PRIMAVERA

ORACLE

Planning & Scheduling Using
Primavera P6 Professional Project Management

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MS (PROJECT MANAGEMENT) - DISTINCTION

ORACLE PRIMAVERA PROJECT MANAGEMENT IMPLEMENTATION SPECIALIST

CERTIFIED PROJECT MANAGEMENT TRAINER & CONSULTANT

Course Goals & Objectives

- **Define Project Management Processes**
- **Use Primavera P6 IDE & Its Features**
- **Create a Project with Activities & Resources**
- **Calculate a Project Schedule**
- **Analyze Resource/ Cost Data**
- **Compare Current vs. Target Schedule**

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Lessons

- Lesson 1
  - History & Introduction
  - Diff b/w Primavera & MS Project (Server/Desktop)
- Lesson 2
  - World's Top PM Standards
  - Project Management Lifecycle
- Lesson 3
  - Data, Navigation, and Layouts
- Lesson 4
  - Enterprise Project Structure
  - Org. Breakdown Structure
  - Mapping EPS &OBS
- Lesson 5
  - Creating a Project
  - Adding Project Details
- Lesson 6
  - Creating WBS & Assigning Responsible Manager
- Lesson 7
  - Adding Activities/ Types
  - Adding Activity Details
- Lesson 8
  - Creating Relationships
  - (Through Activity Network, Gantt Chart, Rel. Tabs)
- Lesson 9
  - Perform Scheduling
  - Schedule Settings
- Lesson 10
  - Assigning Constraints
  - (Project/ Activity Level)

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Lessons

- Lesson 11
  - Maintaining Project Documents Library
- Lesson 12
  - Formatting Scheduled Data
- Lesson 13
  - Defining & Assigning Resources, Cost & Expenses
- Lesson 14
  - Analyzing Resources with Spreadsheets & Profiles
- Lesson 15
  - Optimizing Project Plan (Schedule & Resource)
- Lesson 16
  - Baseline Project Plan
  - (Project Baselines & User Baselines)
- Lesson 17
  - Project Execution & Control (Spotlight Feature)
- Lesson 18
  - Reporting Performance (Screens, Filters, Grouping)
  - Performance Monitoring (Earned Value Management)
  - Primavera Visualizer
- Lesson 19
  - Project Website

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Introduction to Primavera

Lesson 1

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Introduction to Primavera

- Objectives
  - History and Present
  - Primavera Solutions
  - Oracle's Primavera P6

The Value of Project Management

- **80% of global executives believed having project management as a core competency helped them remained competitive during the recession**[1]
- **"The delivery of business outcomes is realized through the success of projects, and in essence that is the way that project management strategies drive organizational success,"** *says Adrian McKnight, PMP, Program Director at Suncorp-Metway Ltd., Brisbane,Queensland, Australia*
- **Nearly 60% of senior executives said building a strong project management discipline is a top-three priority for their companies as they look to the future**[2]
- **"Good project management discipline stopped us from spending money on projects that fail,"** *says Ron Kasabian, General Manager at Intel, Folsom, California, USA*

1 Closing the gap: The link between project management excellence and long-term success, Economist Intelligence Unit, October 2009.

2 McKinsey & Co., January 2010. Results based on a survey of 1,440 senior executives.

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History and Present

- Primavera began in ***1983*** with the launch of PC-based software for engineering and construction.

- Oracle has acquired ***Primavera Software, Inc.***, a leading provider of Project Portfolio Management (PPM) solutions for project-intensive industries on ***October 8, 2008***.

- The present version is ***Oracle Primavera P6 Professional Project Management v 16.1***, released on ***March 31, 2016***.

Primavera's Evolution

DOS & Graphics
- *Flat Files*
- *PENGUIN*

GUI driven Applications

Green Screen Applications

Windows P3/FH
- *PERT*
- *Multi user*
- *SDK*

Client Server P3
- *Scalability*
- *Database*
- *Unlimited hierarchical codes*
- *API*

Connected Applications

Internet Enabled P4, P5, P6
- *Rich User Interface*
- *Role based views*
- *Expanded footprint*
- *Collaboration*

Internet Connected Applications

Loosely coupled Web Services architecture
- *Workflow*
- *Consolidated Business Intelligence & Reporting*

Services Based Applications

Desk Top — Sales Approach — **Enterprise**

DOS	Windows	Client Server	Internet Enabled	Composite Services Based
Mid 80s	Early 90s	Mid -Late 90s	Late 90's – Early 00's	Late 00's . . .

Project-intensive Industries Require Enterprise PPM

- Deliver high-quality projects on-time and within budget
- End-to-end visibility for improved, timely decision making

Key Industry Requirements	Architecture, Engineering & Construction	Public Sector, Aerospace & Defense	Utilities, Oil & Gas	High Tech & Manufacturing	IT and Services
	• Improve coordination and collaboration • Avoid and protect against claims	• Manage large programs with multiple suppliers and subcontractors • Improve accountability and meet regulatory requirements	• Manage short-duration, high-intensity outages and shutdowns • Increase productivity and speed of project delivery	• Bring the right products to market within market windows • Collaborate across the global supply chain	• Prioritize projects based on strategic objectives • Optimize assignment of scarce resources

Overview of Primavera

- **Primavera's mission is to *"Rid the world of project failure"***
  - 5,000 global enterprises, 18,000 medium-sized customers, and 2.5 million users in 85 countries
  - More than $6 trillion in project value managed with Primavera
  - Consistently recognized as a leader by industry analysts
  - Global reach: 43% of revenue from outside North America, localized products in 13 languages
  - Award-winning customer service
  - Industry-specific business processes
  - Standard, pre-built integrations with leading ERP vendors
  - Open standards-based integration with industry applications
- **30 years as proven PPM leader for project-intensive industries**
  - 375 of top 400 engineering and construction firms
  - 17 of top 20 power companies
  - 9 of top 10 oil companies
  - All 5 US military branches
  - 12 of 16 US Federal agencies
  - 9 of top 10 aerospace and defense contractors

Large Portfolio of Loyal Customers Rely on Primavera for Their Mission-Critical Projects

Architecture, Engineering & Construction	Public Sector, Aerospace & Defense	Utilities, Oil & Gas	High Tech & Manufacturing	IT & Services
KBR	Lockheed Martin	ExxonMobil	SIEMENS	Principal Financial Group
PARSONS	Transportation Security Administration	bp	Motorola	nab
FLUOR	THALES	Duke Energy	CATERPILLAR	GUARDIAN
JACOBS	U.S. Department of Homeland Security / U.S. ARMY	Ameren	Honeywell	PROGRESSIVE
HILL / Hill International	NORTHROP GRUMMAN	SOUTHERN COMPANY	freescale semiconductor	Aflac
CH2MHILL	BAE SYSTEMS	Energy to Serve Your World	ALSTOM	SunTrust
Bovis Lend Lease	Federal Aviation Administration / NASA	Shell / Chevron	FMC Technologies	EDS
BECHTEL			BOMBARDIER / GE	

Construction Company Successfully Manages Thousands of Projects

"It gives us a strategic advantage to say that we use Primavera software, because our clients trust the Primavera name."

Cost and Scheduling Manager
Parsons Infrastructure and Technology

PARSONS

Business challenges:

- Provide clients with consistent and profitable engineering and construction management services
- Deliver project management, detailed design, procurement and management of one-of-a-kind projects

Business results:

- Over 4,000 projects managed and 6,000 team members coordinated
- Consistent project control across the enterprise
- Decreased schedule development time by 50%
- Accurate and timely performance data to support management decisions

Oil Company Streamlines Shutdowns and Standardizes Processes

"From the initial quotes to awarding of contracts and beyond, we can track all elements of purchasing and payments, as well as the progress of the work itself."

Project Management Professional (PMP)
Kuwait National Petroleum Company

KNPC

Business challenges:

- Increase oil production without further capital investment
- Replace 31 legacy systems used to manage maintenance and turnaround work

Business results:

- Standardized on Primavera for project management and scheduling and integrated with IBM's Maximo and Oracle's Human Capital Management and Financials
- 7% reduction in shutdown duration
- Savings of US$21 million per year, with US$3 million from manpower reduction
- Quicker procurement cycles, including faster payments to contractors

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Aerospace & Defense Contractor Improves Productivity

"Primavera provides us with the toolset and visibility to… take an idea and transform it into a complex product that flies away and saves lives."

Program Planning and Control Manager
Military and Commercial Programs

Sikorsky
A United Technologies Company

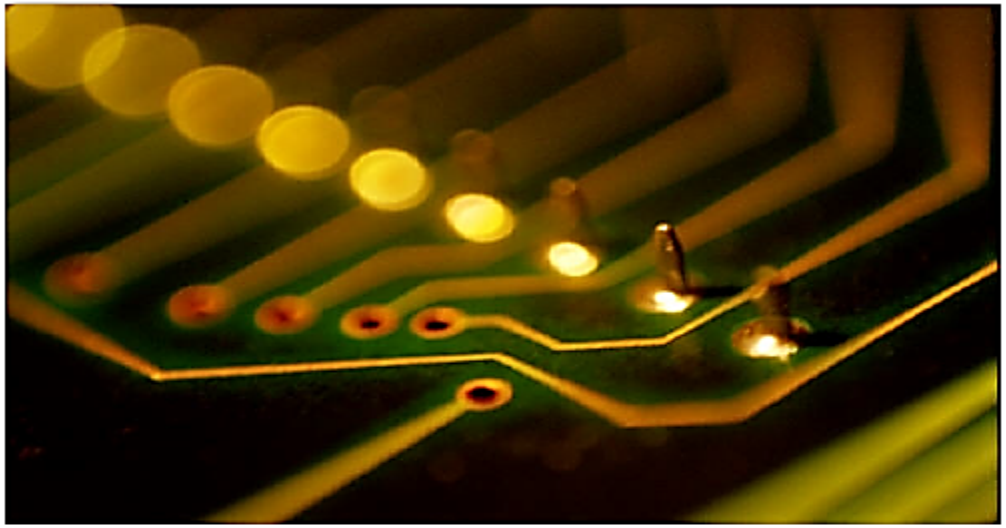
Business challenges:

- Manage lifecycles of billion-dollar programs – from contract award through delivery
- Comply with government reporting requirements
- Collaborate with customers

Business results:

- Managing more than 350 projects, with 50 to 30,000 tasks each, including the Blackhawk Helicopter program
- Integrated with SAP and other internal systems
- Improved productivity and efficiencies, providing greater value to customers
- Gained visibility into contract performance

High-Tech Company Gains Visibility and Control of Development Projects Worldwide



"We had immediate visibility into our project portfolio and resources, along with status against official baselines based on business rules we defined. The information is right there, and everyone can trust that it's accurate."

Operations Manager
Freescale Semiconductor

freescale semiconductor

Business challenges:

- Provide accurate project information to all stakeholders across all functional groups
- Manage both functional and matrixed organizational structures
- Manage both waterfall and spiral development models

Business results:

- 160 product releases per year
- "Real-time, all the time" dashboards showing end-to-end PPM information
- Eliminated redundant work
- Better control of commitments, resources and deliverables
- 50% productivity gain in scheduling and reporting
- Saving 8 hours per week in administrative time

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Insurance Company Standardizes Platform to Improve IT Performance and Control Costs

"Our business units and IT have the same objectives, the same agenda, the same priorities. Primavera's software plays a major role in making that happen."

IT Executive
The Guardian Life Insurance Company

GUARDIAN®

Business challenges:

- Run IT like a business while reducing IT budget by US$40 million over two years
- Establish a sound financial management structure for IT

Business results:

- Eliminated US$20 - $50 million of nonstrategic projects from the IT budget each year
- Increased rate of delivering projects on time, on budget and within scope from 35% to 69%
- Reduced routine IT maintenance costs from 30% of the budget to only 18%

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Customer Results

- ***New Jersey Department of Transportation*** realized an estimated savings of US$50 million annually by reducing project delays

- ***University of Utah*** used Primavera Unifier to help complete a major cancer center expansion project, budgeted at US$105 million, completed two months early and US$9 million under budget

- ***Parkland Health & Hospital System*** completed a 1,700-space parking garage nearly 14% under budget and came in US$8 million under projection on the new US$683 million acute care hospital

- ***CPqD*** cut project monitoring time approximately 75%

- ***GERC*** reduced planning time and costs by 50%

1 Oracle Project Portfolio Management *http://www.oracle.com/us/solutions/project-management/index.html*

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Reports From Analyst Firms

- The Info-Tech Research Group ranked Primavera as a "Market Pillar" in their Enterprise Project Portfolio Management Vendor Landscape for 2014.

1 *The Info-Tech Research Group- Vendor Landscape: Enterprise Project Portfolio Management*
http://www.infotech.com/research/ss/vendor-landscape-enterprise-project-portfolio-management

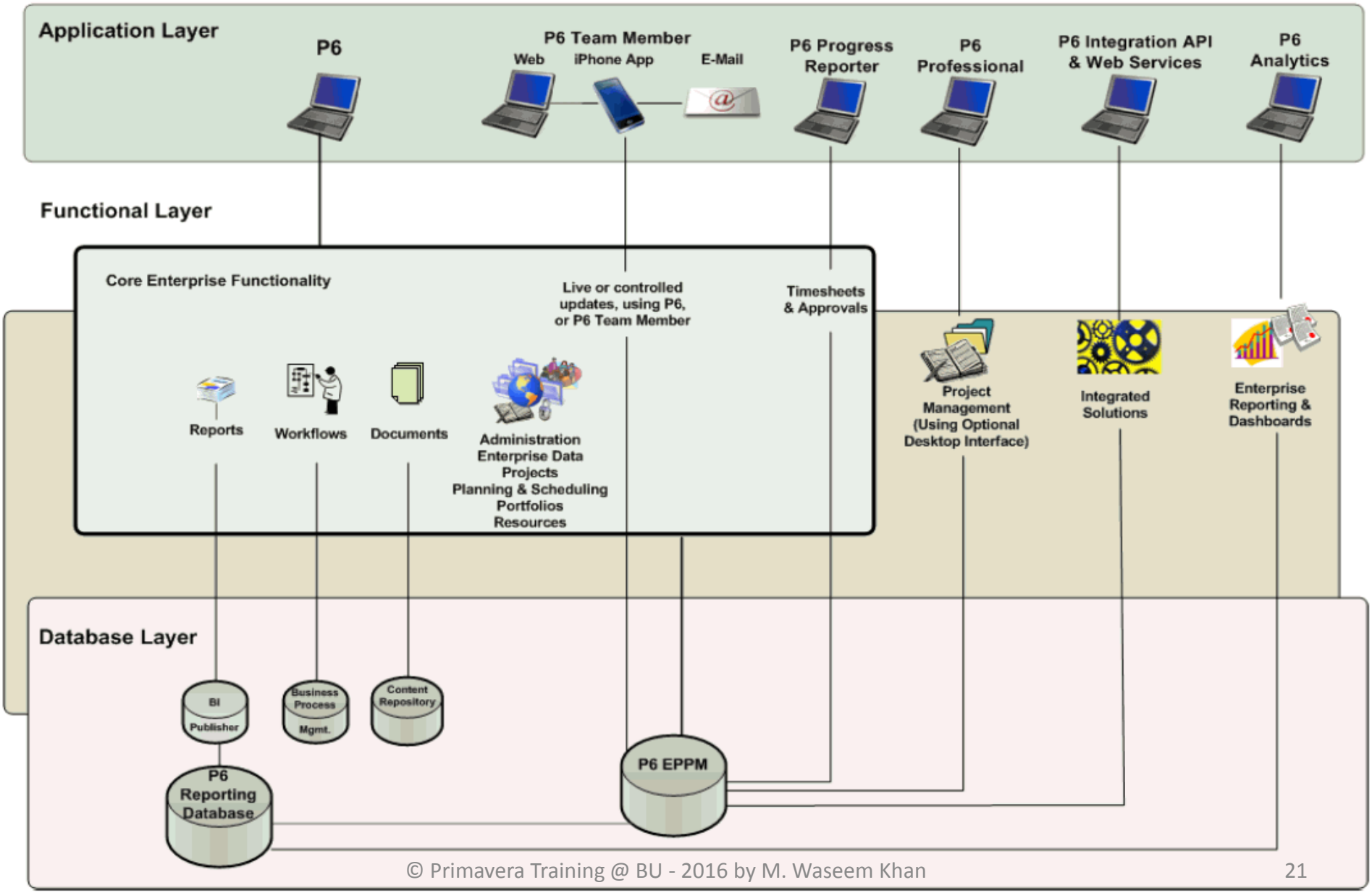
Oracle's Primavera P6

- Gives today's Project Managers and Schedulers the one thing they value most: ***Control***.

- The recognized standard for high-performance project management software, is designed to handle large-scale, highly sophisticated and multifaceted projects.

- Can be used to organize projects up to ***100,000 activities***, and it provides unlimited resources and an unlimited number of target plans.

Primavera P6



Applications

- ***P6:*** Simply termed P6, it is the primary interface for administering and managing projects.
- ***P6 Professional for EPPM:*** The P6 web application is the main interface for all project management functionality.
- ***P6 Progress Reporter:*** P6 EPPM includes the P6 Progress Reporter integrated timesheet entry software. Resources use P6 Progress Reporter to record their time spent working on assignments via electronic timesheets, and approving managers use P6 to review and approve them.
- ***P6 Integration API:*** A Java-based application programming interface (API) enabling your P6 EPPM deployment to interface with other components and systems.
- ***P6 Web Services:*** P6 Web Services is an integration technology that extends P6 business objects and functionality.
- ***P6 Analytics:*** An optional integrated dynamic reporting tool with advanced visual features, including dashboards.

Functionality

- ***Core Enterprise Functionality:*** We use P6 for all of the following core enterprise functionality:
  - ***Administration and Enterprise Data:*** Administer user accounts, preferences, views, application settings, and enterprise data.
  - ***Project, Portfolio, and Resource Management:*** P6 provides an extensive array of features designed to optimize all phases of Project Management, Resource Management, and Portfolio Management. It includes full support for activities, work breakdown structures, costs, resource administration and assignment, roles, teams, portfolio analysis, capacity planning, and convenient dashboards for measuring status at any level at every moment.
  - ***Document Management:*** P6 includes document management support with or without the optional document repository option.
  - ***Workflows:*** The workflow engine bundled provides Business Process Modeling Notation (BPMN) compliant graphical notation that depicts the steps in your project initiation workflows.
  - ***Reports:*** Generate and view reports using your standard web browser running P6.

Functionality

- ***Planning and Scheduling:*** The optional P6 Pro component of the suite provides a robust set of features primarily for planners and schedulers, including reflections, schedule comparison (Claim Digger), and a report designer.
- ***Time Reporting:*** P6 EPPM includes P6 Progress Reporter, an optional integrated timesheet entry application.
- ***Integrated Solutions:*** Build or deploy other systems and use the P6 Integration API or P6 Web Services to integrate them with P6 EPPM.
- ***P6 Analytics:*** Extend your solution by adding P6 Analytics with the Oracle Business Intelligence (OBI) metadata layer to facilitate the creation of ad-hoc reports and interactive custom dashboards reflecting trends and metrics for activities, portfolios, resource assignments, utilization, and project history. Also receive proactive alerts based on integrated report data mined from the ODS and star databases.

Technology

- ***The P6 EPPM Database:*** The main database for all your P6 EPPM data.
- ***BPM Workflow:*** The separate workflow engine bundled with P6 EPPM.
- ***Oracle BI Publisher:*** The database server hosting the reporting library, templates, and views required to build complex reports with ease.
- ***The Reporting Database:*** The P6 Reporting Database portion of the suite consists of the Star database and the Operational Data Store (ODS) database used to extract, transform, and load data from the P6 EPPM database. This data is specifically designed to be used to create reports.
- ***Oracle Universal Content Management:*** This server hosts documents in a shared repository enabling collaborative functionality such as document check-out/check-in and versioning.

Primavera vs. MS Project

- No. of Activities per Project (100,000 & 400,000)
- No. of EPS Structures (20/ 50 & Nil)
- No. of Baselines (∞ & 11)
- Publish Project (Yes & Customizable only on Server)
- No. of Columns (200 & 40)

- Issues & Risks
- Multi-User Multi-Project
- Roles based Analysis
- TSLD
- Mobile Alerts
- Activity Steps & Expenses
- Multiple Activity Relationships

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The Project Management Lifecycle

Lesson 2

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The Project Management Lifecycle

- Objectives
  - A brief on Project Management history
  - An overview of World's Renowned Project Management Standards/ Methodologies ***(PRINCE2, ISO 21500, PMBOK)***
  - Project & Project Management Defined *(Standard-based)*
  - Review relationship between Primavera and the Project Management Lifecycle
  - Identify the Process Groups in the Project Management Lifecycle

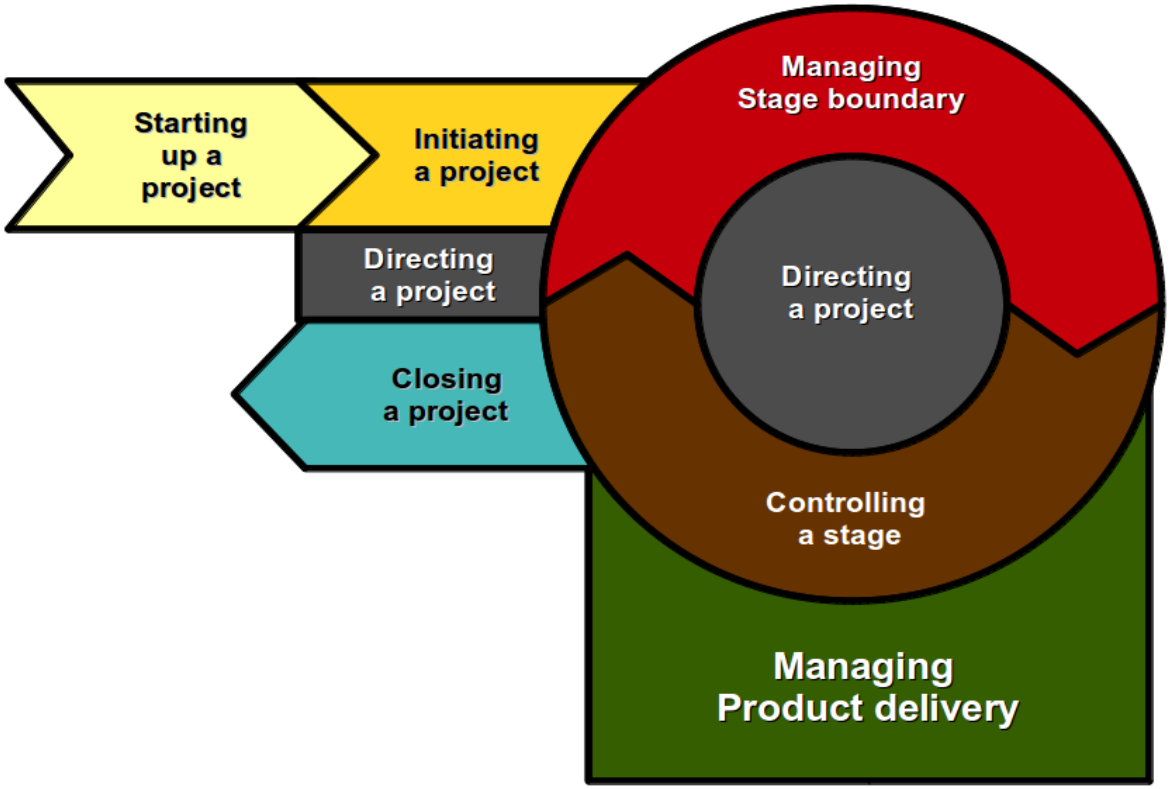
Talking About Most Recognized
Standards/ Methodologies

PRINCE2

ISO 21500:2012

PMBOK

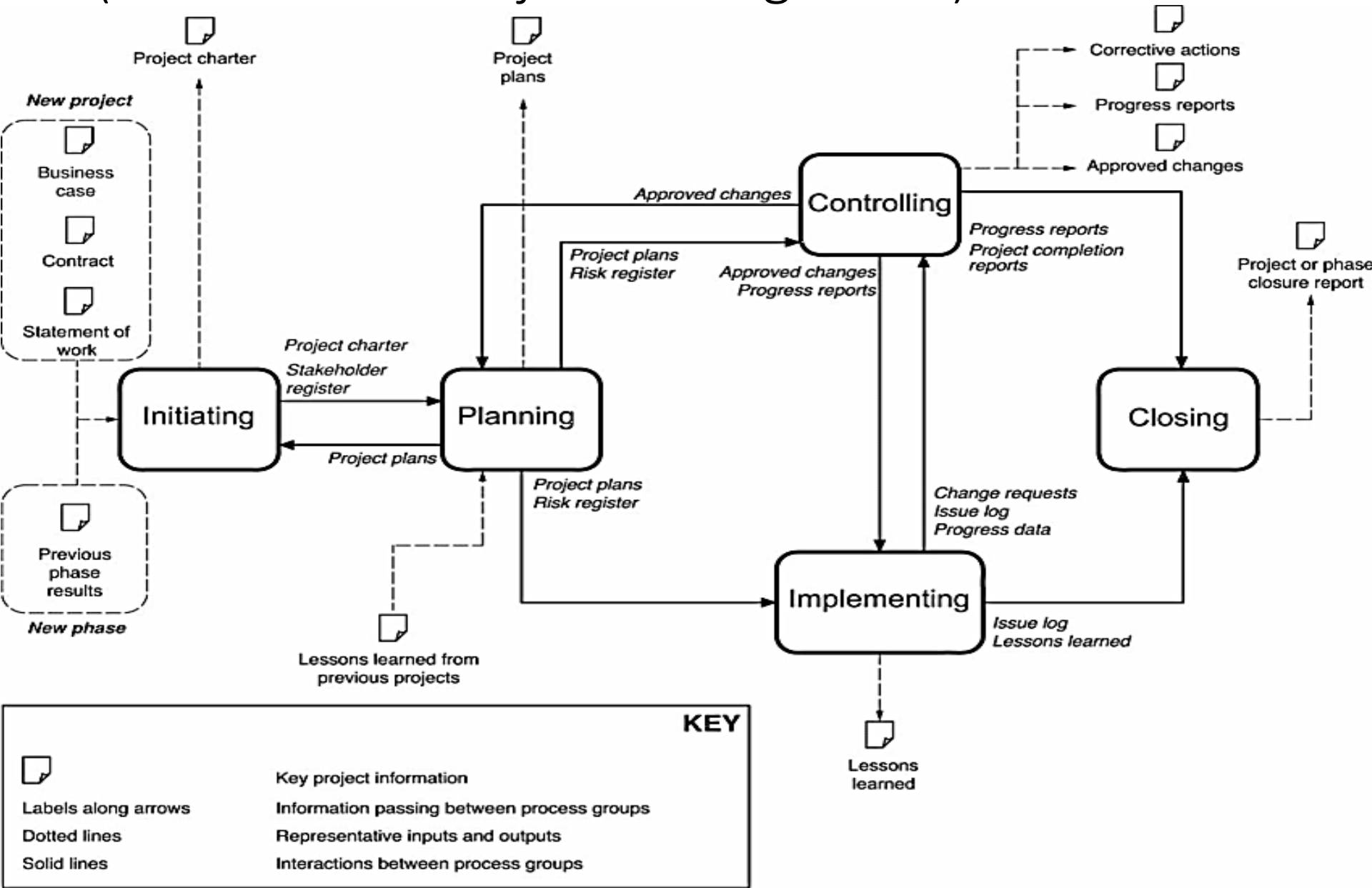
PRINCE2



Themes							
Business Case	Organization	Quality	Plans	Risk	Change	Progress	

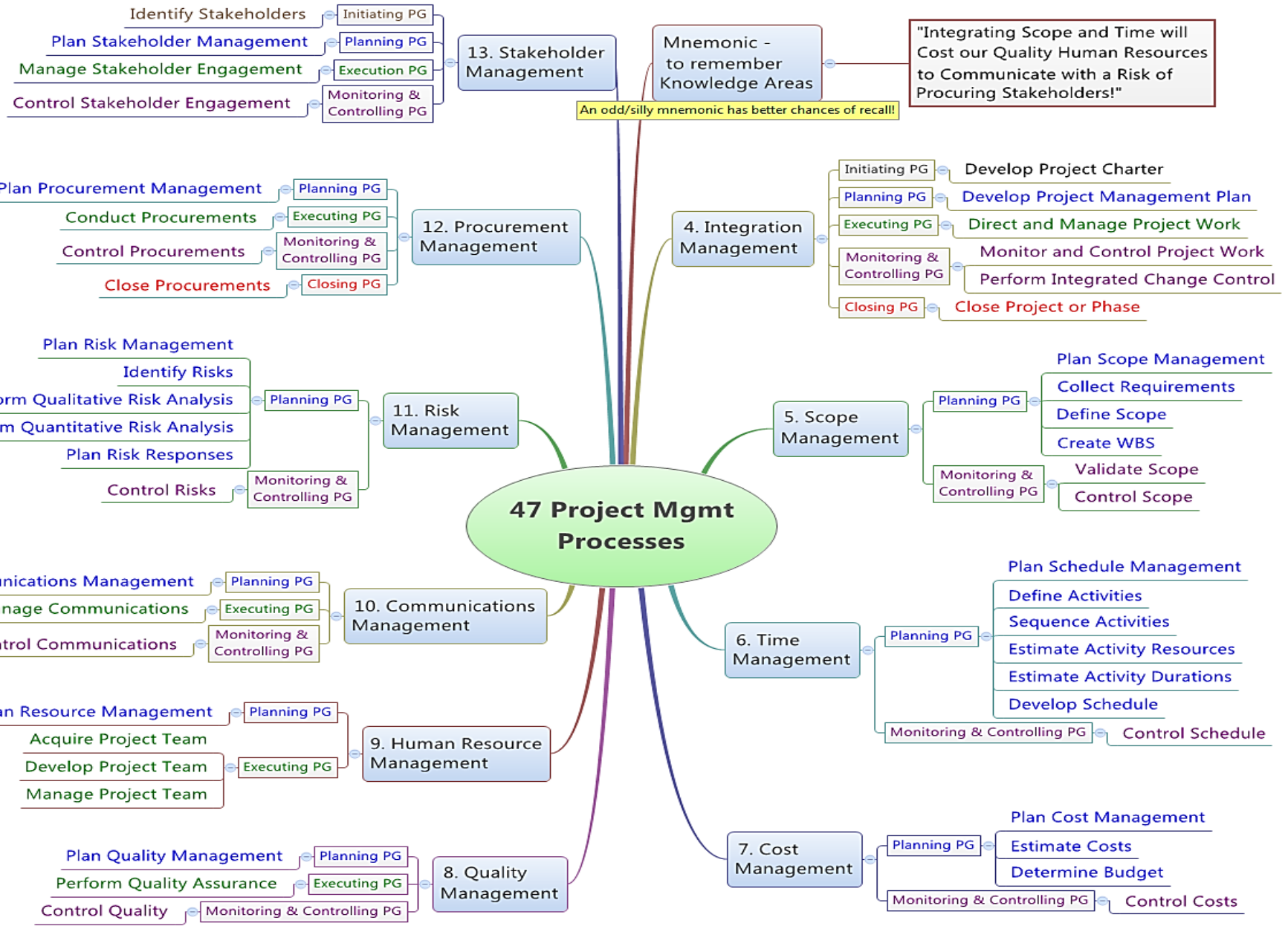
Principles						
Continued business justification	Learn from experience	Defined roles and responsibilities	Manage by stages	Manage by exception	Focus on products	Tailor to suit the project environment

ISO 21500:2012
(Guidance on Project Management)



PMBOK

PMBOK V5



ISO 21500 vs. PMBOK

Table 1. ISO 21500 and PMBoK® Guide process groups comparison

ISO 21500	PMBoK® Guide
Initiating	Initiating
Planning	Planning
Implementing	Executing
Controlling	Monitoring and Controlling
Closing	Closing

39 Processes vs. 47 Processes

ISO 21500 Subjects and PMBoK® Guide Knowledge Areas

ISO 21500 Subjects	PMBoK® Guide Knowledge Areas
Integration	Integration
Stakeholder	Stakeholder
Scope	Scope
Resource	Human Resources
Time	Time
Cost	Cost
Risk	Risk
Quality	Quality
Procurement	Procurement
Communication	Communication

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PRINCE2 vs PMBOK

PRINCE2 (PRojects IN a Controlled Environment)
&
PMBOK (Project Management Body of Knowledge)

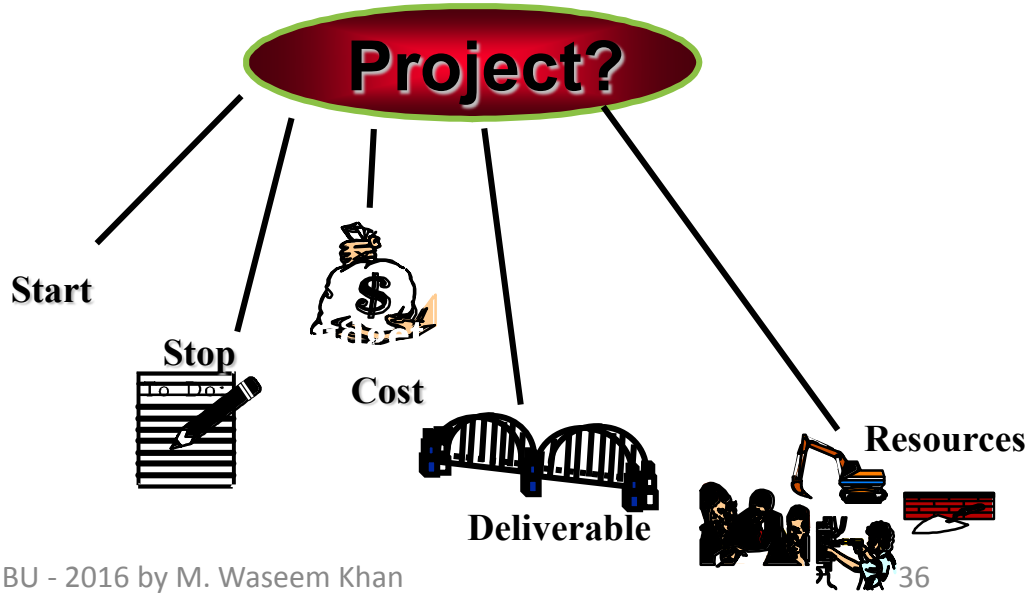
PRINCE2	PMBOK
Origin - United Kingdom	Origin - United States
Administered by APMG	Administered by PMI
A process based project management methodology	A knowledge based approach to project management
A series of management processes defining what must be done, when and how it must be done and by whom over the life of a project	Describes core practices and a wider range of techniques that can be applied to manage a project
Prescriptive, but tailorable	Non-prescriptive
Defines the roles of everyone involved in a project	Focuses on the project manager's role

PRINCE2 vs PMBOK

PRINCE2	PMBOK
Practical project management methodology based on 7 principles	Comprehensive information on all aspects of project management
Driven by the business case	Driven by customer requirements
Business case, product based planning, management by exception, clarity in roles and authorities, project assurance	Procurement, HR management. More depth on techniques such as EVM, Critical Path, estimating, etc.

The Project

- A project is a temporary organization that is created for the purpose of delivering one or more business products according to an agreed Business Case. *(PRINCE2)*
- A project consists of a unique set of processes consisting of coordinated and controlled activities with start and end dates, performed to achieve project objectives. *(ISO 21500: 2012)*
- Project is a temporary endeavor undertaken to create a unique Product, Service or Result. *(PMBOK)*



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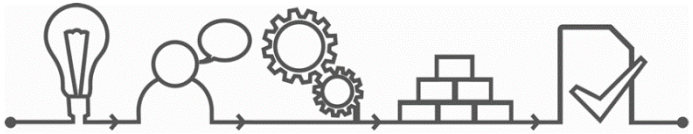
The Project

- It has a defined START and END, therefore the project is TEMPORARY;
- It has a certain volume of “WORK” which needs some form of organization, otherwise it is NOT a endeavor;
- It is NOT business as usual, NOT following normal procedures, because there is something UNIQUE to it;
- It creates an END RESULT, being a PRODUCT, a SERVICE or RESULT.

Project Management



- Project management is the planning, delegation, monitoring and control of all aspects of the project, and the motivation of those involved, to achieve the project objectives within the expected performance targets for time, cost, quality, scope, benefits and risks. ***(PRINCE2)***
- Project management is the application of methods, tools, techniques and competencies to a project. ***(ISO 21500)***
- Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. ***(PMBOK)***

Project Manager

- The **Project Manager** is the person assigned by the performing organization to lead the team that is responsible for achieving the project objectives.
- Project managers are **change agents**: they make project goals their own and use their skills and expertise to inspire a sense of shared purpose within the project team.

The Project Management Lifecycle

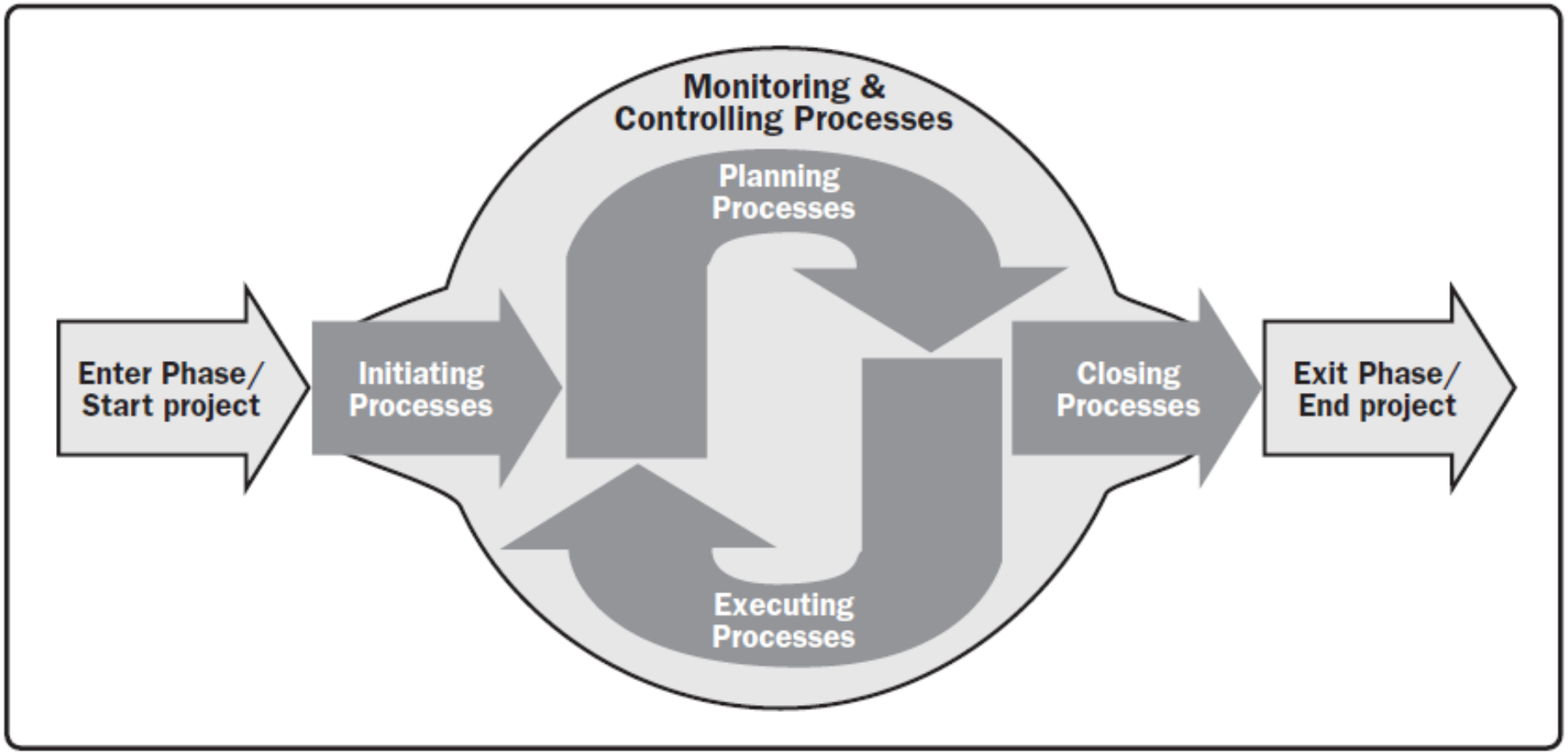


Figure : Project Management Process Groups

Process Groups & the Project/ Phase

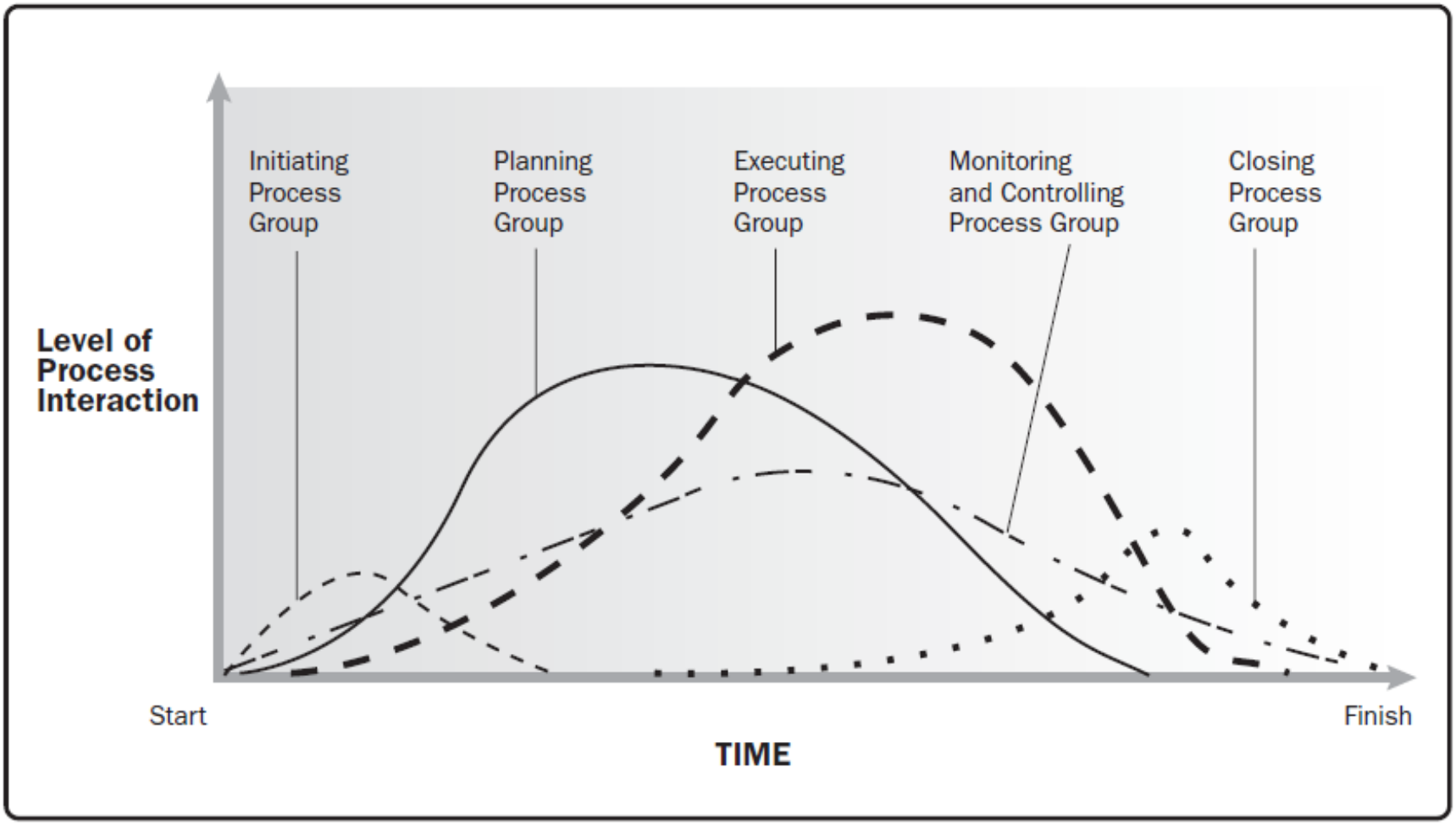


Figure: Process Groups Interact in a Phase or Project

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Project Life-Cycle

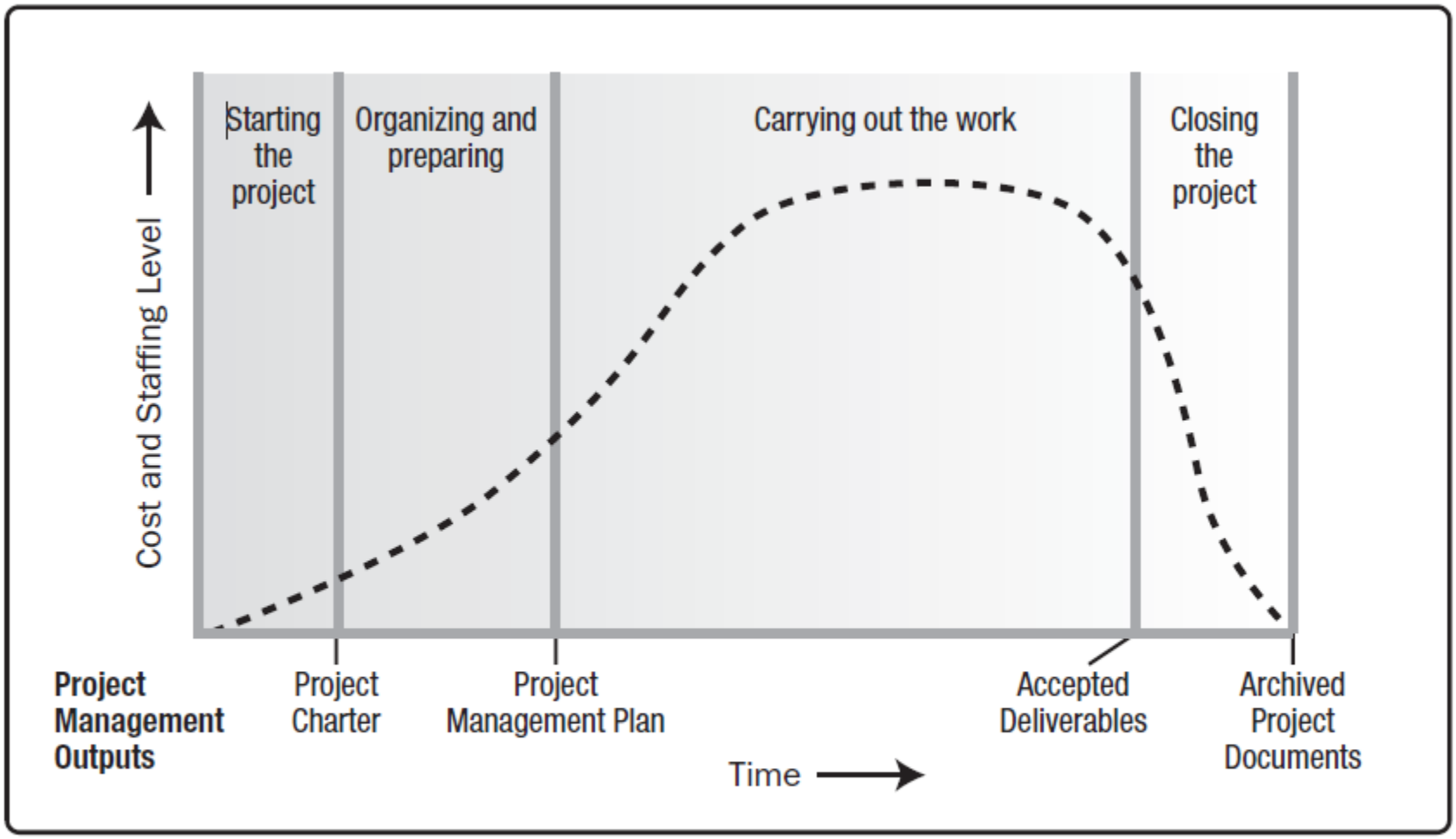

Figure: Typical Cost and Staffing Levels Across a Generic Project Life Cycle Structure

Data, Navigation, and Layout

Lesson 3

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Data, Navigation, and Layout

- Objectives
  - Describe Enterprise and Project Specific Data
  - Log In to Primavera P6
  - Open an Existing Project
  - Navigate in the Home Window and Activities Window
  - Open an Existing Layout
  - Customize a Layout
  - Save a Layout

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Enterprise Data

- ***Enterprise Data*** provides a global structure needed to manage multiple projects. It is available to all projects across the organization and provides the structure necessary for centralized project and resource management.
- Administrator defines enterprise-specific data to standardize the organizational data.
- Examples of Enterprise Data:
  - Enterprise Project Structure
  - Project Codes
  - Resource Codes
  - Admin Categories and Preferences
  - Resources
  - Cost Accounts

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Project Specific Data

- ***Project Specific Data*** is only available to the project in which it is defined.
- Project Manager defines project specific data to further control his/her project.
- Examples of Project Data:
  - Dates
  - Work Breakdown Structure
  - Activities
  - Relationships
  - Baselines
  - Expenses
  - Risks
  - Thresholds and Issues
  - Work Products and Documents
  - Project Website

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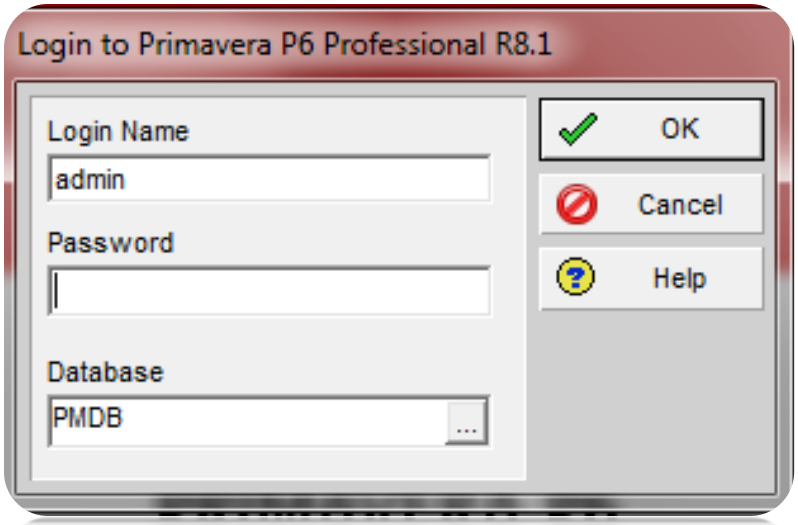
Enterprise/ Project Specific Data

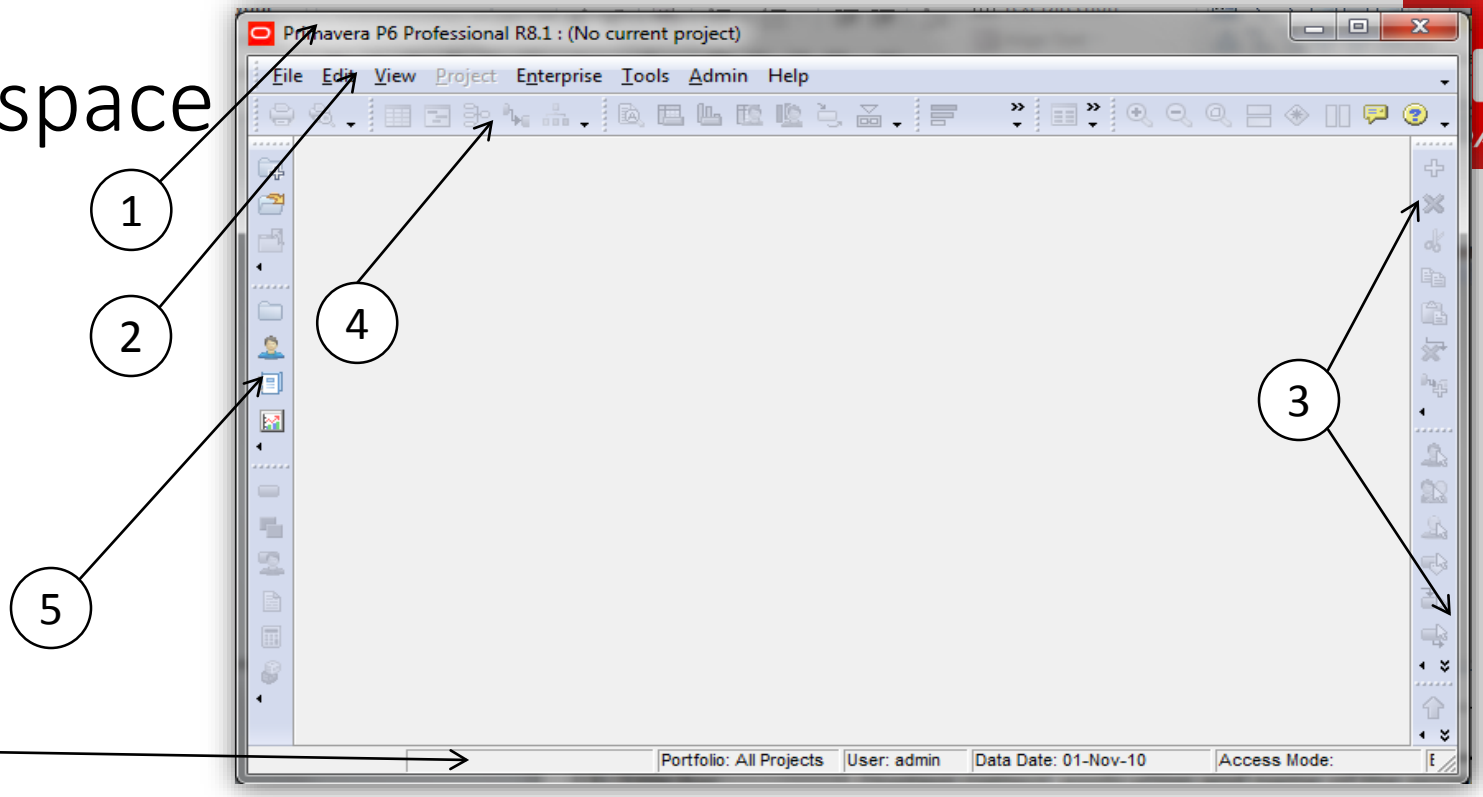
- ***Enterprise/ Project Specific Data*** is available to both enterprise and project data.
- Examples of Enterprise/ Project Specific Data:
  - Calendars
  - Reports
  - Activity Codes

Logging In

- Exercise:
  - Steps
    - Click Start, Programs, Oracle – Primavera P6, P6 Professional R15.1
    - Type a Login Name “admin”
    - Type your password “admin123”



Workspace



Item	Functionality
1. Title Bar	Displays current application and name of the project
2. Menu Bar	Perform functions in Primavera
3. Command Bar	Actions that are performed in an open window (Add, Delete etc.)
4. Tool Bar	Displays icons that allow you to change the look and feel of the layout
5. Directory Bar	Quickly displays Primavera window (Activities, Project, Resources etc.)
6. Status Bar	Login Name, Data Date of open project, Access Mode, and Current Baseline

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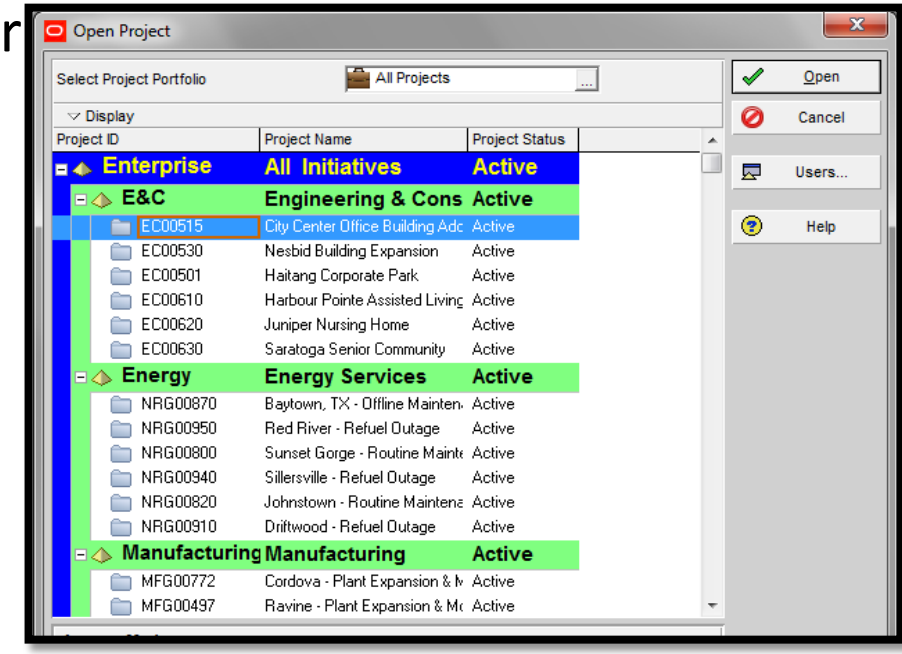
Opening An Existing Project

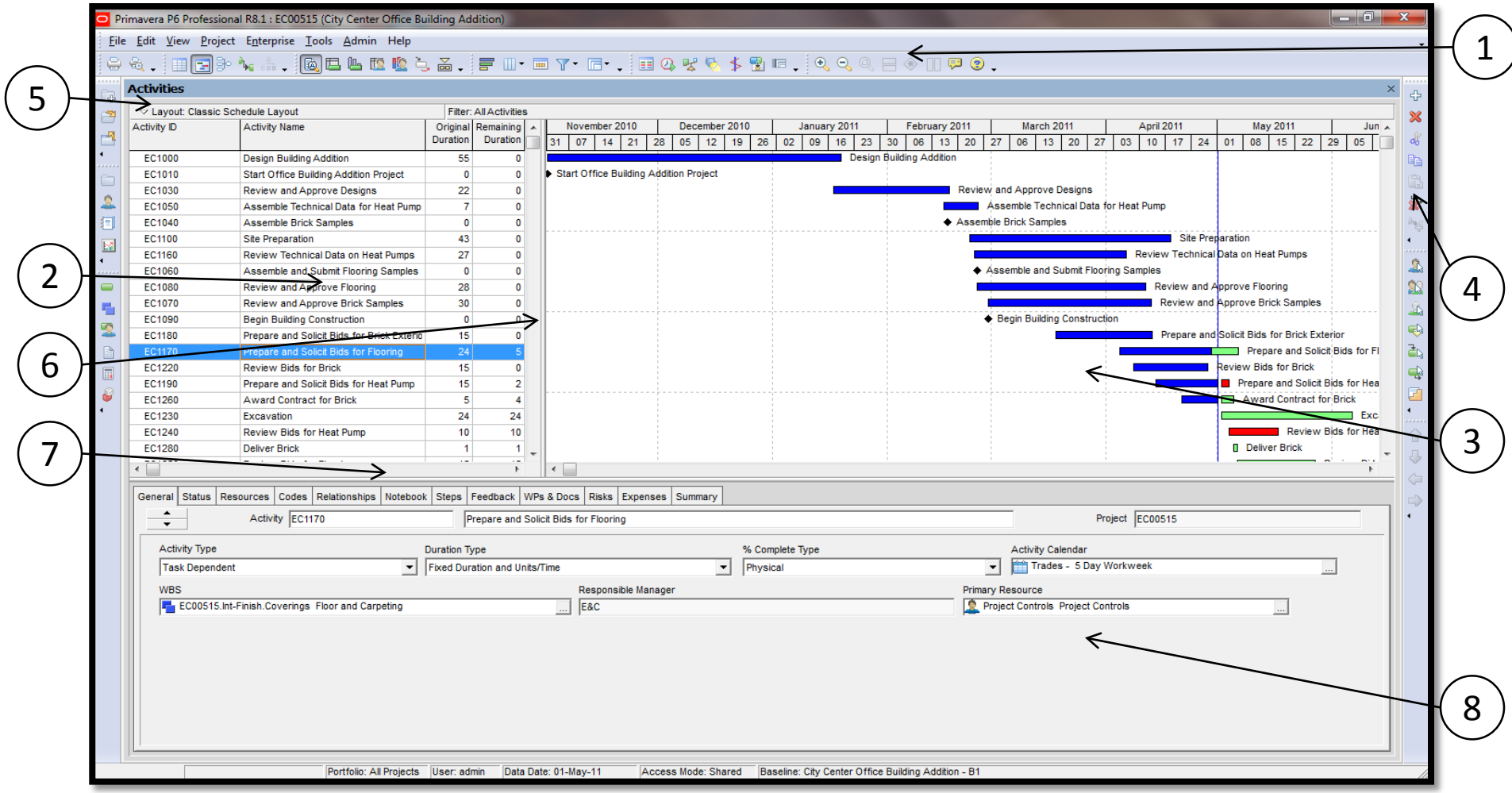
- The ***Open Project*** dialog box lists all the projects you have access to open
  - Open a single project indicated by
  - Open a single node indicated by
    - All projects under the node are opened.
  - Open multiple projects under different nodes
    - Press Click+Ctrl to open more than one project.



- Exercise
  - Steps
    - In the File menu Click “Open”

Activities Window

- ***Activities Window*** is used to create, view, and edit activities for open project.



Activities Window

Item	Functionality
1. Tool Bar	Displays icons that allow you to change the look and feel of the layout
2. Activity Table	Displays activity information in spreadsheet format
3. Gantt Chart	Provides graphical view of the activity progress over the period of time
4. Command Bar	Displays options for adding or removing activity data
5. Layout Option Bar	Displays menu of available options for activity window
6. Vertical Split Bar	Drag this bar to hide/ show information in each pane
7. Horizontal Split Bar	Hide/ show more information in bottom pane
8. Activity Details	View/ edit detail information for selected activity

- Exercise
  - Steps
    - Confirm you are in Activity Window (By clicking on activity button)

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Layouts

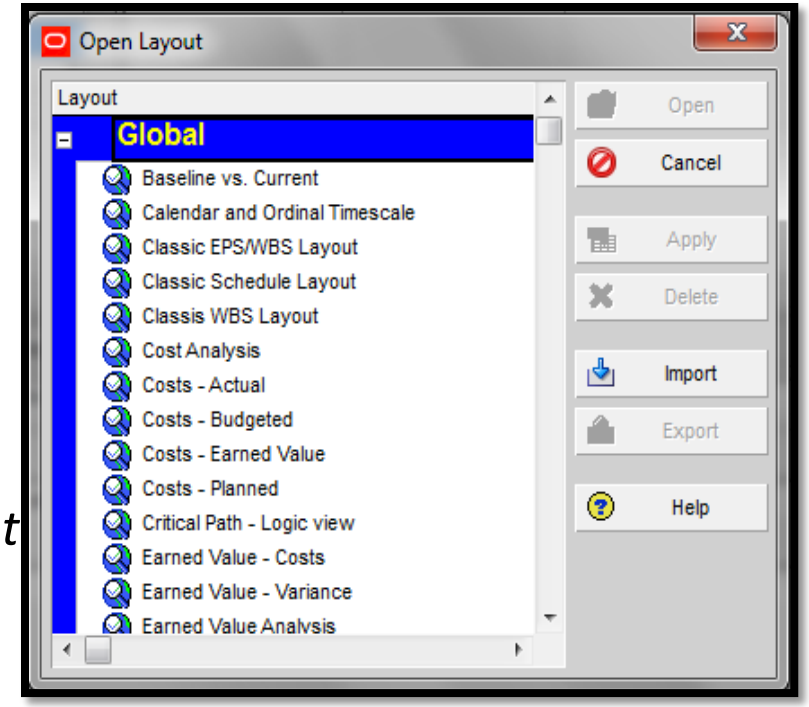
- ***Layout*** is a customizable view of information. It is combination of all the visual elements that appear on screen. Layouts are available in Projects, WBS, Activities, Resource Assignments, and Tracking Windows.

Activity Layout

- The activity window provides options in viewing data in top/ bottom layouts
  - Choose one of the following to show on top:
    - Activity Table
    - Gantt Chart
    - Activity Usage Spreadsheet
    - Activity Network
  - Choose one of the following to show on bottom:
    - Activity Details
    - Activity Table
    - Gantt Chart
    - Activity Usage Spreadsheet
    - Activity Usage Profile
    - Resource Usage Profile
    - Trace Logic

Opening An Existing Layout

- A variety of layouts are available to present activity data from different perspectives. You can create user specific layouts and project specific layouts, or use global layouts provided by your company.
- After selecting a layout, you can click either “Apply” or “Open”
  - *Apply* – Displays layout but keeps open layout dialog box open
  - *Open* – Displays layout and closes open layout dialog box
- Exercise
  - *Steps*
    - *In the Layout Option Bar, click Layout, Open*
    - *When prompted to save changes to the layout, click No*
    - *Select a layout, Analyzing the Budget*
    - *Click Apply*
    - *Select a layout, Classic WBS Layout*
    - *Click Open*



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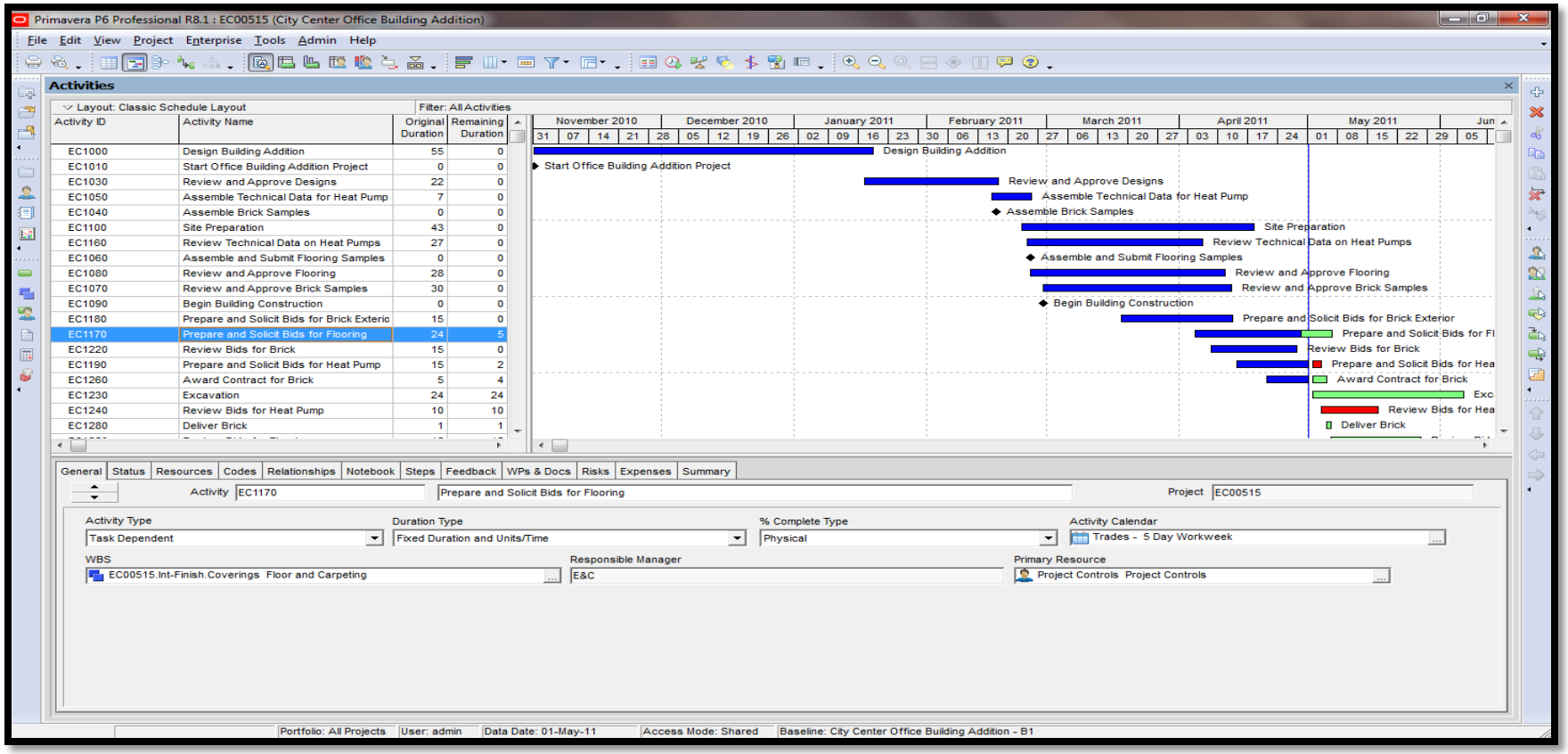
Gantt Chart

- ***Gantt Chart*** is divided into two sections:
  - ***Activity Table*** – Displays activity data in columns
  - ***Bar Area*** – Provides a graphical display of activity progress over the duration of the project

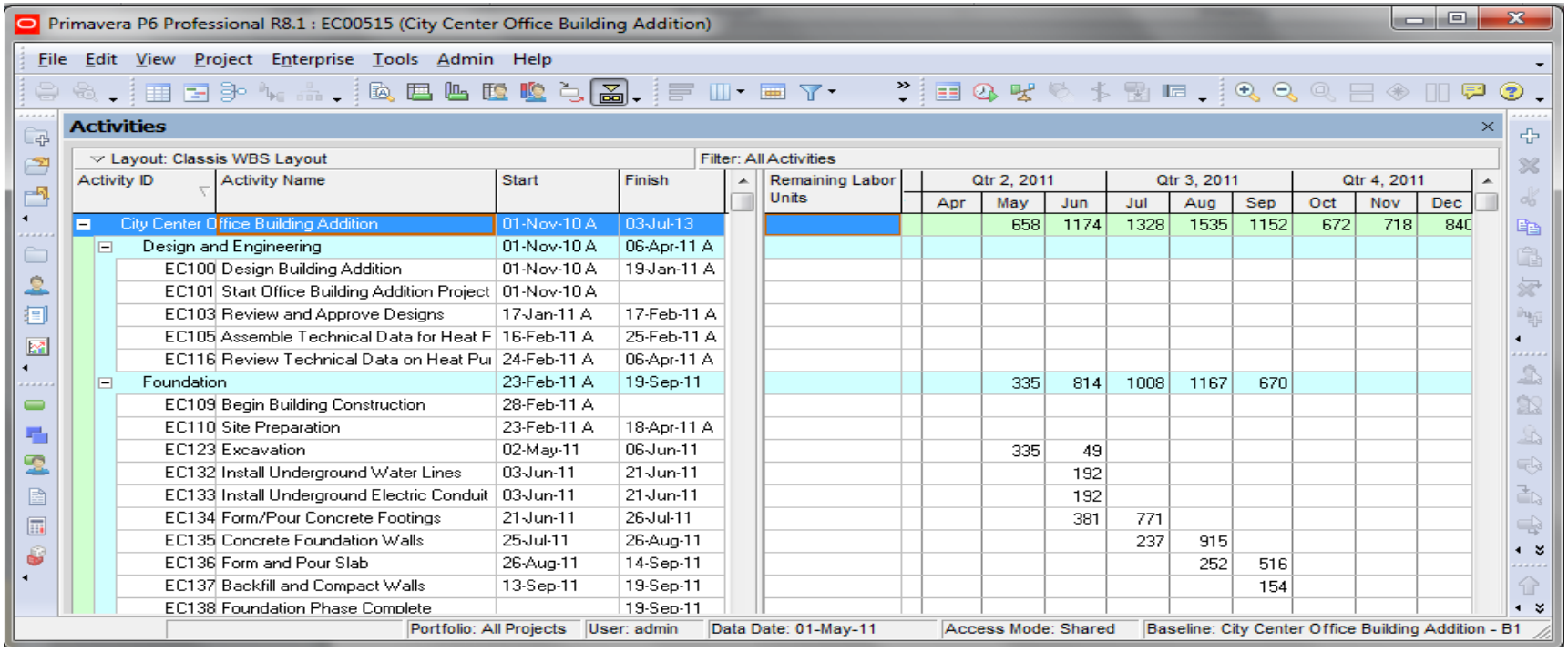


Activity Usage Spreadsheet

- The ***Activity Usage Spreadsheet*** displays units, cost, or earned value data by activity overtime. Use this type of layout to review per period and rolled-up activity resource/ cost.
- You can customize the timescale of Activity Usage Spreadsheet:
  - Move the timescale to focus on a specific time period – Point in timescale until cursor displays and then slide cursor left or right.
  - Expand the timescale to widen/ narrow width of columns – Point in minor date interval until the cursor displays and then slide cursor left or right.

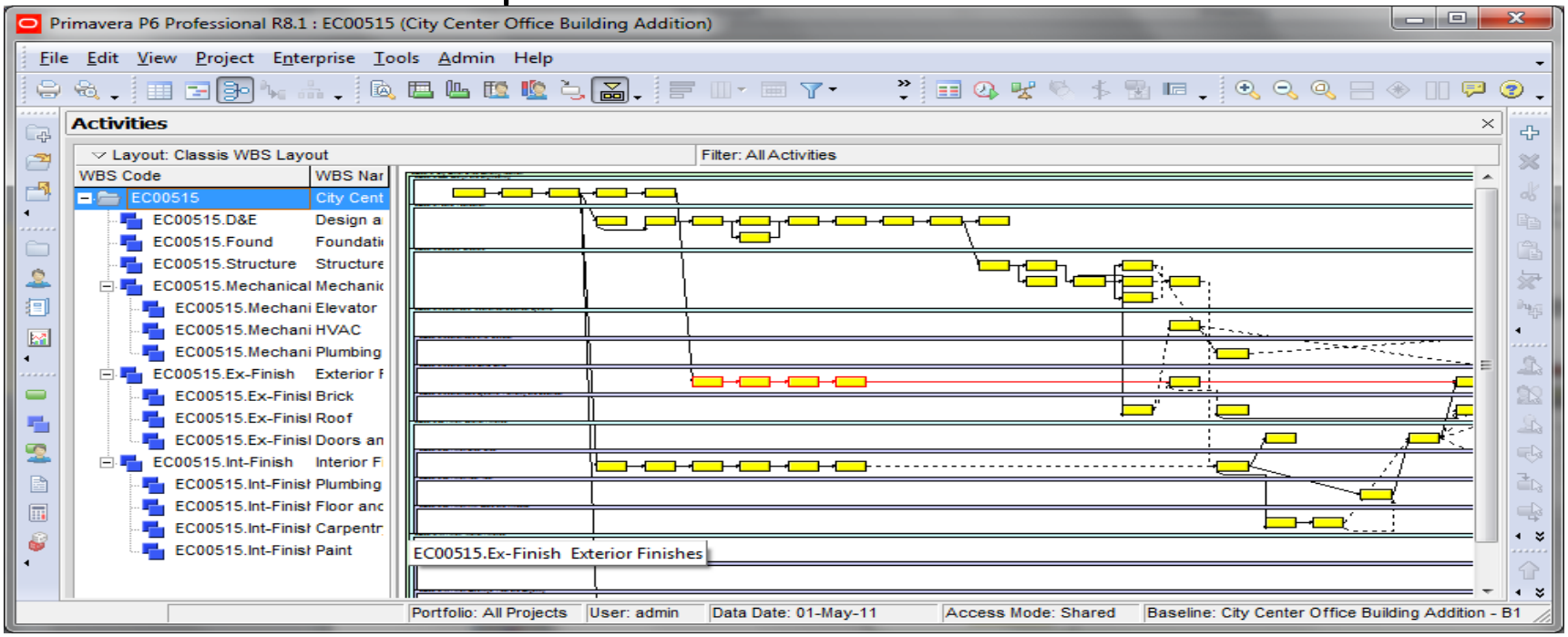
Activity Usage Spreadsheet

- Exercise
  - Steps
    - Layout Option Bar, click Show on Top, Activity Usage Spreadsheet
    - In the Layout Option Bar, click Show on Bottom, No Bottom Layout
    - Expand the timescale
    - Move the timescale to display August 2011



Activity Network

- Use the ***Activity Network*** to view the relationships between activities and the logical flow of the activities in the project:
  - ***Left Pane*** – Displays the WBS hierarchy
  - ***Right Pane*** – Shows a graphical display of activities and their relationships



Activity Network

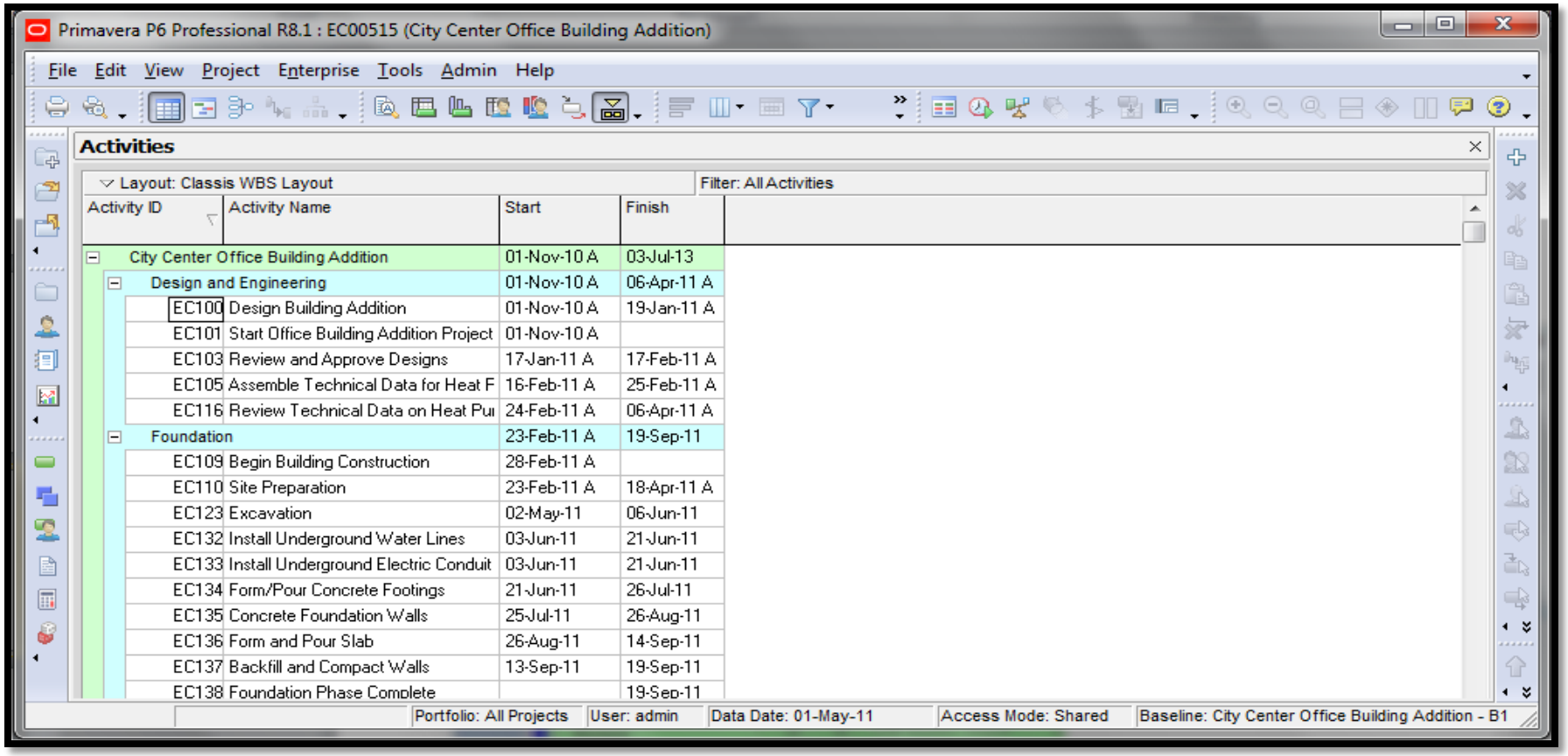
- Exercise
  - Steps
    - In the Layout Option Bar, click Show on Top, Activity Network
    - In the Toolbar, click (magnifier) zoom several times to get a close look at activities

Activity Table

- The ***Activity Table*** enables you to see project data in the spreadsheet format. You also can modify the columns displayed in the Activity Table to meet your needs.
- You can display activity Table on the entire screen if you want to analyze data in tabular format.

Activity Table

- Exercise
  - Steps
    - In the Layout Option Bar, click Show on Top, Activity Table

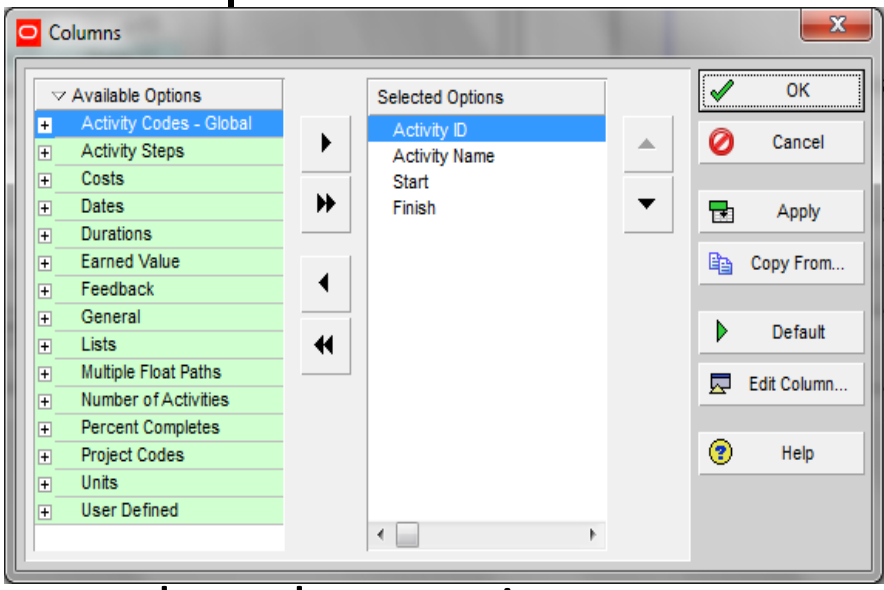


Customizing a Layout

- The ***Activities Window*** can be customized and saved as a layout. Saving layouts for future use allows you to quickly retrieve information.
  - The Layout option bar is the centralized menu for layout customization
  - Following is the list of Layout elements that are customizable:
    - Bars
    - Columns
    - Timescales
    - Table Font and Colors
    - Row Height
    - Filters
    - Activity Grouping and Sorting
    - Top/ Bottom Layouts

Selecting Columns

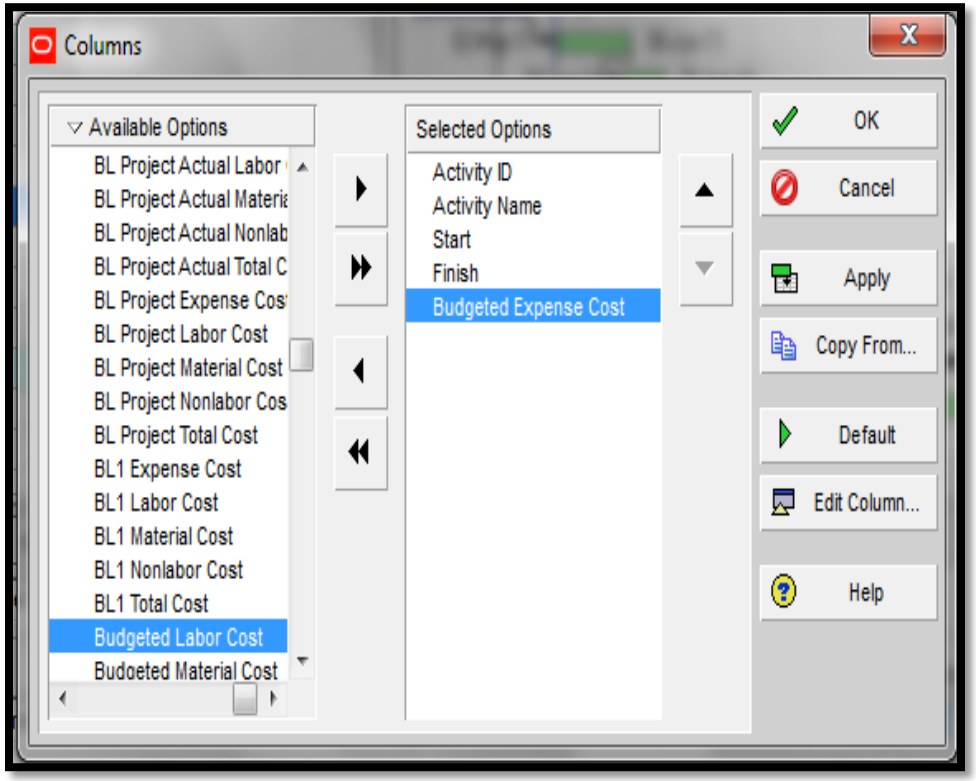
- The ***Column*** dialog box enables you to select columns to display in the Activity Table and specifies the order in which they appear:
  - ***Available Options*** –
    - This section lists data items in groups or in list
  - ***Selected Options*** –
    - This section lists items you have chosen to display
  - ***Single Arrow*** –
    Moves highlighted data items to the other section
  - ***Double Arrows*** – Move all data items to the other section
  - ***Up/ Down Arrows*** – Configure the order of the data items



- Click ***Edit Column*** to edit the selected item's title and choose its alignment in the display.

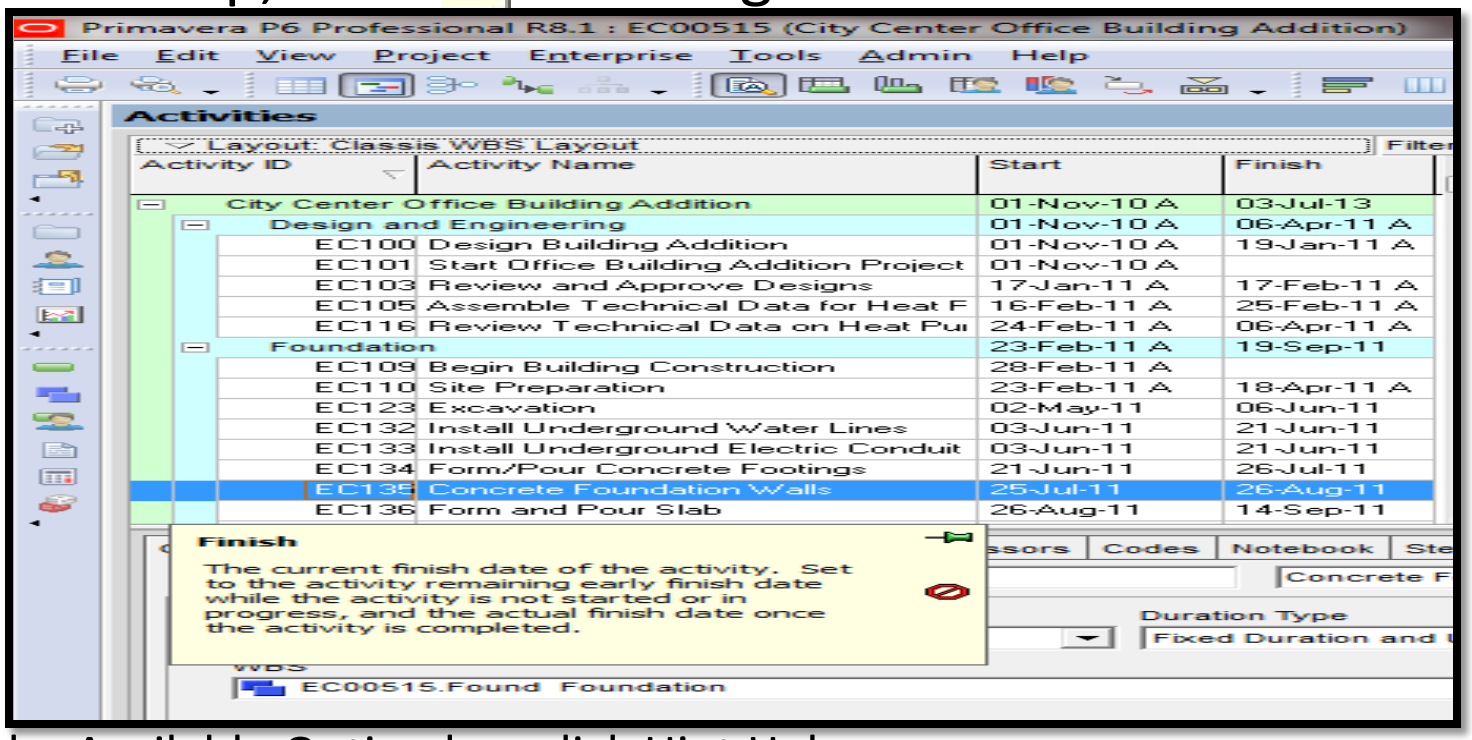
Selecting Columns

- Exercise
  - Steps
    - In the Layout Option bar, click Columns
    - In the Available Option Bar, click Group & Sort By, List
    - Select a data item to display in the Activity Table; Budgeted Labor Cost
    - Click > to move the selected data item into the Selected Options
    - Use the Navigation Arrow to configure the order of the data item
    - Click Apply



Using Hint Help

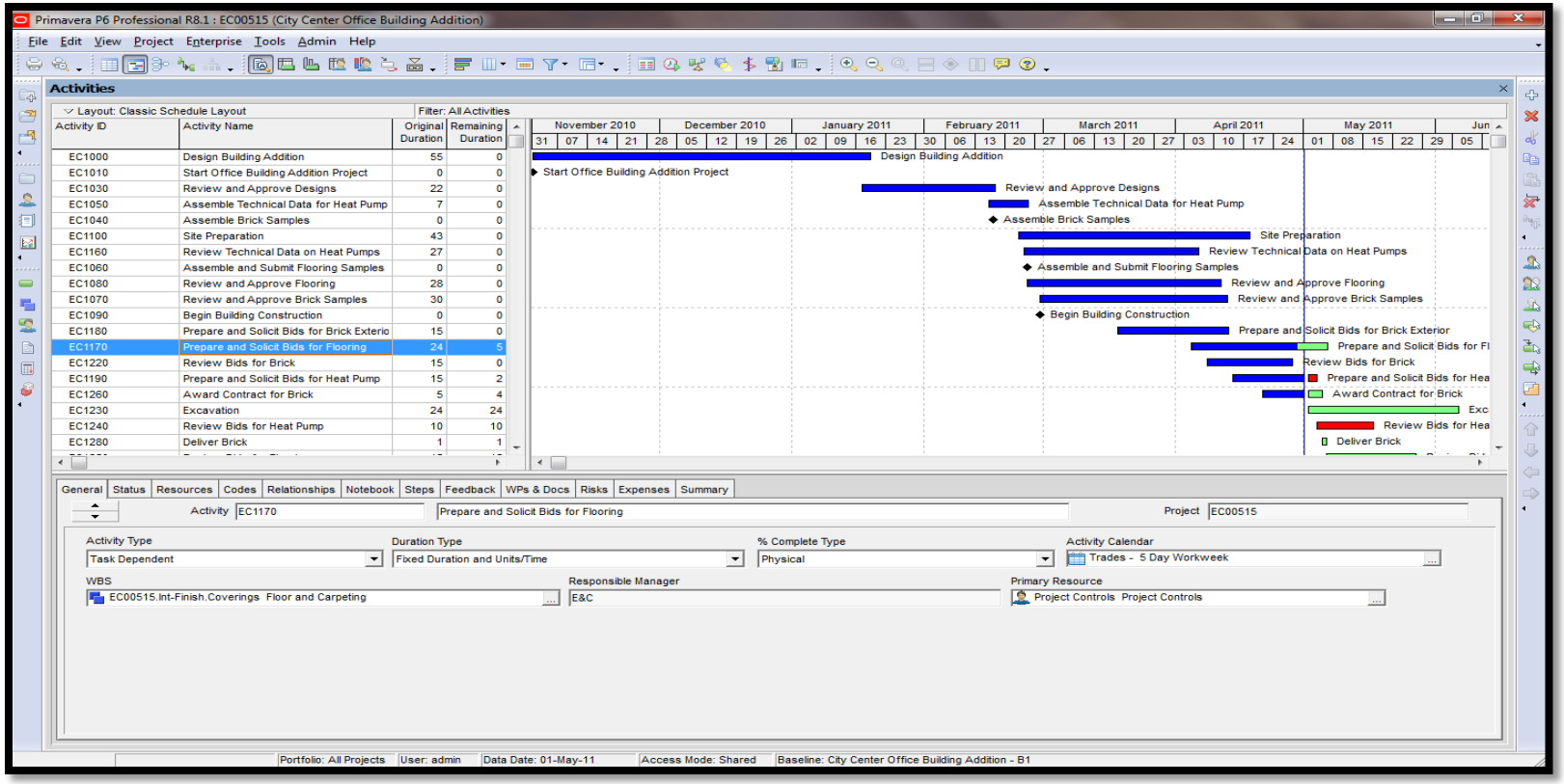
- Use ***Hint Help*** to view a definition for any data item
- To move Hint Help, click and drag to the desired location



- Exercise
  - Steps
    - In the Available Option bar, click Hint Help
    - Click a column heading, Budgeted Labor Cost
    - In the Available Option bar, click Hint Help to disable the onscreen help dialog box
    - Click Ok

Displaying Activity Details

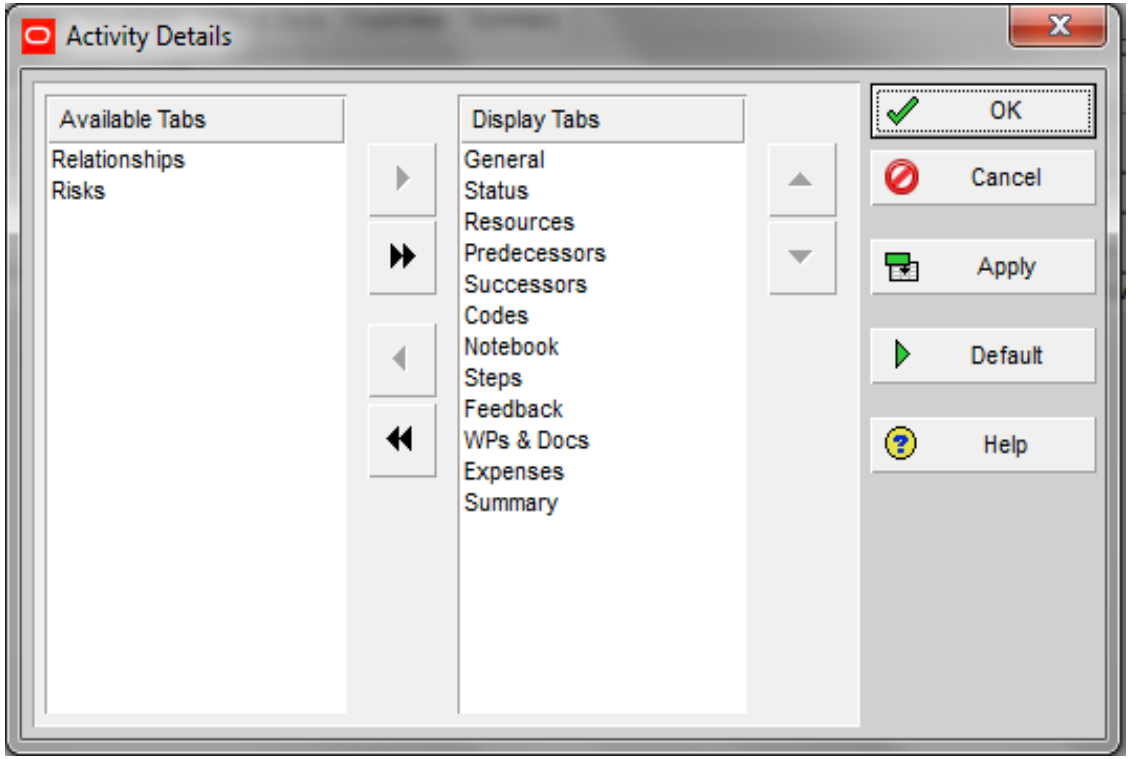
- ***Activity Details*** displays detailed information for the activity highlighted in the Activity Table or Activity Network.



- Exercise
  - Steps
    - In the Layout Options bar, click Show on Bottom, Activity Details

Selecting Details Tab

- The tab displayed in the Activity Details can be customized.



- Exercise
  - Steps
    - In the Layout Option bar, click Bottom Layout Options
    - In the Available Tabs column, select Relationships
    - Click > to move the selected data item in Display Tabs column
    - Click Ok.

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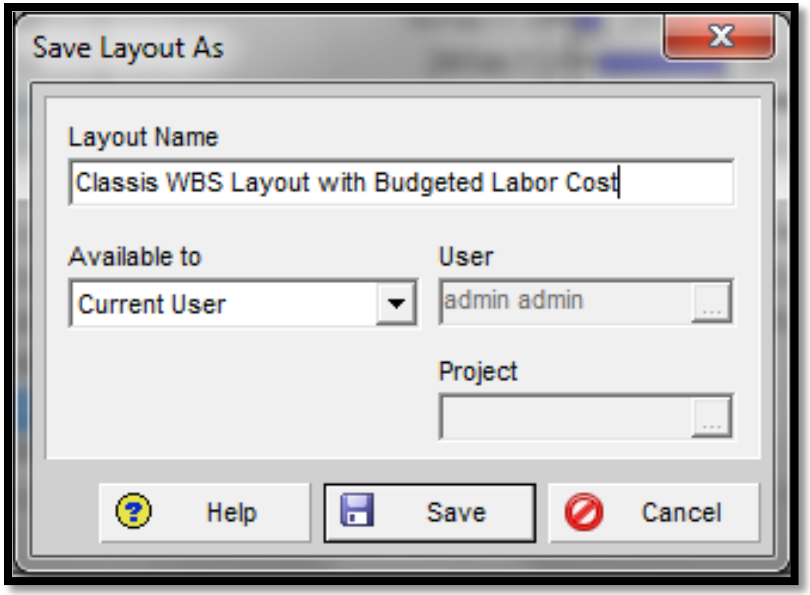
Saving Layout

- Layouts can be saved and shared with other users to facilitate project communication. Use the Save Layout dialog box to save a layout in the Activities, WBS, Projects, Assignments, or Tracking Windows:
  - *Layout Save* – Saves changes to the existing layout
  - *Layout Save As* – Prompts you to save the layout with a new name
    - *Current Users* – Only the user creating the layout will have access to it in the future
    - *Project* – Apply the layout to any project that is currently open in Primavera. Though project-specific layouts can be applied to multiple projects, you can only select one project at a time in the Layout Save As dialog box. After a project-specific layout is saved it can be viewed in the Project band in the Open Layout dialog box. Project-specific layout offers two advantages:
      - Exported with the project when it is exported
      - Enhanced organization of multiuser layout

Saving Layout



- Exercise
  - Steps
    - In the Layout Option bar, click Layout, Save As
    - Type a Layout name <Classic WBS with Budgeted Labor Cost>
    - Verify Current User is selected in the Available To field
    - Click Save

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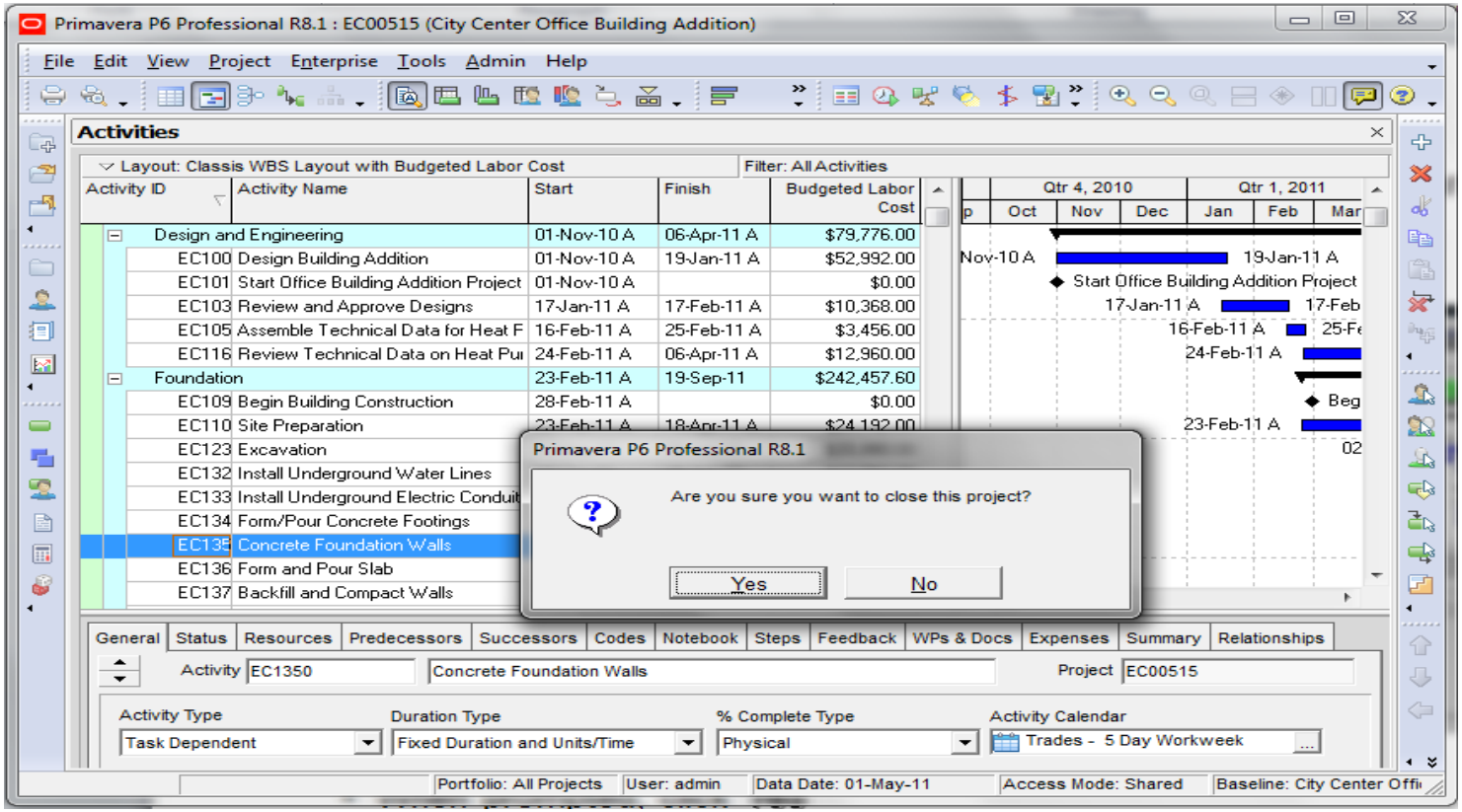
Closing a Project

- ***Close the project*** when you have finished working with it. You are prompted to verify for that.
- Closing the project takes you back to the Home window.



- Exercise
  - Steps
    - In the File menu, click Close All
    - When prompted, click Yes

Enterprise Project Structure/ Organization Breakdown Structure

Lesson 4

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EPS/OBS

- Objectives
  - Describe the components that comprise the Enterprise Project Structure (EPS)
  - Describe the components that comprise the Organization Breakdown Structure (OBS)
  - View the EPS and OBS

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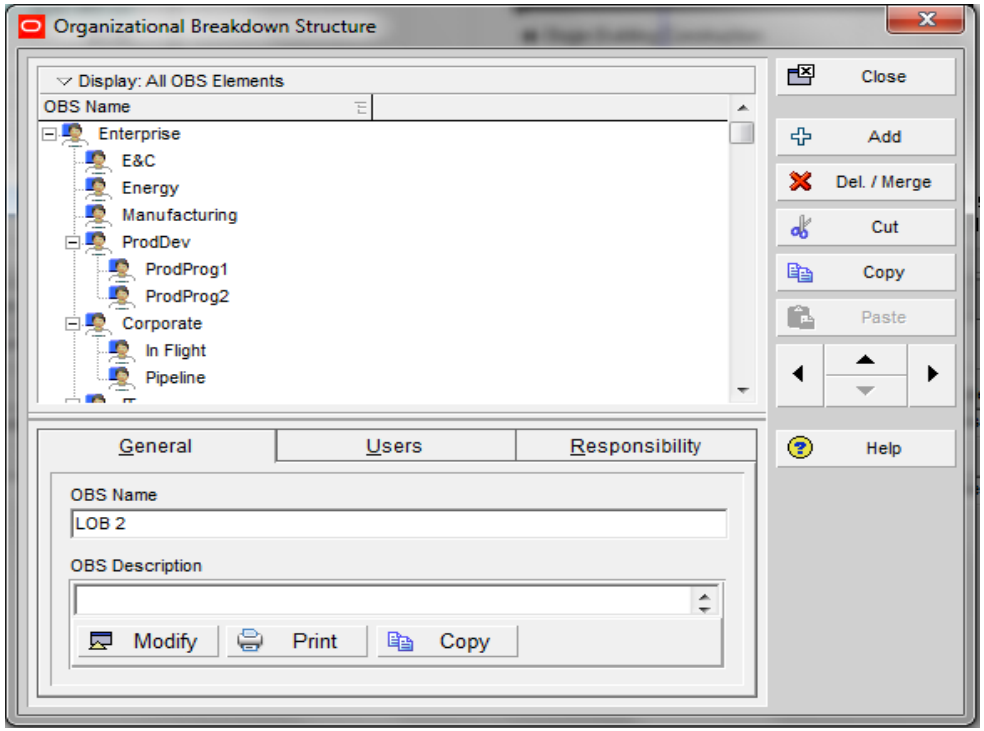
Organization Breakdown Structure

- The ***Organization Breakdown Structure (OBS)*** is a hierarchy used to organize responsibilities.
  - The OBS is made of roots and nodes
    - Each root in the OBS can be sub-divided into many nodes
    - Nodes represent different levels within the structure
      - E.g., nodes can represent subordinates within your company, departments, project groups, and site locations
    - All responsible persons must be included in a node
      - Each node can contain an unlimited no. of responsible persons

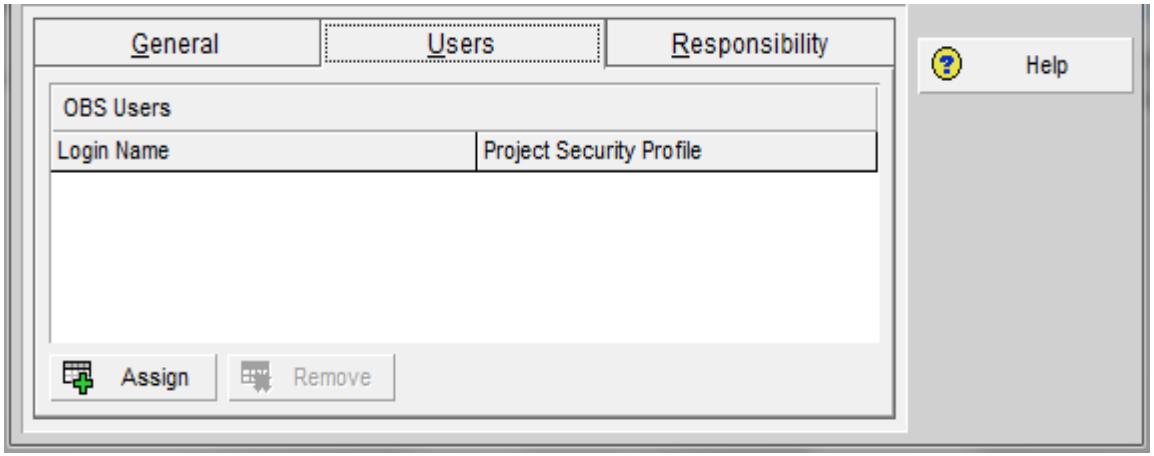
Opening OBS

- You can use ***OBS*** dialog box to define the hierarchy.
- The two fields (General Tab) to enter when adding an OBS node are:
  - ***OBS Name*** – Name of the selected OBS node
  - ***OBS Description*** – Description of the selected OBS node (Details of job, Level etc.)

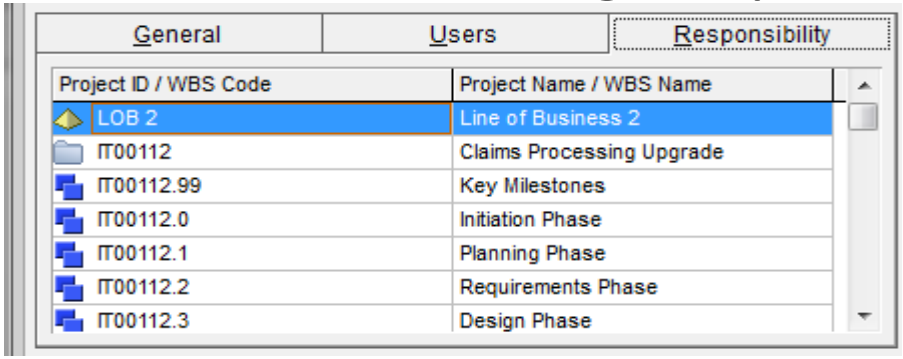


Opening OBS

- You can assign Users (Primavera user) to a selected OBS node using Users Tab



- You can add a Responsibility of Certain Project/WBS to a selected OBS node using Responsibility Tab



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Enterprise Project Structure

- The ***Enterprise Project Structure (EPS)*** is a hierarchy used to organize projects.
  - The EPS is made of roots and nodes
    - Each root in the EPS can be sub-divided into many nodes
    - Nodes represent different levels within the structure
      - E.g., nodes can represent divisions within your company, departments, project groups, and site locations
    - All projects must be included in a node
      - Each node can contain an unlimited no. of projects
      - Projects always represent the lowest level of hierarchy
      - Placement of a project in the hierarchy determines the summary level in which it is included

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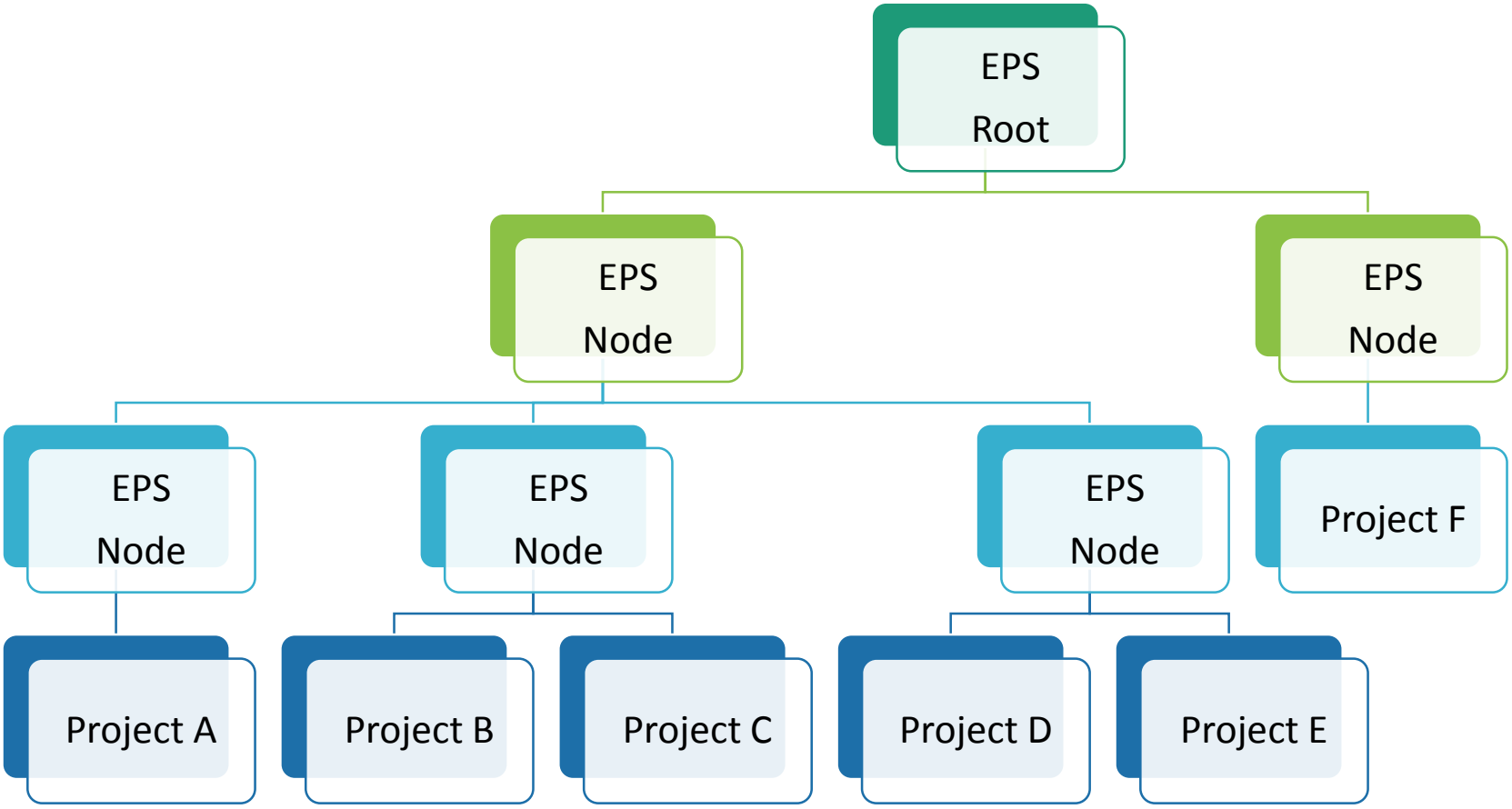
Enterprise Project Structure



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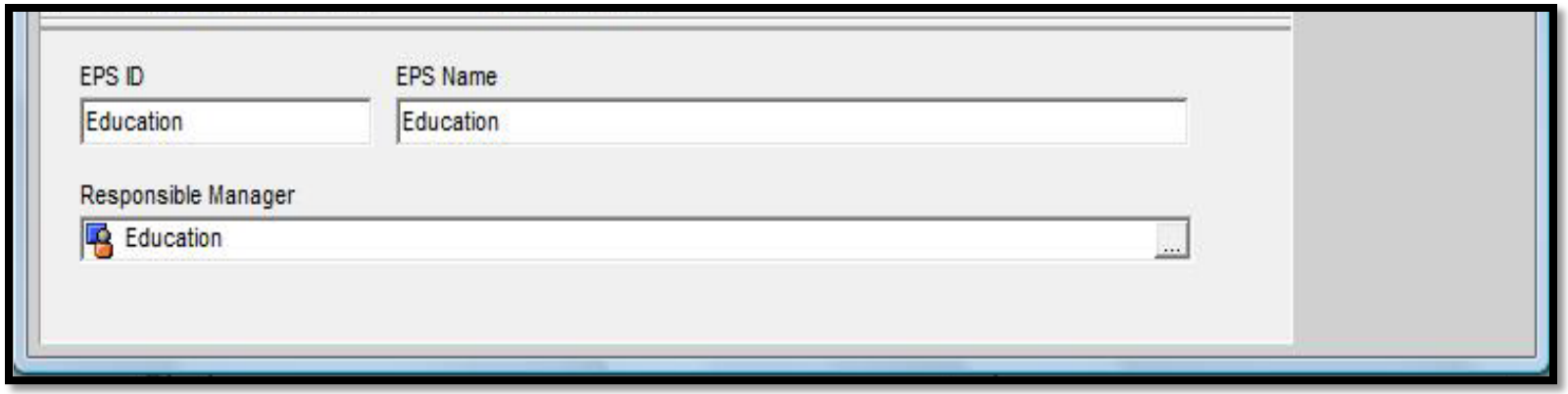
Opening EPS

- You can use ***Enterprise Project Structure*** dialog box to define the EPS.
- The three fields to enter when adding an EPS node are:
  - ***EPS ID*** – Identifies the selected EPS node
  - ***EPS Name*** – Description of the selected EPS node
  - ***Responsible Manager*** – Use this field to select an OBS (Organizational Breakdown Structure) element to associate with the selected level of EPS.



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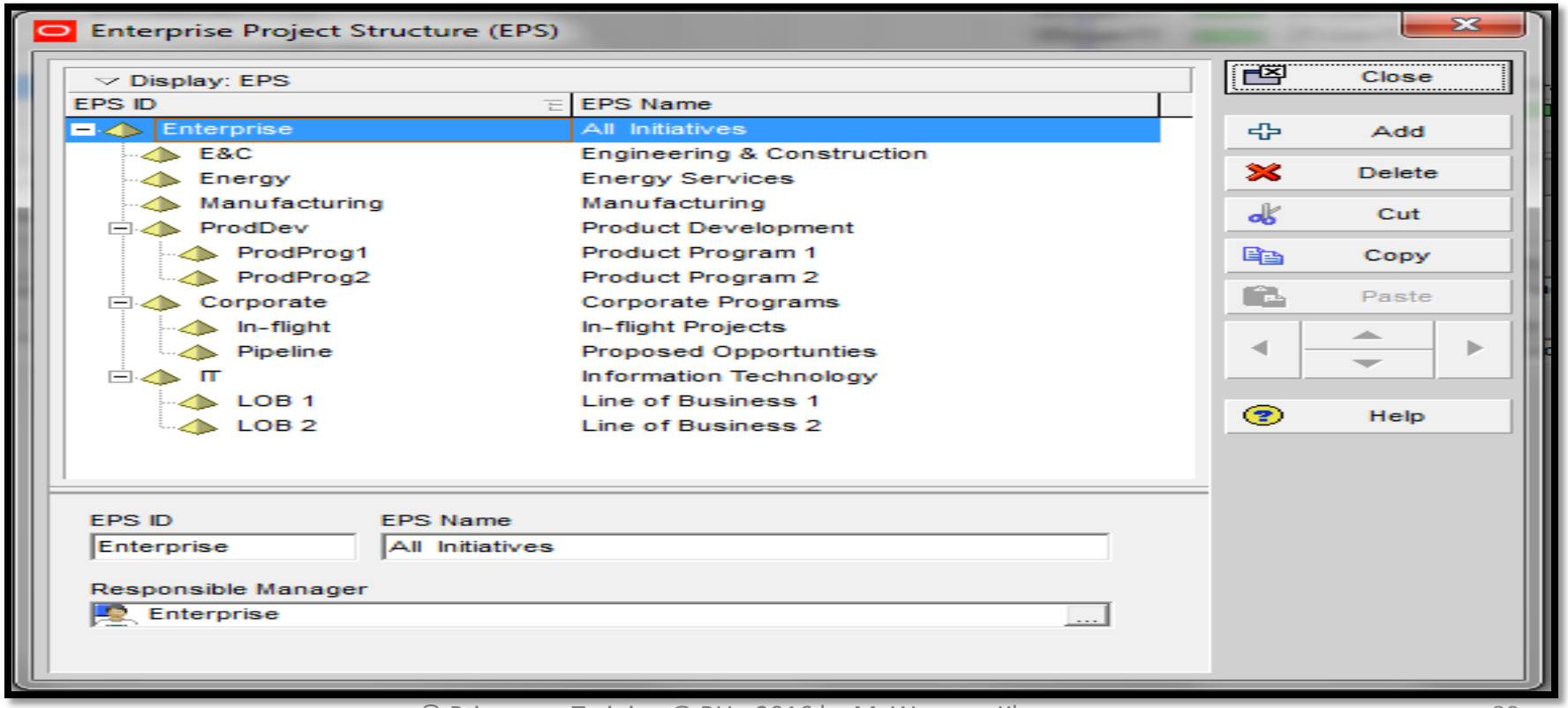
Opening the EPS

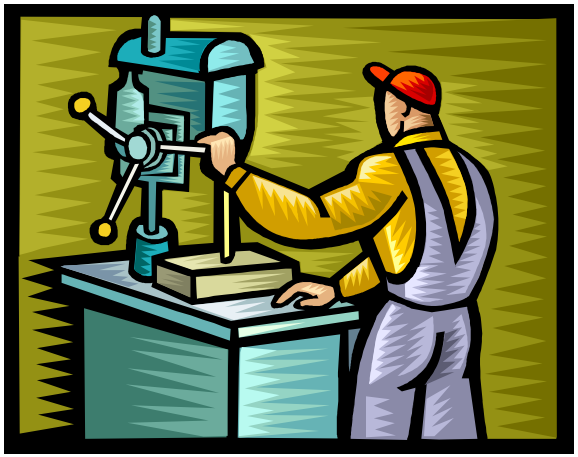
- Exercise
  - Steps
    - In the Enterprise menu, click Enterprise Project Structure
    - Select an EPS node, Education
    - After viewing the EPS, click Close



Enterprise Project Structure

- Benefits
  - View project priorities, scope, budgets, and resource across the entire project structure or within a specific node
  - Manage projects separately while keeping ability to roll-up and summarize data across multiple projects
    - Each node acts as a master project, rolling-up all child nodes and projects
    - A node can be opened to view all detailed activity information from the member projects
  - View resource allocation across projects
  - Assign security at any level of project structure to provide user with appropriate access to project information

WORKSHOP
Creating a Organization Breakdown Structure and Enterprise Project Structure



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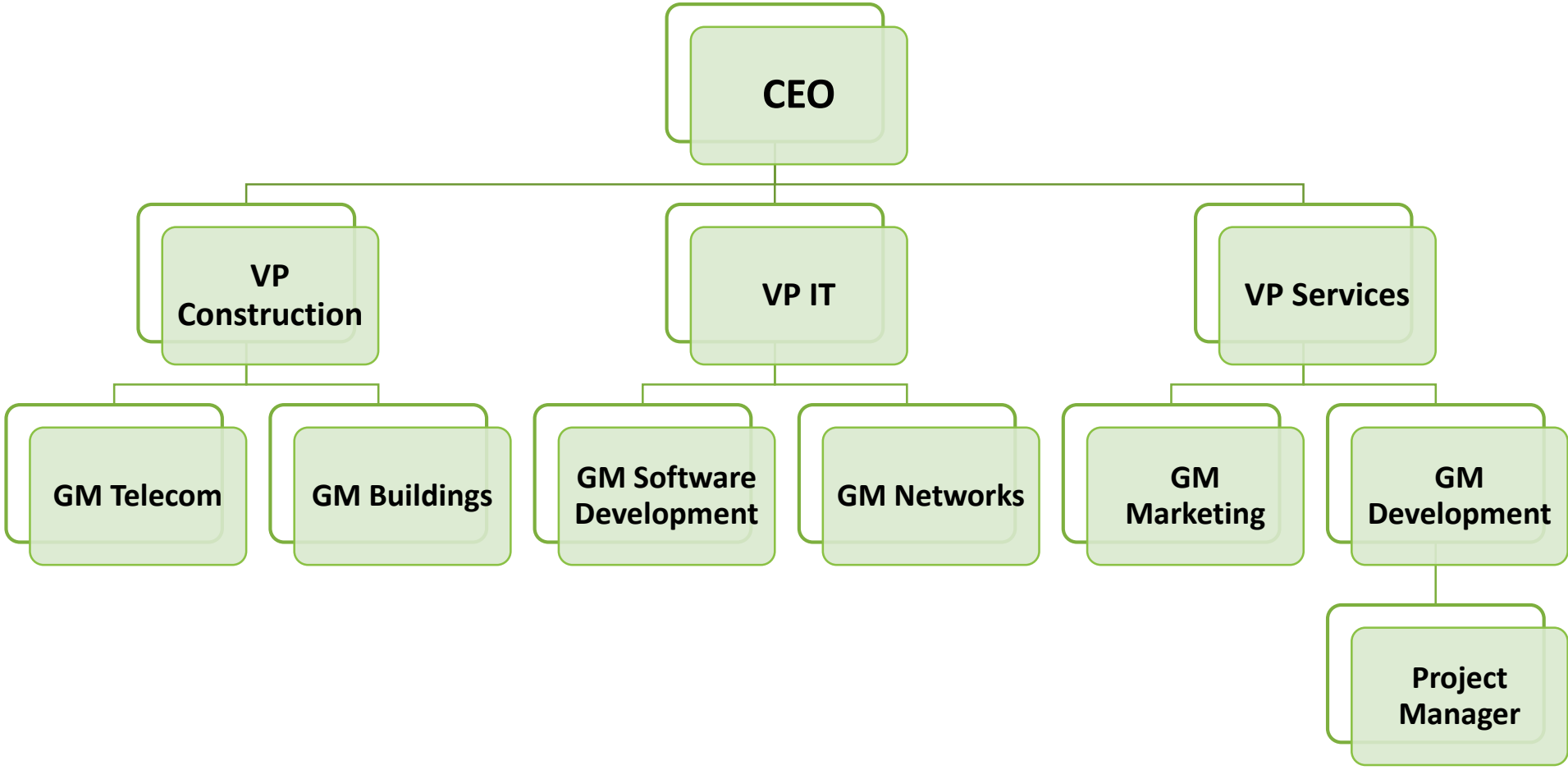
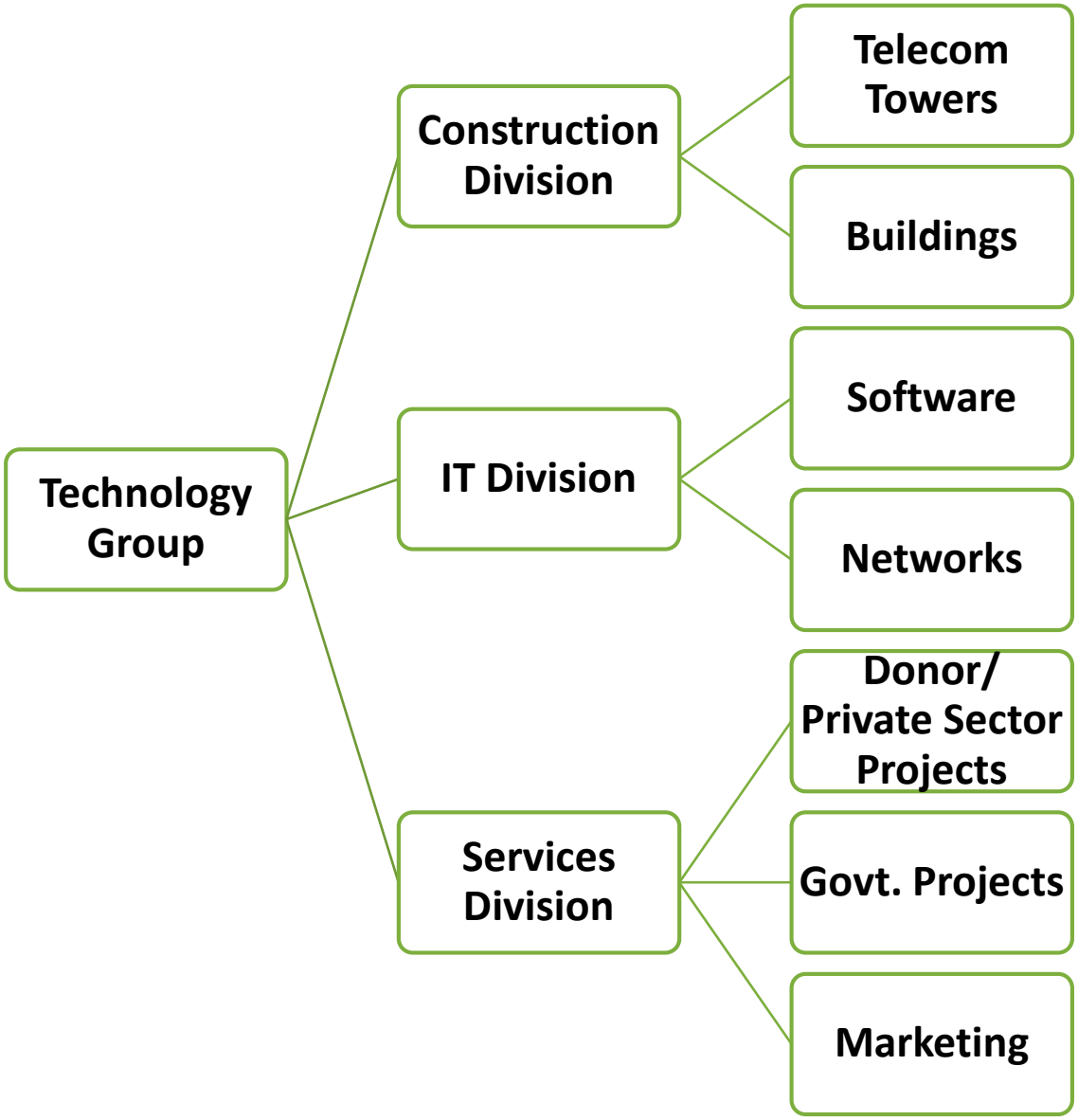
Exercise: Create Management OBS



Exercise: Create EPS



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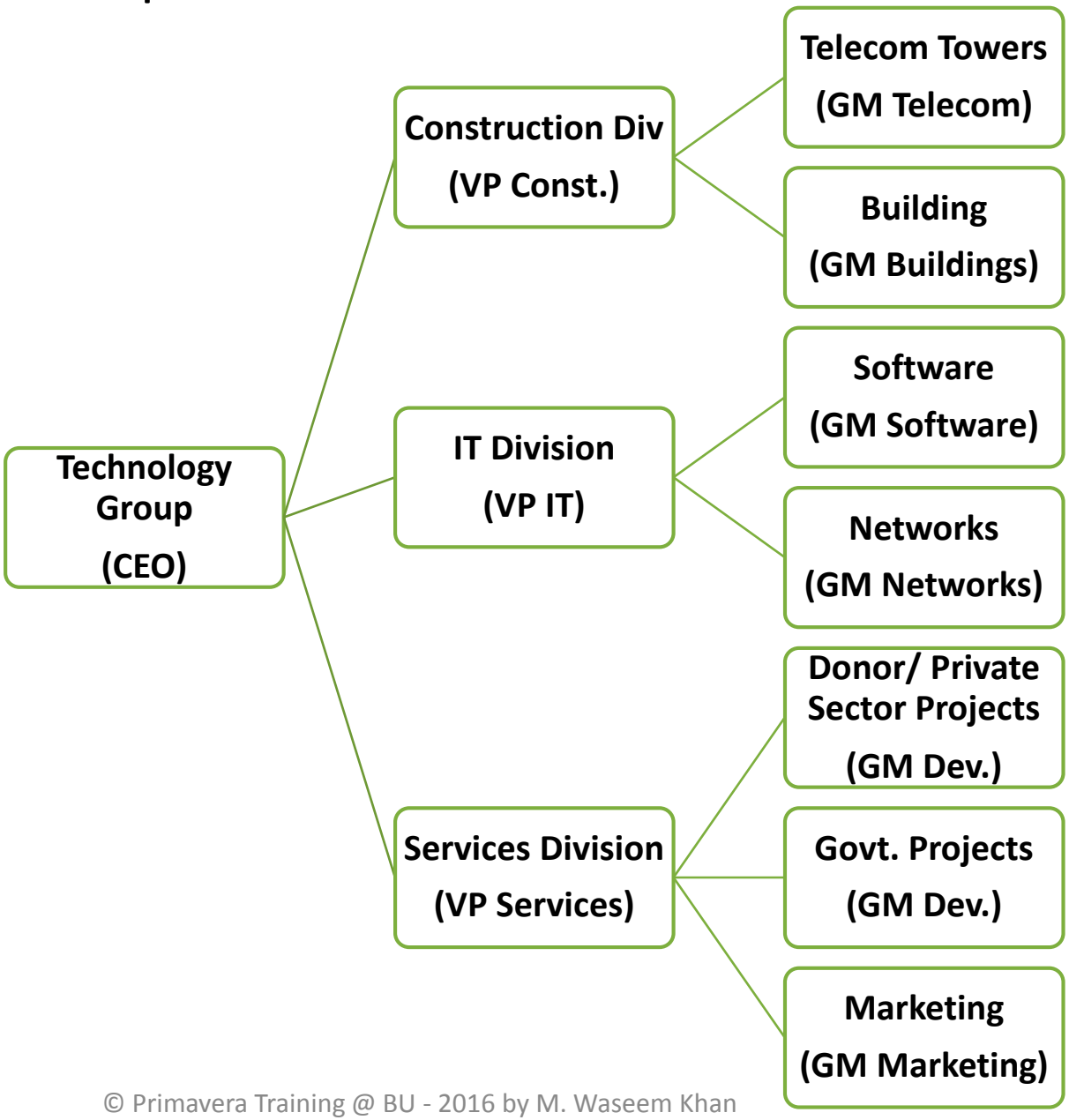
Exercise: Map OBS with EPS



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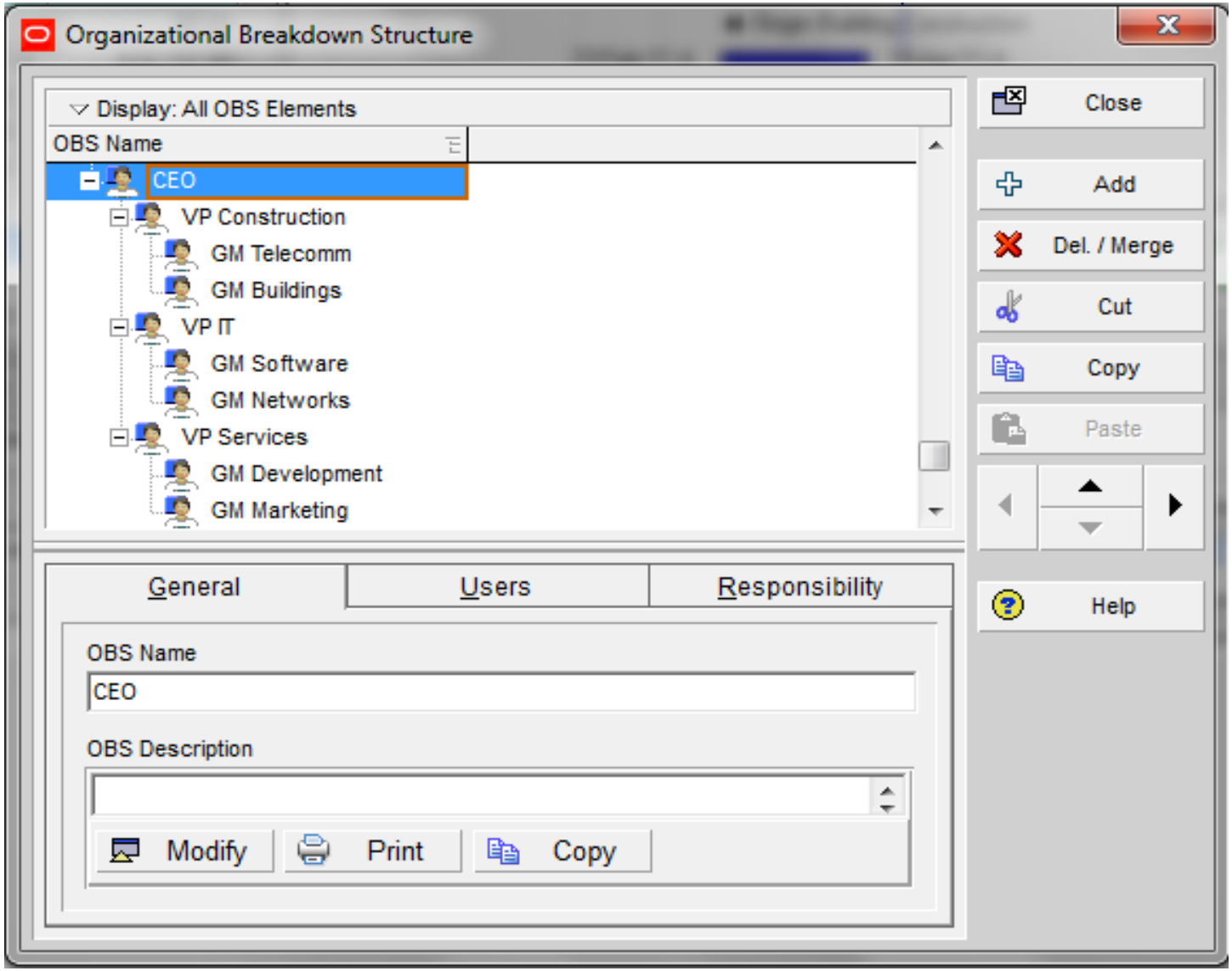
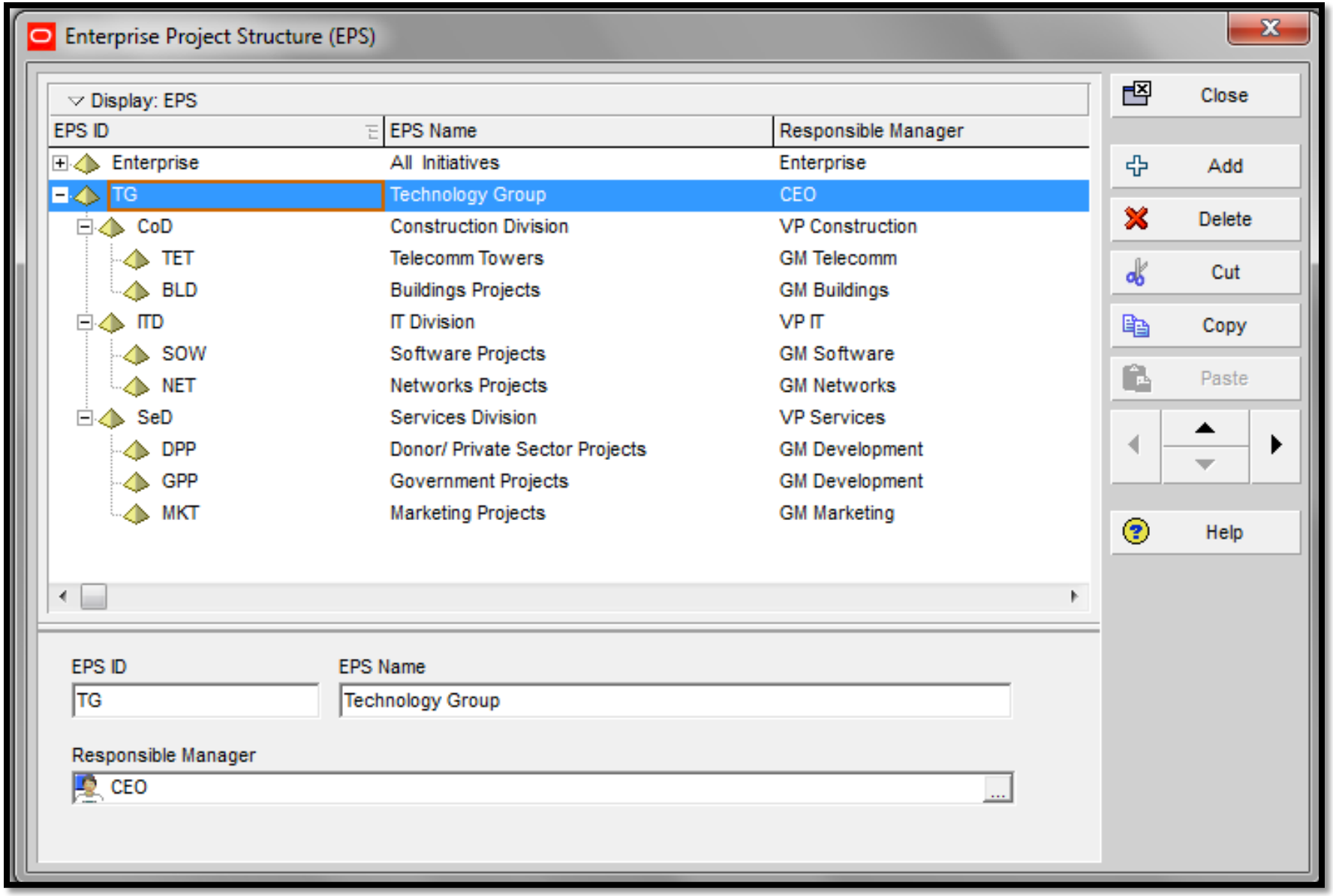
Organization Breakdown Structure



Enterprise Project Structure



Lesson Review

- The OBS and EPS are the hierarchies that represent the management and the project organization of your company respectively
- In EPS, root is the top-level that can be sub-divided into nodes
- Each node represents a level in the project structure that can hold another node or a project
- Projects represent the lower level of hierarchy
- The EPS enables you to view project data across the entire project structure or within a specific node

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Creating a Project

Lesson 5

Creating a Project

- Objectives
  - Create a Project
  - Navigate in the Project Window
  - View and Modify Information in Project Details

Creating a Project

- Project can be created using a variety of methods:
  - **Using the Create a New Project Wizard**
    - Create a Project
    - Create the Work Breakdown Structure (WBS)
    - Add Activities
    - Assign Resources and Costs
  - **Using Project Templates (Only Available in EPPM 8+ – Enterprise Suite)**
    - Create Project from Methodology (Templates)
    - Review and Adjust the WBS
    - Review and Adjust the Activities
    - Assign Resources and Costs
  - **Importing a File**
    - Import Projects Using the Following File Formats:
      - Project Management Module Project (XER)
      - All Microsoft Project Related Extensions (MPP, MDB, MPD, MPT)
      - Third-Party Projects (MPX)
      - Primavera Project Planner Projects (P3)
    - Review and Adjust the WBS
    - Review and Adjust the Activities
    - Assign resources and Costs
  - **Copy/ Paste**
    - Select Elements of an Existing Project You Want to Copy to a New Project

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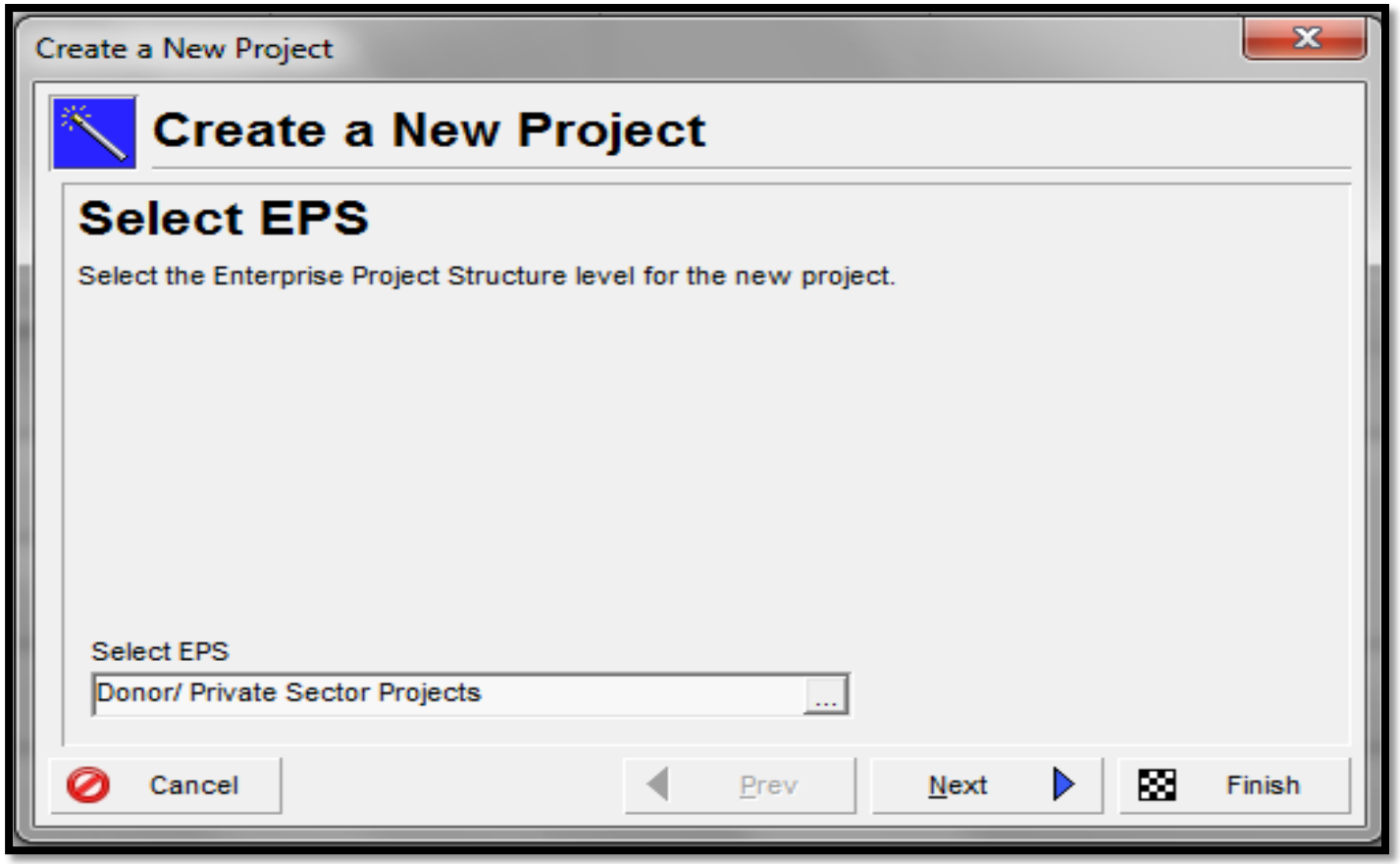
Create a New Project Wizard

- The ***New Project Wizard*** can assist you in creating a project



- Exercise
  - Steps
    - In the File menu, click New to launch the wizard
    - Click Select EPS field, click ...
    - Select a node, Donor/ Private Sector Projects

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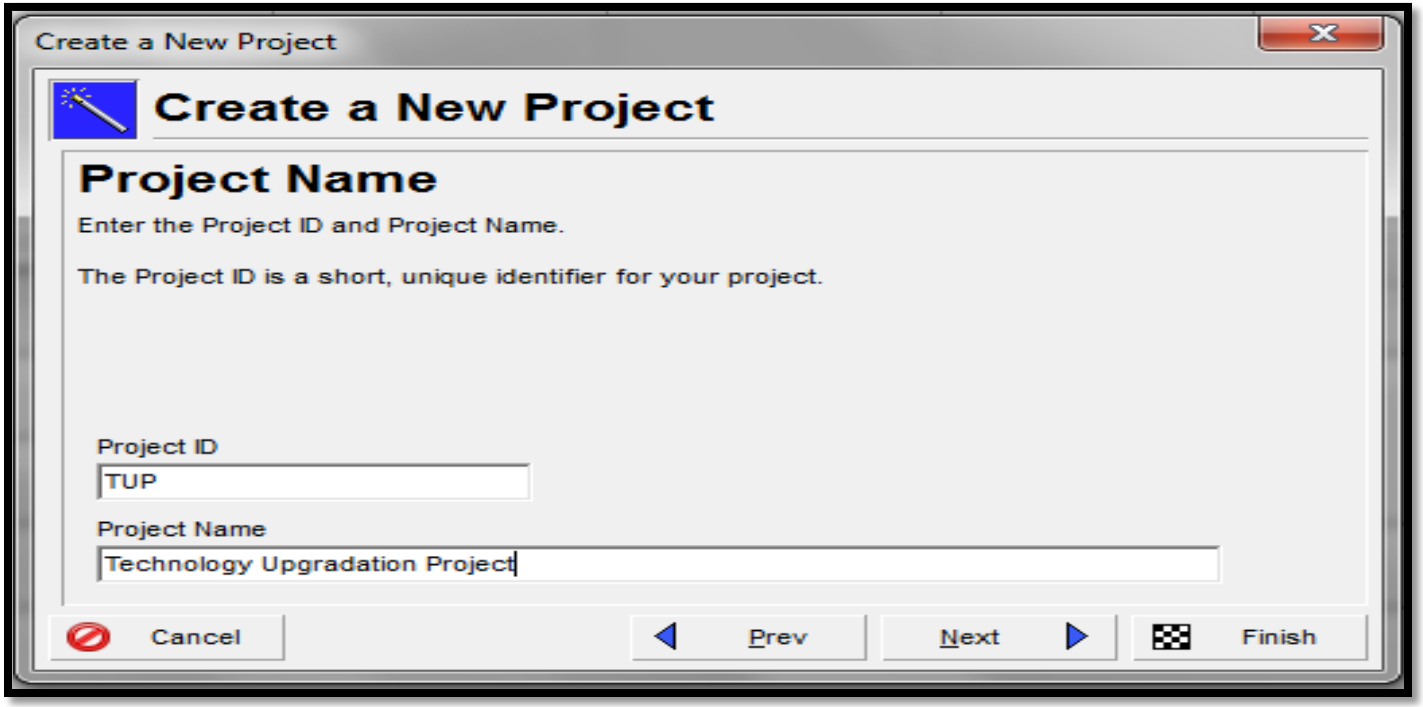
Entering Project Name

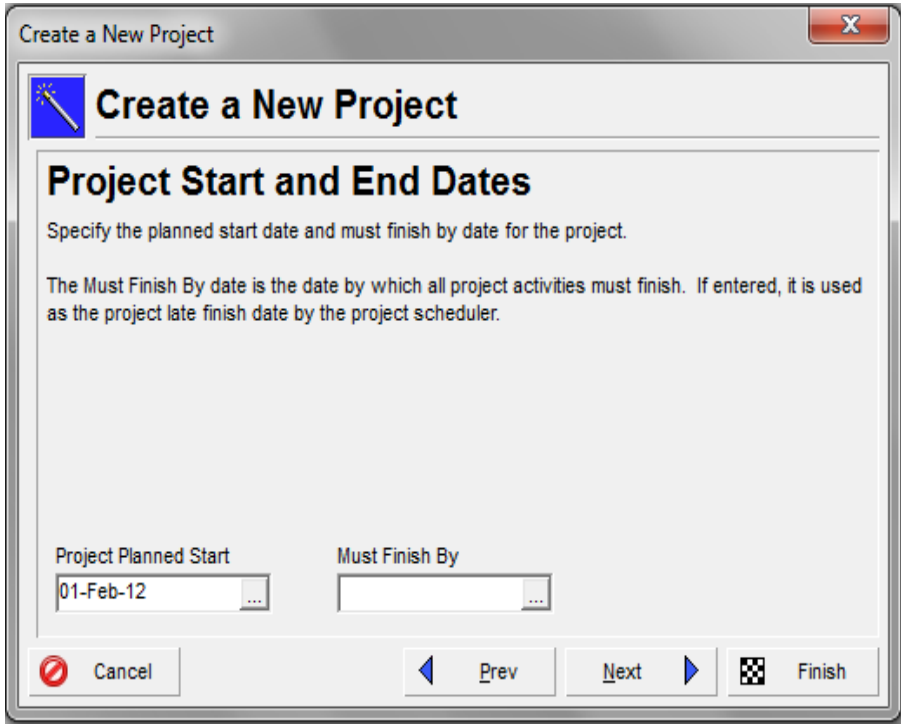
- The ***Project Name*** is City Center Office Building Addition. You can shorten the name to create the Project ID, bldg
  - ***Project ID*** – Type a unique identifier in this field
  - ***Project Name*** – Type a new name in this field. (May not be unique)



- Exercise
  - Steps
    - In Project ID field type <TUP>
    - Type a name in Project Name field<Technology Upgradation Project>

Entering Project Start & End Dates

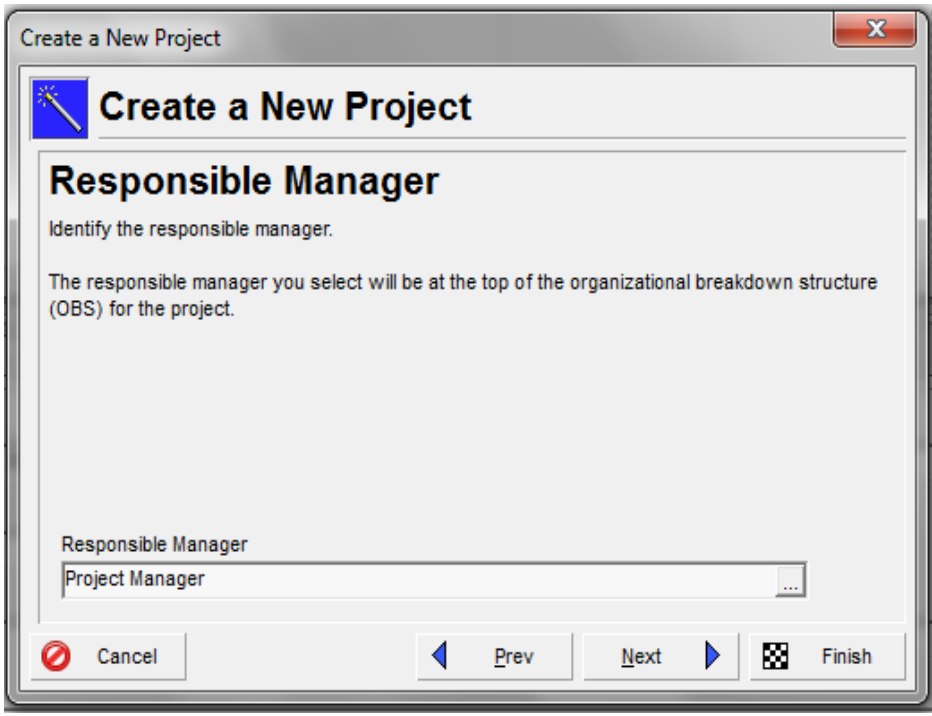
- Use the calendar to select ***Planned Start*** and ***Must Finish By*** dates for the project.
- The ***Must Finish By*** field is not mandatory. You can assign a project Must Finish By date at any point in the project lifecycle in the Dates tab in Project Details.
- To navigate in the calendar:
  - When you launch the calendar, the current month/year is displayed.
    To navigate to a different year, click the month/Year section in the calendar, and then use arrows to scroll to the desired year.
  - Click the desired month and date, and then click Select.



Entering Responsible Manager

- The ***Responsible Manager***, selected from the OBS, is the individual responsible for the work.
- The OBS is a hierarchical arrangement of an organization's project management structure, either as roles or individuals. The OBS can be configured to represent a detailed organizational breakdown (with employee names) or a more general framework where departments, teams, or types of responsibility are modeled in the structure.

- Exercise
  - Steps
    - In the Responsible Manager field, click ...
    - Select a responsible manager <Project Manager> and then click select button
    - Click Next



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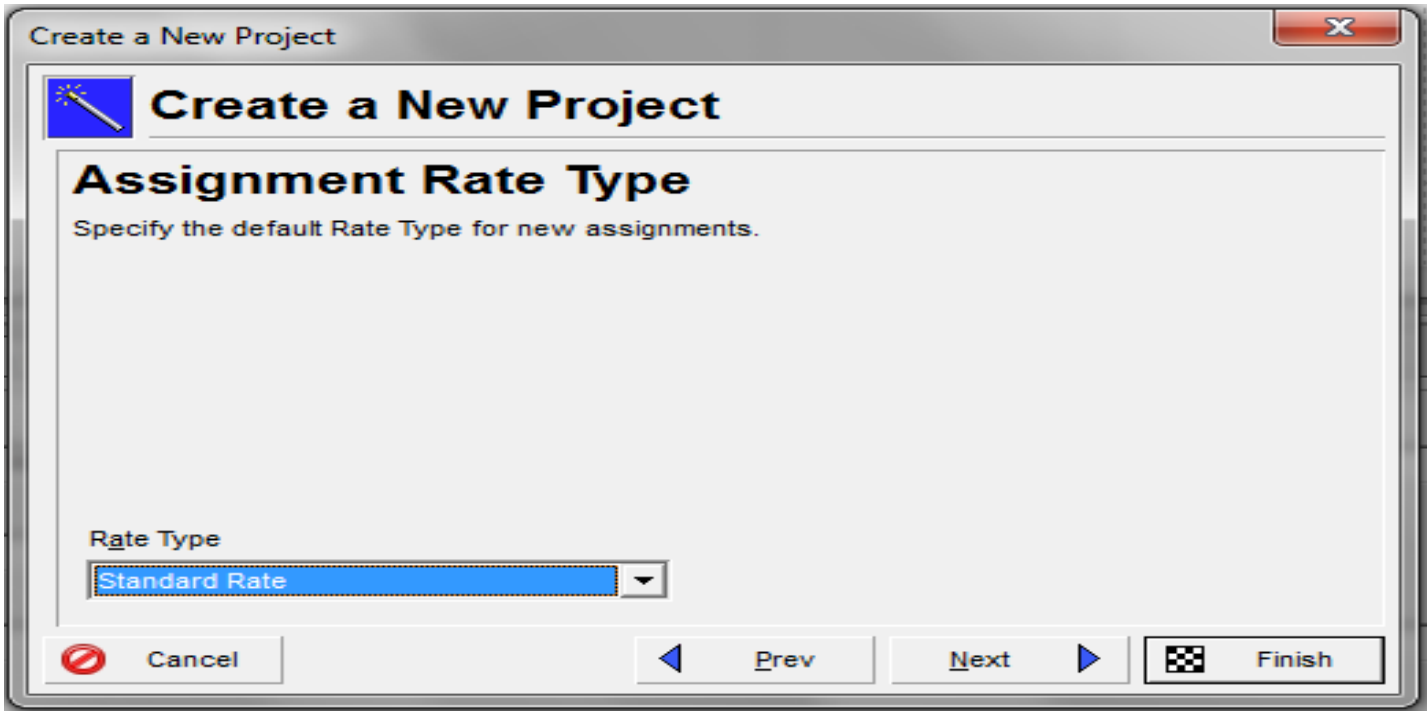
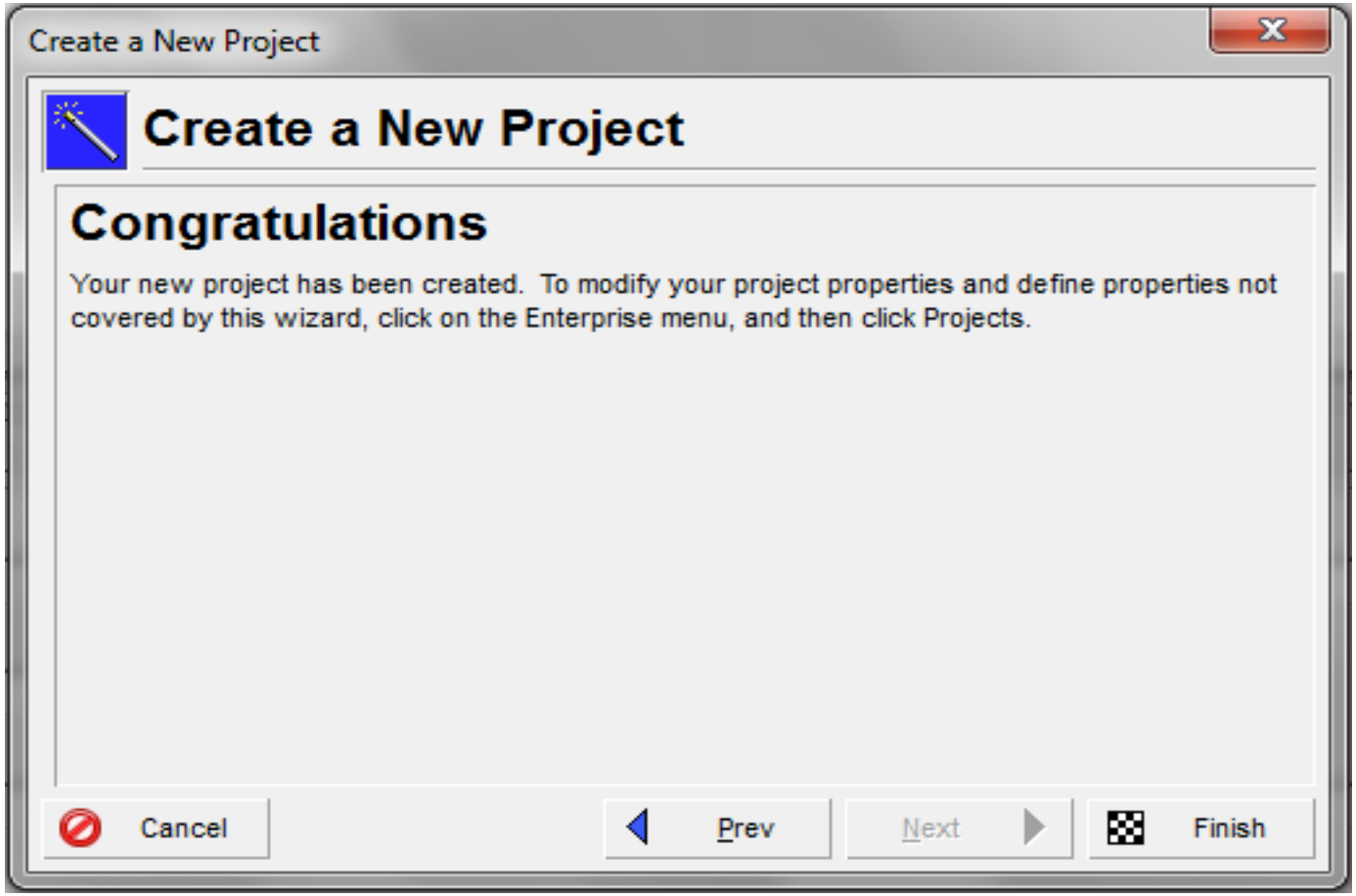
Selecting Assignment Rate Type

- You can specify the ***Assignment Rate Type*** for new resource assignments. The default rate type determines which price/ unit is set on a resource assignment. Values in the Rate Type drop-down list reflects rate types defined in the Rate Types tab in Admin Preferences.



- Exercise
  - Steps
    - In the Rate Type drop-down list, confirm Standard Rate
    - Click Next

Project Creation



- Exercise
  - Steps
    - Click Finish to end the new project wizard

Projects Window

- The project has been created and opened
- To view high-level information about the project, navigate to the Projects window, which displays the projects within the EPS that you can access. You can also:
  - Open, create, and save project layouts
  - Group projects by the EPS, project codes, or other project-related items
  - Filter projects
  - Modify column data
- The icon in the project window indicates the project is open
- Exercise
  - Steps
    - In the Directory Bar, click Projects

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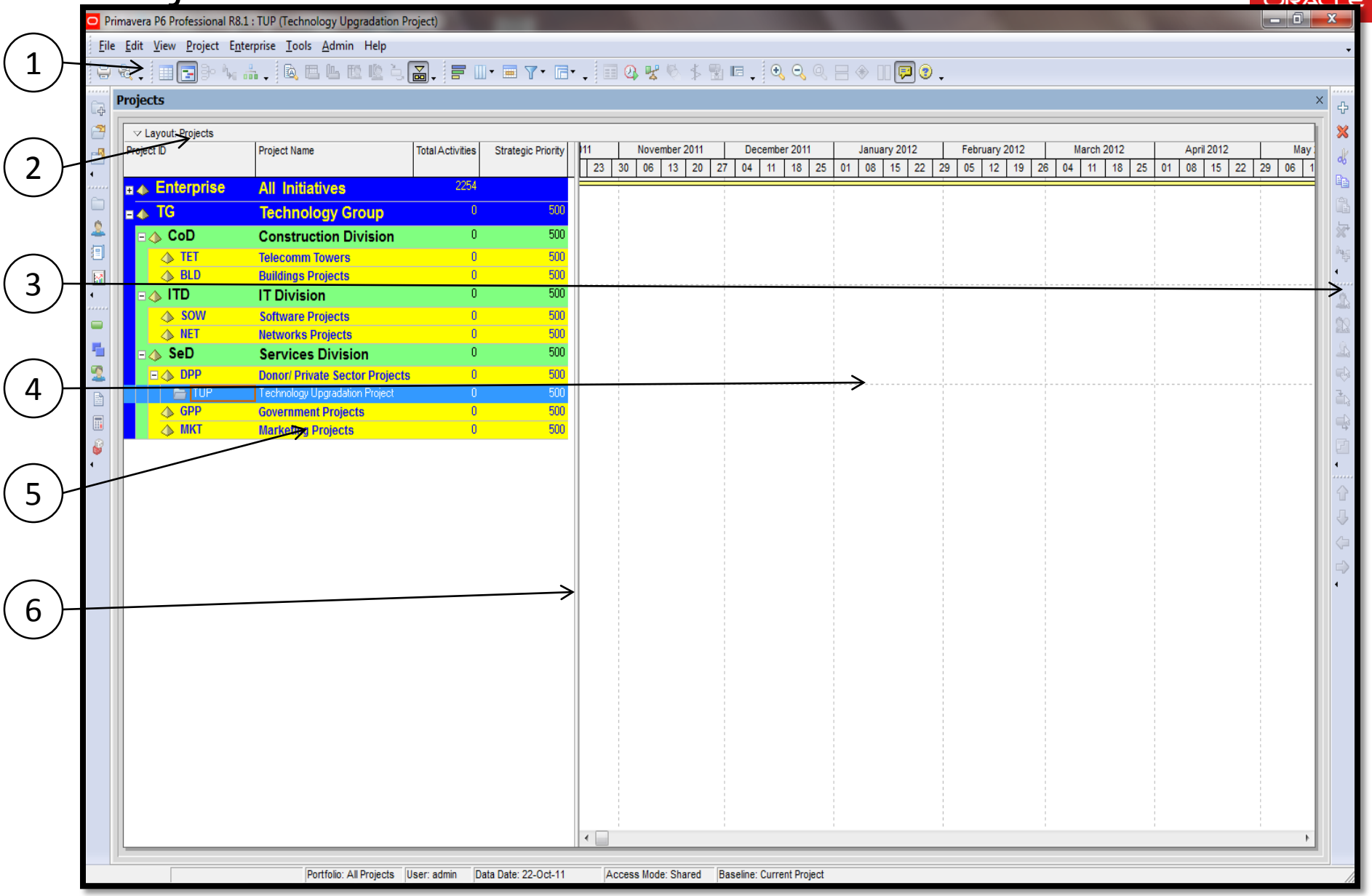
Projects Window



Projects Window

Item	Functionality
1. Tool Bar	Displays icons that allow you to change the look and feel of the layout
2. Layout Option Bar	Displays a menu of available options for projects window
3. Command Bar	Displays options for adding or editing project data
4. Bar Area	Provides a graphical display of the project progress over the period of time
5. Project Table	Displays project information in spreadsheet format
6. Vertical Split Bar	Drag this bar to hide/ show information in each pane

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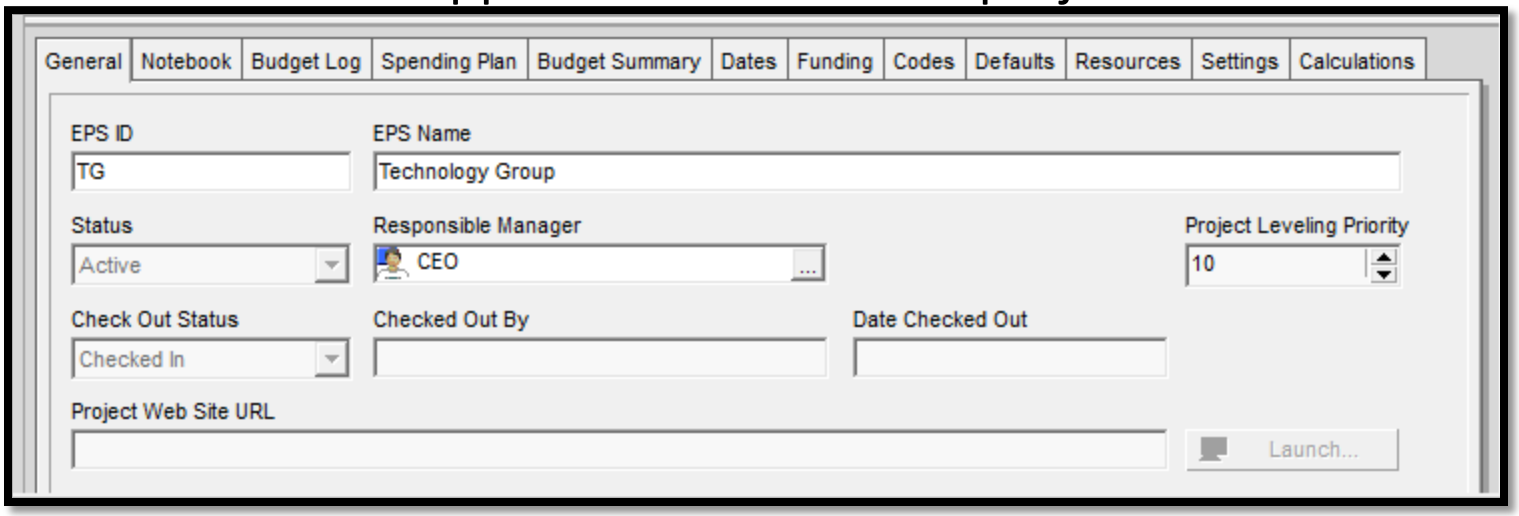
Project Details

- ***Project Details*** information is located in the bottom layout of the Projects Window. It can be used to define the project properties and defaults that are applied to the selected project.



- Exercise
  - Steps
    - In the Layout Options bar, click Layout, Open
    - If Prompted to save changes made to the layout, click No
    - Select a layout
    - Click Open
    - Select a project <TUP – Technology Upgradation Project>
    - Verify the General Tab is selected in bottom layout

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General Tab

- The ***General Tab*** enables you to view or modify general info about the selected project. Project ID, Project Name, and Responsible Manager can be set when you create the project, or you can change them here. The remaining fields are set by default.
- Fields in the General tab are:
  - *Project ID* – Short, unique identifier for the project
  - *Project Name* – Name of the project
  - Status – Indicates status of the project based on table:

Status	Indicates Project is…
Planned	Being analyzed before establishing permanent plan
Active	Currently being worked on
Inactive	Completed or on hold
What-if	Used as Test Scenario

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General Tab

- Fields in the ***General Tab*** are:
  - ***Responsible Manager*** – Individual, selected from the OBS, who is responsible for the project.
  - ***Leveling Priority*** – User-defined rank of the project against all other projects, based on its importance to the organization while leveling resources. You can enter a value between 1 and 100. The highest rank is 1; the default is 10.
  - ***Check Out Status*** – Indicates whether the project is checked-in or checked-out
  - ***Checked Out By*** – Displays the user that checked-out the project
  - ***Date Checked Out*** – Indicates the date and time the user checked-out the project
  - ***Project Website URL*** – Displays the project's website address

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Dates Tab

- The ***Dates Tab*** enables you to edit date information for the selected project. The Planned Start and Must Finish By dates can be set when you create the project, or you can change them here.
- Fields in the Dates tab are:
  - ***Planned Start*** – Planned start date of the project
  - ***Data Date*** – Date used as the starting point for schedule calculations
  - ***Must Finish By*** – Date indicating the desired end date of the project
  - ***Finish*** – Non-editable field indicating the latest early finish date calculated when the project was last scheduled
  - ***Actual Start*** and ***Actual Finish*** – Non-editable field indicating the actual start and finish dates of the project
  - ***Anticipated Start*** and ***Anticipated Finish*** – Expected dates that can be entered while planning the project at a high level

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Notebook Tab

- The ***Notebook Tab*** enables you to write, view, or edit project notes such as the project's purpose, core requirements, or other project-specific details.
- Fields in the Notebook tab are:
  - ***Notebook Topic*** – List of topics assigned to the selected node/ project
  - ***Detail*** – User-defined description of the selected topic. You can use HTML editing features, including formatting text, inserting pictures, copy, paste, and adding hyperlinks

- Exercise
  - Steps
    - Click the Notebook Tab
    - In the Notebook Topic selection, click Add
    - Scroll-down and highlight a Notebook topic, Purpose
    - Click Assign button
    - Close the assign Notebook Topic dialog box
    - In the Detail section, type <Building Design Enhancement, New Software Development, and Training for Software Technology Park>
    - Press Enter (keyboard) – for single spacing Press Shift+Enter

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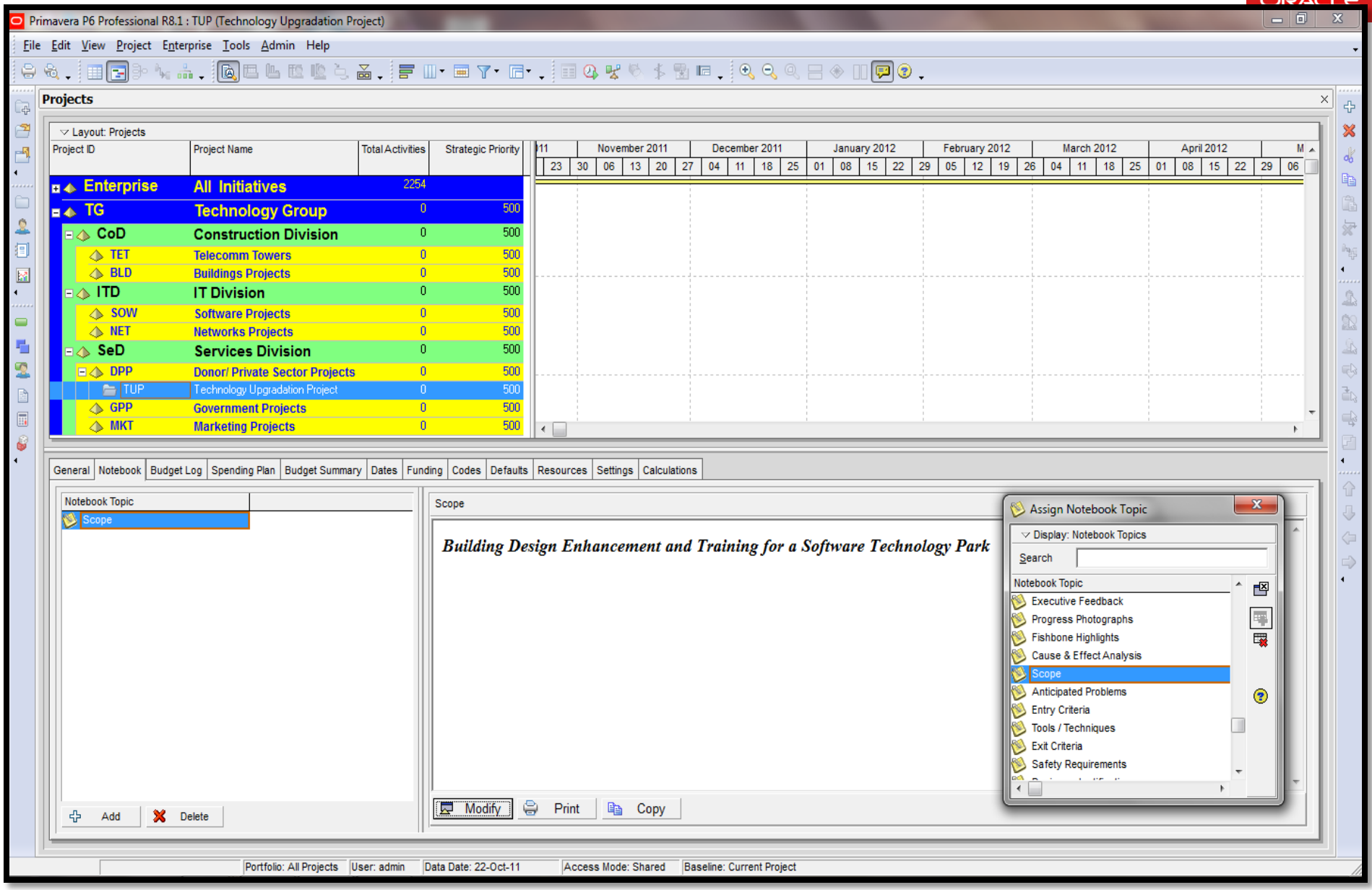
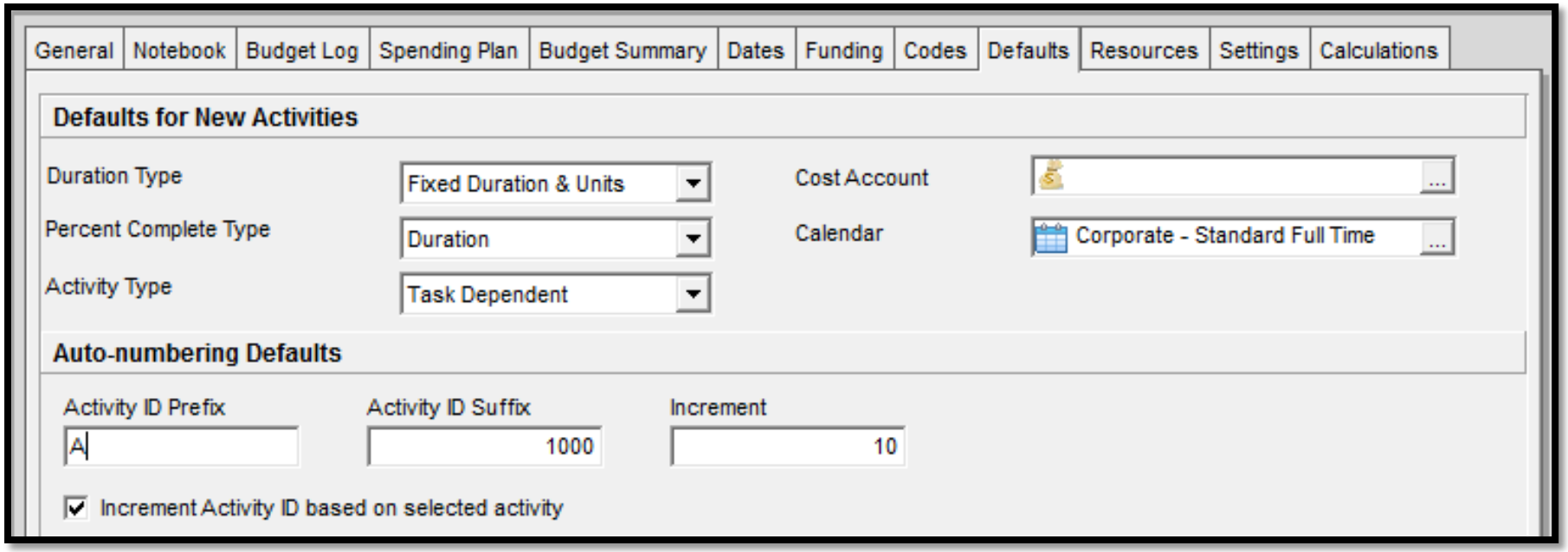
Notebook Tab



Defaults Tab

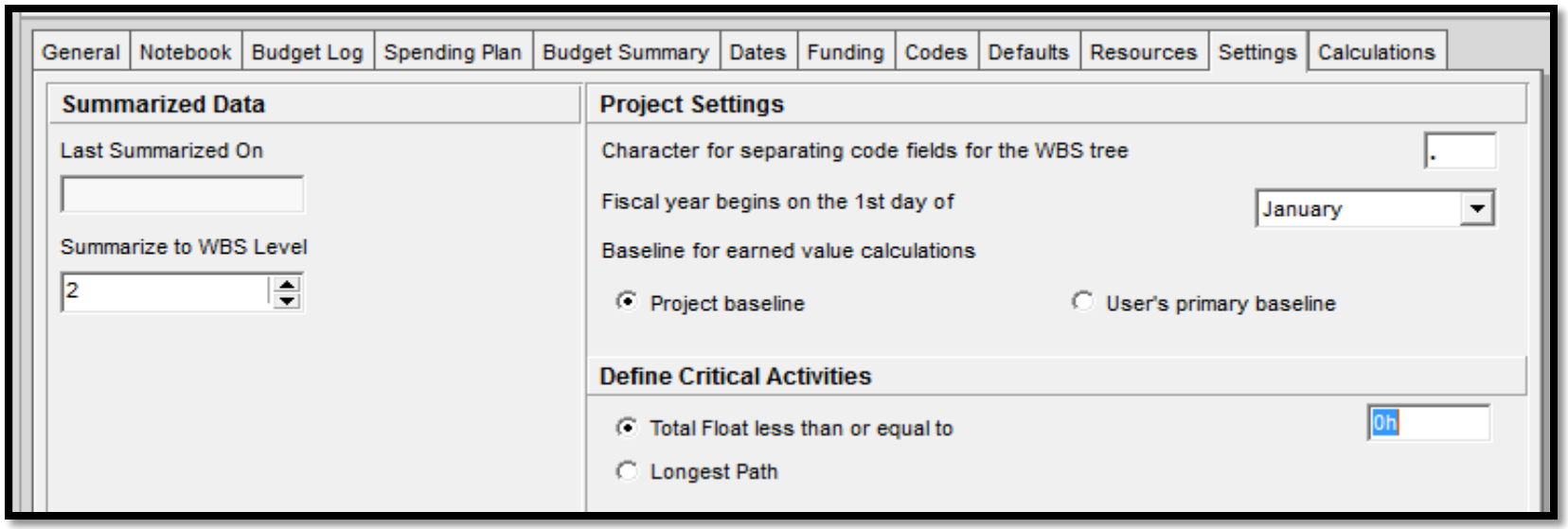
- The ***Defaults Tab*** is divided into two section:
  - Default for New Activities – Indicates the settings that will be used when new activities are added to the project. Note that changing these settings will not affect existing activities.
  - ***Auto-numbering Defaults*** – Sets how new activities will be numbered in your project.
    - When the Increment Activity ID based on selected activity checkbox is marked, the prefix or suffix of the selected activity is applied to the activity that is being added.

Defaults Tab



Settings Tab

- The ***Settings Tab*** consists of three sections:
  - ***Summarized Data*** – Identifies the date and level to which the project was last summarized
  - ***Project Settings*** – Sets the character used to separate WBS levels, identifies the month in which the fiscal year begins, and specifies the baseline used in earned value calculations
  - ***Define Critical Activities*** – Identifies which activities are displayed as critical, either longest path or Total Float.



Lesson Review

- You can create a project with several methods including: New Project Wizard, Import a File, Copy and Existing File, and Project Templates.
- Once the project is created, use the Projects Window to high-level information for the projects you can access
- Use Project Details tab in the Projects Window to define defaults settings and properties for the selected project, such as anticipated start and finish dates.

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Creating a Work Breakdown Structure (WBS)

Lesson 6

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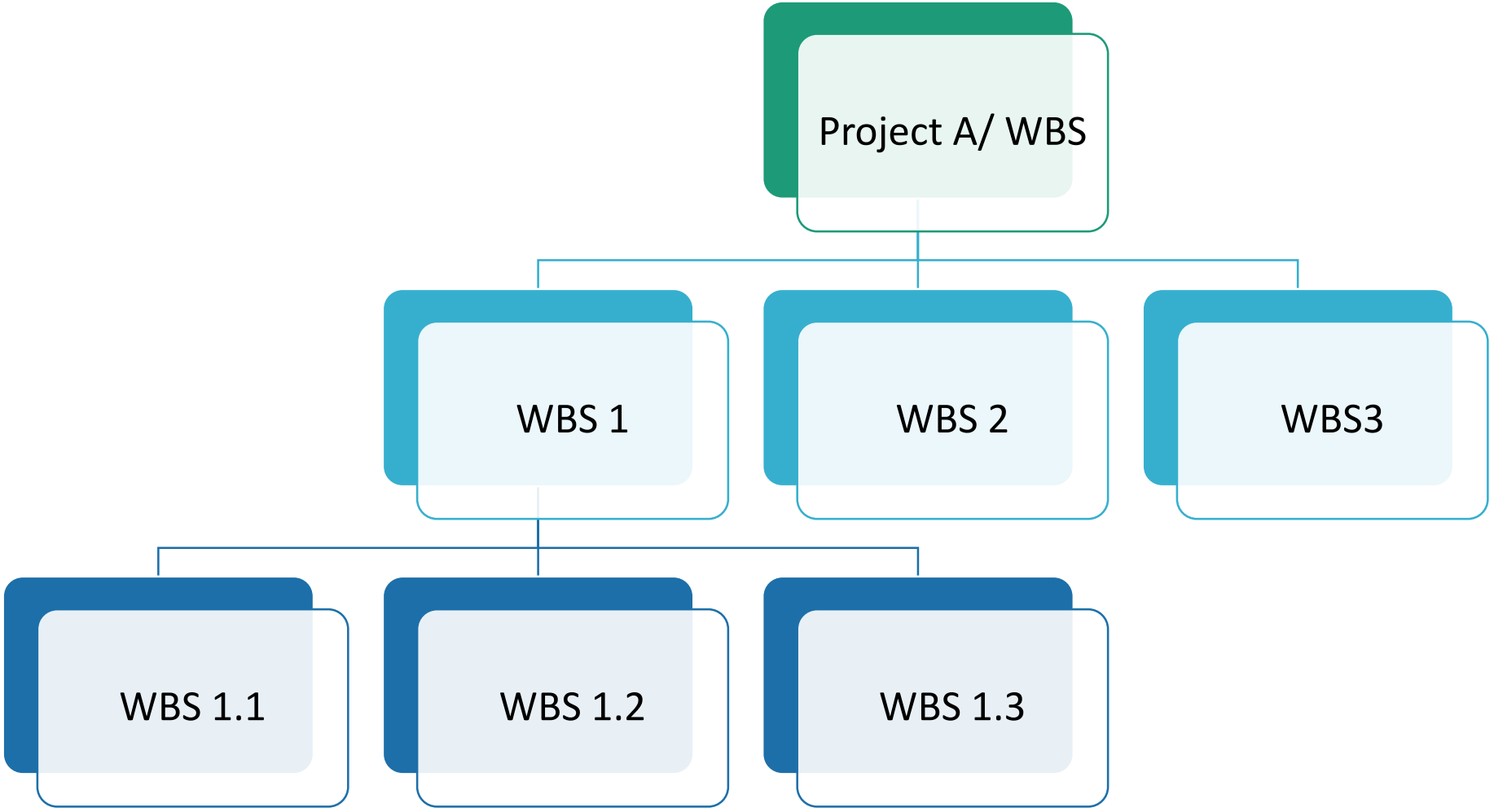
Creating a WBS

- Objectives
  - Define a Work Breakdown Structure of a project
  - Create multiple levels of WBS hierarchy

Work Breakdown Structure

- The ***Work Breakdown Structure (WBS)*** is a hierarchical arrangement of the products and services produced during, and by, a project. It enables you to divide a project into meaningful and logical pieces for the purpose of planning and control.
- Each project has a unique WBS hierarchy
  - The root level of the WBS is equal to the Project ID and Project Name
- Elements within the WBS have parent/child relationship, which means that you can rollup and summarize information from the lower levels.

Work Breakdown Structure



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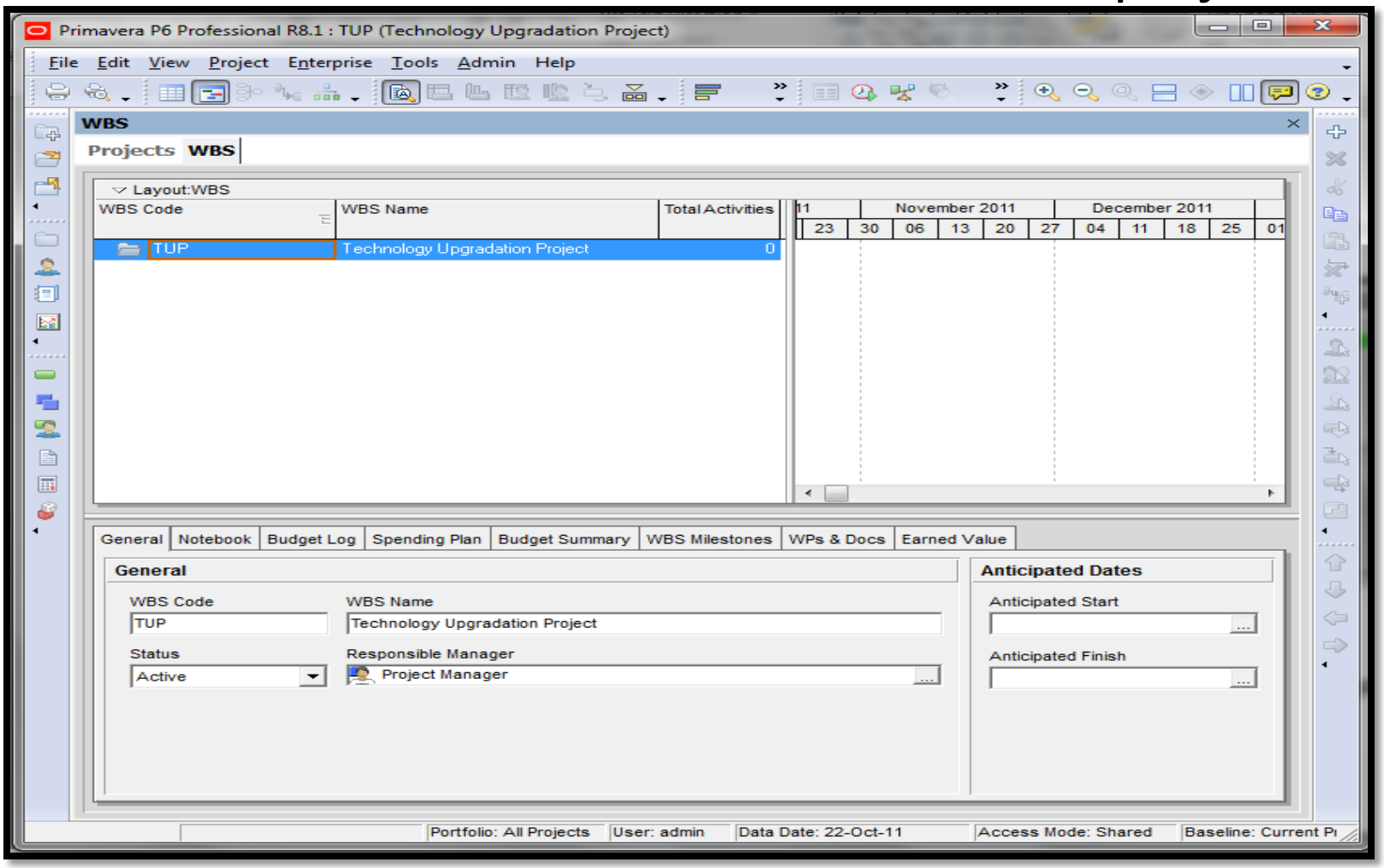
Viewing WBS Elements

- When the project is created, root level WBS element is added with the same ID and name as of project.



Viewing WBS Elements

- Exercise
  - Steps
    - In the Projects Window, select a project TUP
    - Right-click the Projects Window and select Open Project
    - In the Directory Bar, click WBS
    - In the General Tab, note the WBS Code and WBS Name, TUP – Technology Upgradation Project

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Creating WBS Hierarchy

- WBS elements added to the root level element are automatically indented to form the second level of the hierarchy.
- When you create a new WBS element, it is indented as a “child” of the WBS element that is currently selected.
- If you add a WBS element to the wrong level or in the wrong order, you can use the indentation keys located on the Command Bar to adjust the structure of the WBS hierarchy.
- The child WBS element inherits attributes from the parent WBS element.
- You can determine the level of WBS elements group by clicking right in the WBS window and choosing Collapse To
- Right-click in the WBS window and click Expand All or Collapse All to expand or collapse elements of the WBS.

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Creating WBS Hierarchy

- Exercise
  - Steps
    - In the Command Bar, click Add
    - In the WBS Code column, type the name and press Tab to move to the next field
    - In the WBS Name column, type the name and then press Enter
    - In the Responsible Manager, select appropriate manager as given

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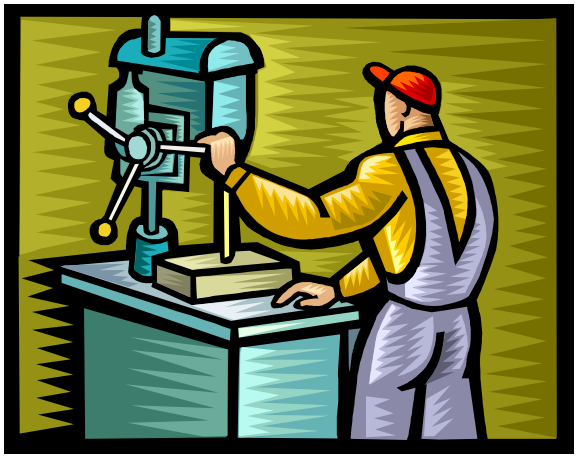
WORKSHOP
Creating a Work Breakdown Structure



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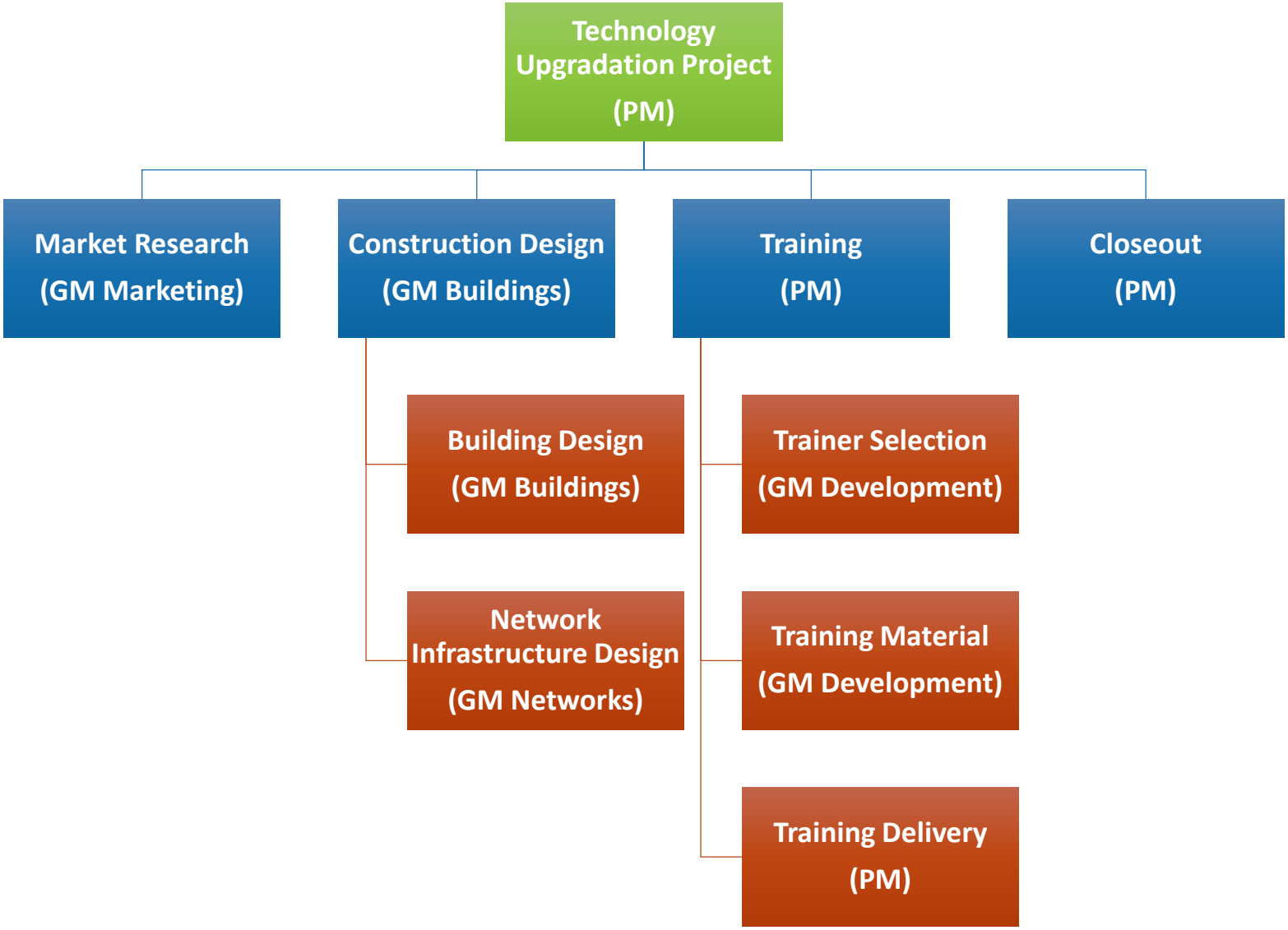
Exercise: Create WBS and Map Responsible Manager



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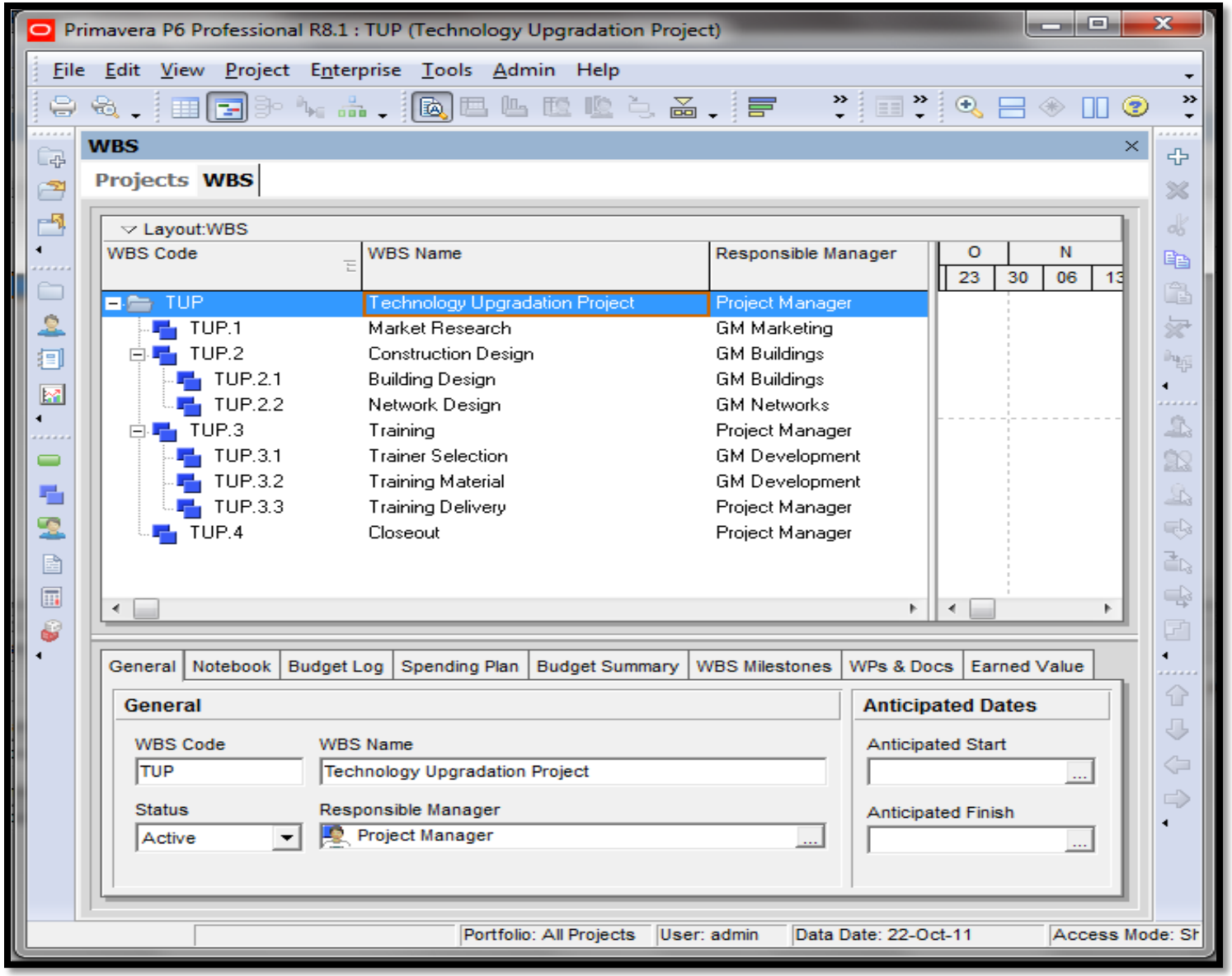
Exercise: Create WBS and Map Responsible Manager



Lesson Review

- The Work Breakdown Structure is a hierarchical arrangement of the products and services produced during and by a project.
- The highest level of the WBS is the project, and lowest level consists of the individual activities required for the deliverables.
- Create the WBS in WBS Window. Use the indentation keys to form various levels in the WBS.

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Adding Activities

Lesson 7

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Adding Activities

- Objectives
  - Describe an activity and its components
  - Describe activity components
  - Add activities
  - Add a notebook topic to an activity
  - Add steps to an activity
  - Assign activity codes to activities

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Activities

- ***The component of work performed during the course of project.***
- Activities are the fundamental work elements of a project. They are the lowest level of a WBS and the smallest subdivision of work that directly concerns the project manager.
  - Most detailed work unit tracked in a project schedule.
  - Contains all information about the work to be performed.
  - Also known as a task, item, event, or work package

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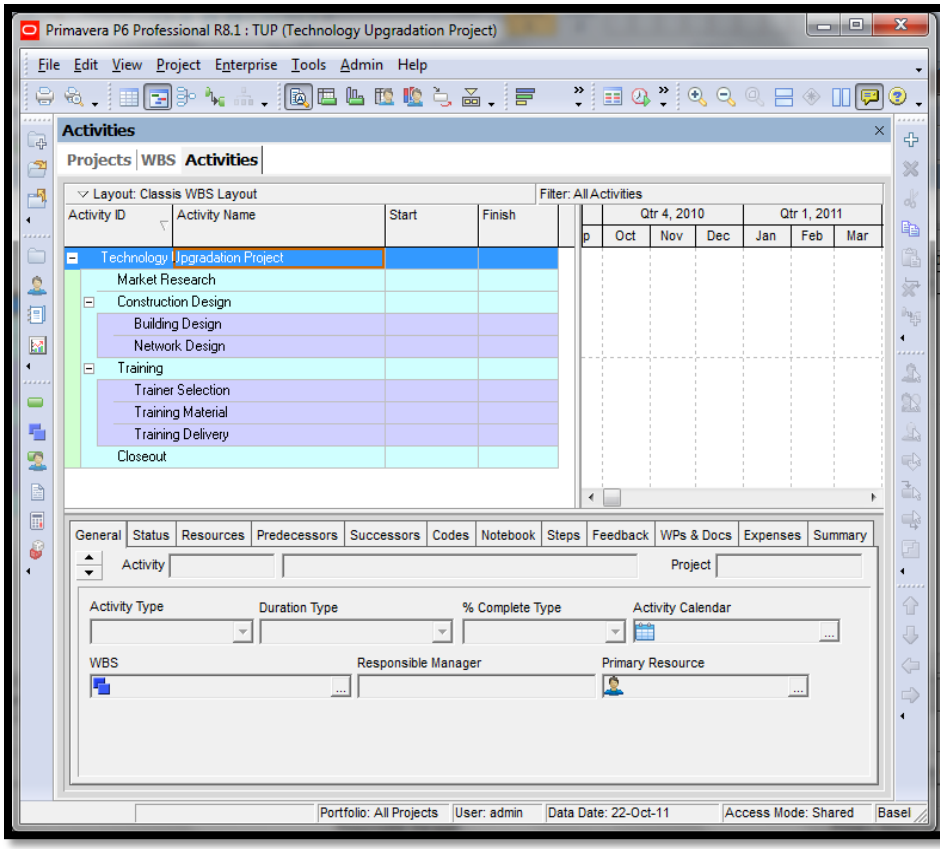
Activity Components

Adding Activities

- Use the ***Activities Window*** to create, view, and modify activities for the selected project.
- To add an activity, perform one of the following:
  - In the Command Bar, click Add
  - In the Edit Menu, click Add
  - Press Insert on the Keyboard
  - Right-click and click Add

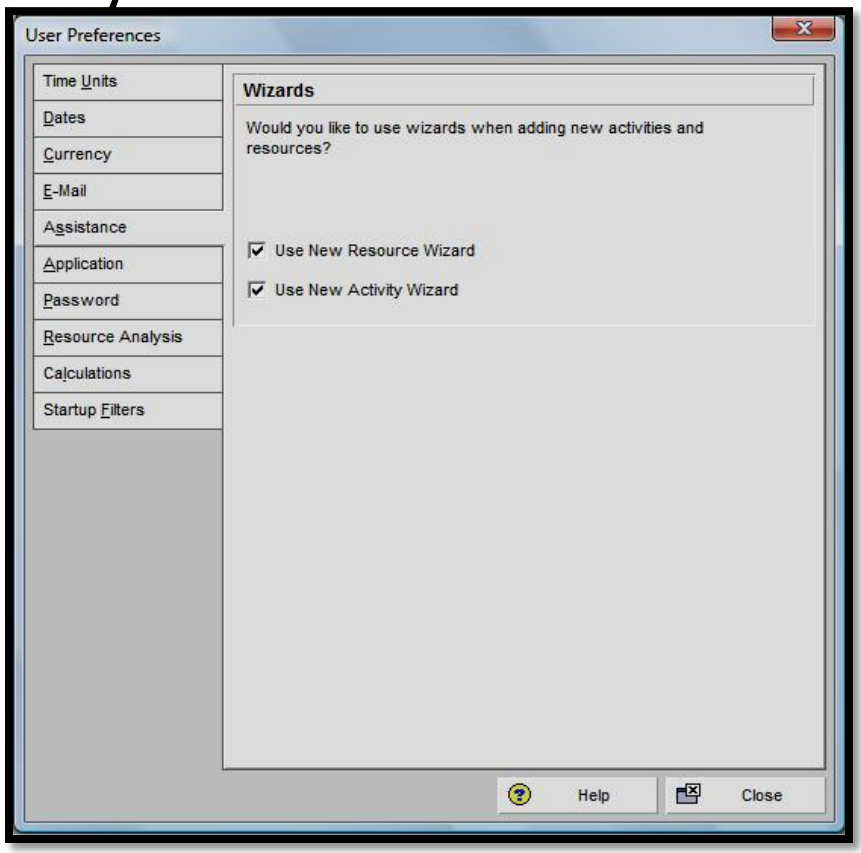
Adding Activities

- Exercise
  - Steps
  - Open a Project, TUP
  - Confirm you are in Activities Window
  - Click the Layout Option Bar
  - and open a layout,
  - Classic WBS Layout



New Activity Wizard

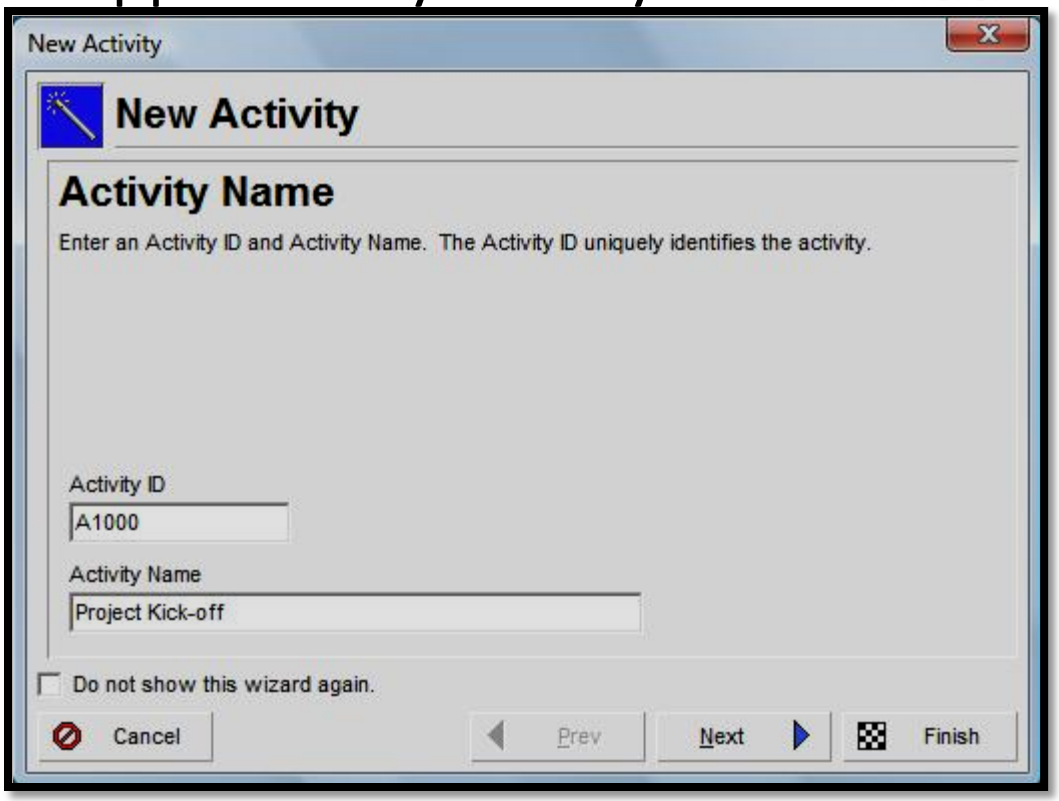
- The ***New Activity Wizard*** walks you through the process of adding an activity. Once you become familiar with the process, you can disable the wizard in User Preferences and manually add activities to the project.



- Exercise
  - Steps
    - In the Edit Menu, click User Preferences
    - Click the Assistance Tab
    - Check Use New Activity Wizard
    - Click Close

Adding Activities Using Activity Wizard

- The New Activity Wizard appears only when you click **Add** in the Command Bar.



- Exercise
  - Steps
    - In the Activity ID field, type <A1000>
    - In the Activity Name field, type <Project Kick-off>
    - Click Next

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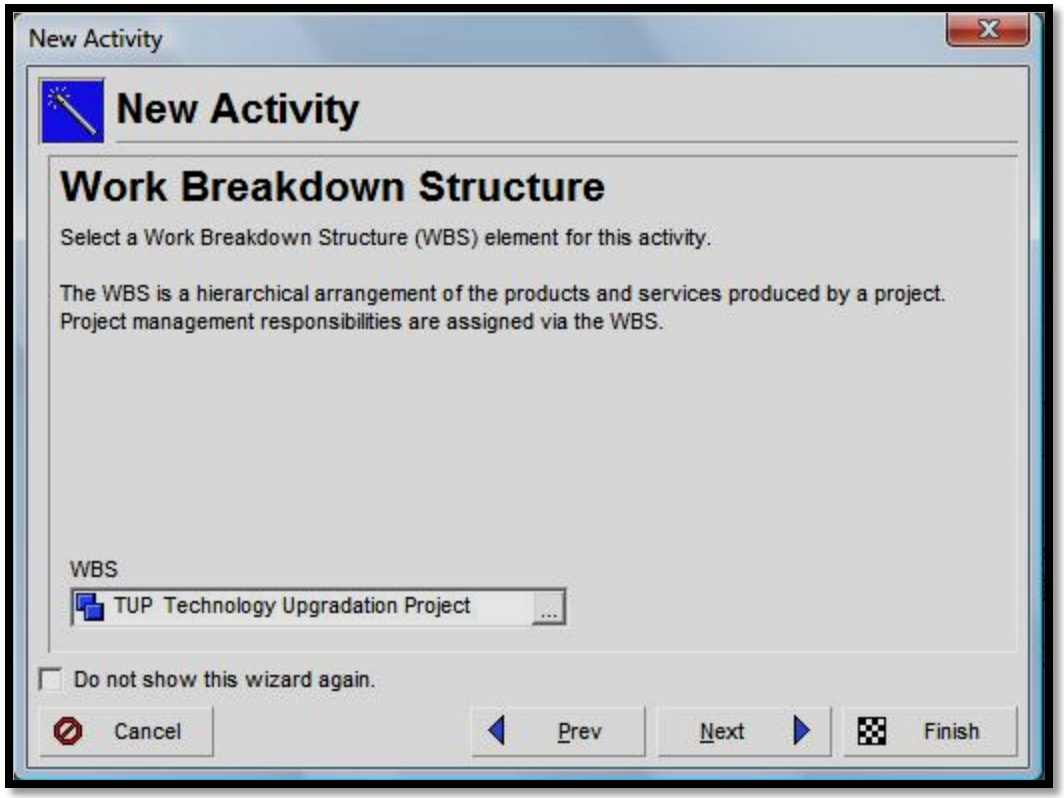
Adding Activities Using Activity Wizard

- Exercise
  - Steps
    - In the WBS field, click Browse
    - Select a WBS, TUP – Technology Upgradation Project, and click Assign button
    - Click Next



Activity Type

- ***Activity type controls how an activity's duration dates are calculated***
- Select the Activity Type according to the activity's function in the project and the calendar that should be used for the activity during scheduling
  - Start Milestone
  - Finish Milestone
  - Task Dependent
  - Resource Dependent
  - Level of Effort
  - WBS Summary

Activity Type

- ***Start Milestone*** – This type is typically used to mark the beginning of a phase or to communicate project deliverables.
  - Zero-duration activity
  - Only has a start date
  - You can assign constraints, steps, expenses, work products, and documents
  - You can assign a primary resource
  - You cannot assign roles
- ***Finish Milestone*** – This type is typically used to mark the end of a phase or to communicate project deliverables.
  - Zero-duration activity
  - Only has a finish date
  - You can assign constraints, steps, expenses, work products, and documents
  - You can assign a primary resource
  - You cannot assign roles

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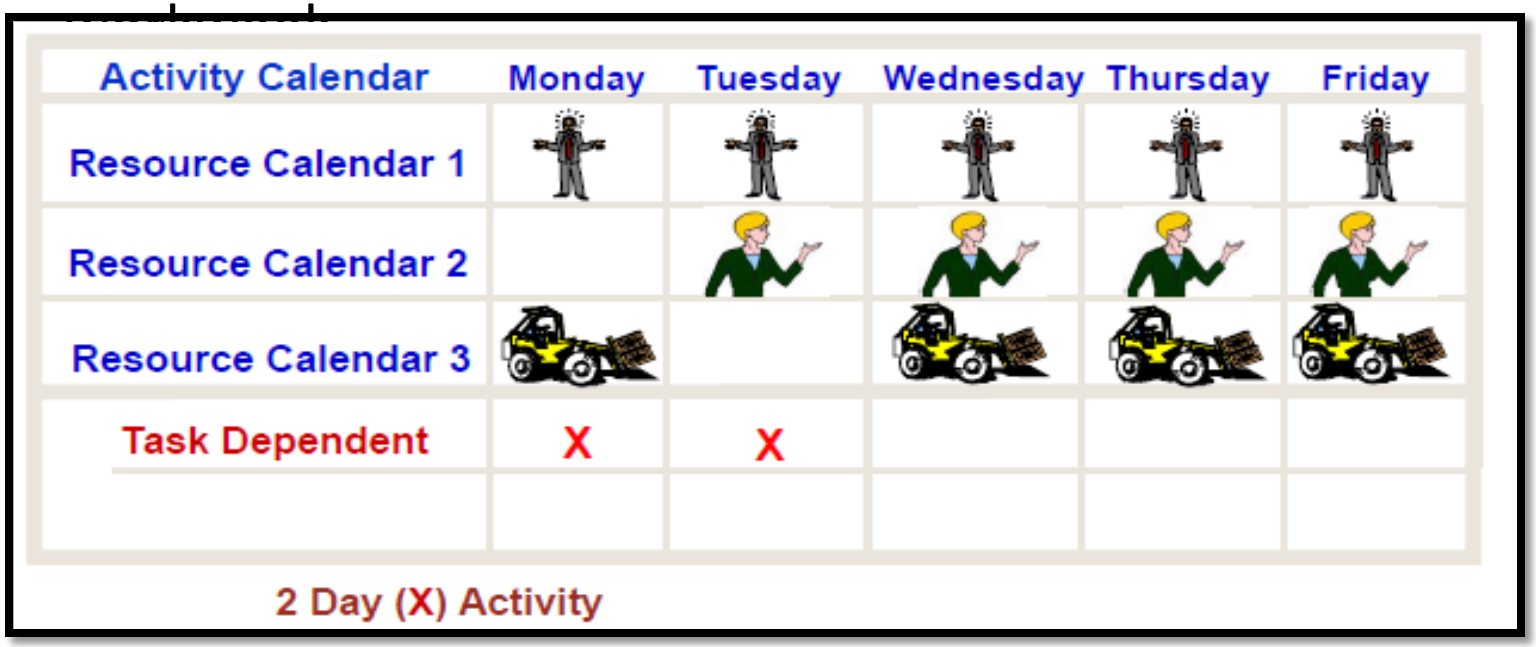
Activity Type

- ***Task Dependent*** – This type is typically used when the work needs to be accomplished in a given time frame, regardless of the assigned resources' availability.
  - The activity's resources are scheduled to work according to the activity calendar
  - Duration is determined by the assigned calendar's



Activity Type

- ***Resource Dependent*** – This type is typically used when multiple resources assigned to the same activity can work independently.
  - The activity's resources are scheduled according to the individual resource's calendar
  - Duration is determined by the availability of the resources assigned to work on the activity.

Activity Calendar	Monday	Tuesday	Wednesday	Thursday	Friday
Resource Calendar 1					
Resource Calendar 2					
Resource Calendar 3					
Task Dependent	X	X			
Resource Dependent	X	X	X		

2 Day (X) Activity

Activity Type

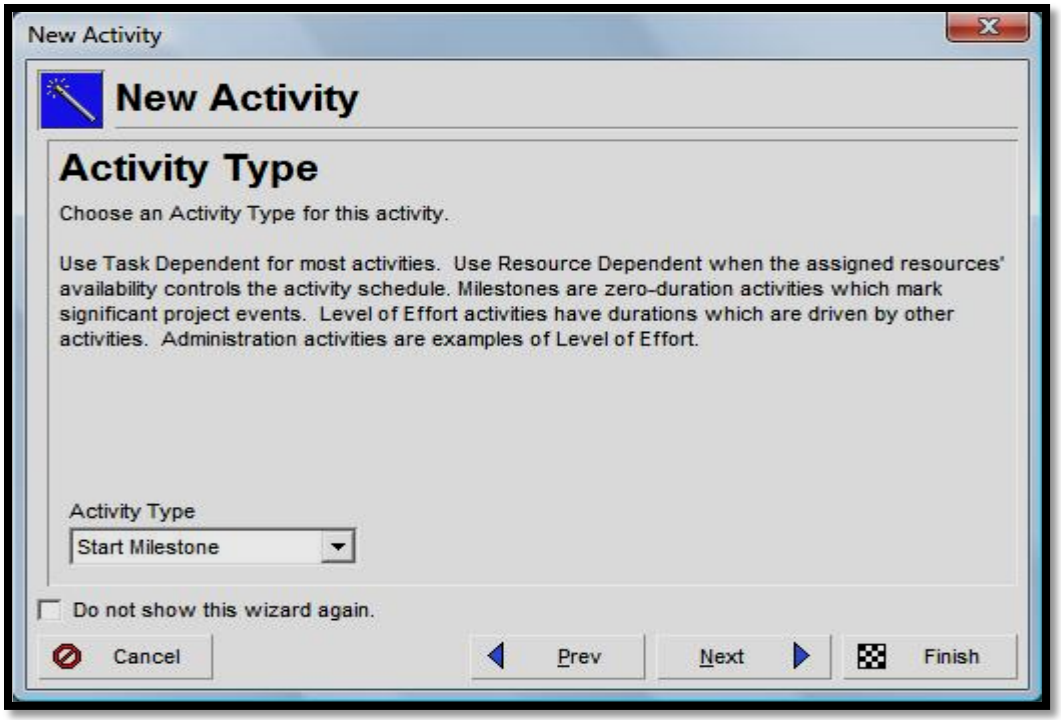
- ***Level of Effort*** – This type is typically used for ongoing tasks dependent on other activities.
  - Duration is determined by its predecessor and successor activities, and its assigned calendar
  - Examples include clerical work, a security guard and meetings
  - You cannot assign constraints
- ***WBS Summary*** – This type is used to summarize a WBS level.
  - The WBS summary activity comprises a group of activities that share a common WBS level
  - The dates calculated on a WBS summary activity are based on the earliest start date of the activities in the group and the latest finish date of these activities
  - You cannot assign constraints

Activity Decomposition

- Activities need to be decomposed to sufficient detail so as to provide effective basis for:
  - Estimating
  - Scheduling
  - Executing
  - Monitoring
  - Control
- ***Hourly rules***
  - 4 to 40 hour rule
  - 8 to 80 hour rule

Activity Type Using Activity Wizard

- Exercise
  - Steps
    - In the Activity drop-down list, select Start Milestone
    - Click Next
    - Verify No, continue is selected, and then click Next
    - Verify No, thanks is selected, and then click Next



Completing New Activity Wizard

- Exercise
  - Steps
    - Make check <do not show this wizard again>
    - When prompted, click Ok
    - Click Finish

Adding An Activity via Activity Details

- You can use the ***Activity Details*** tab to add an activity, and then can enter additional information about the activity.

- Exercise
  - Steps
    - Select a WBS element, Market Research
    - In the Edit Menu, click Add, or Right-click and then click Add

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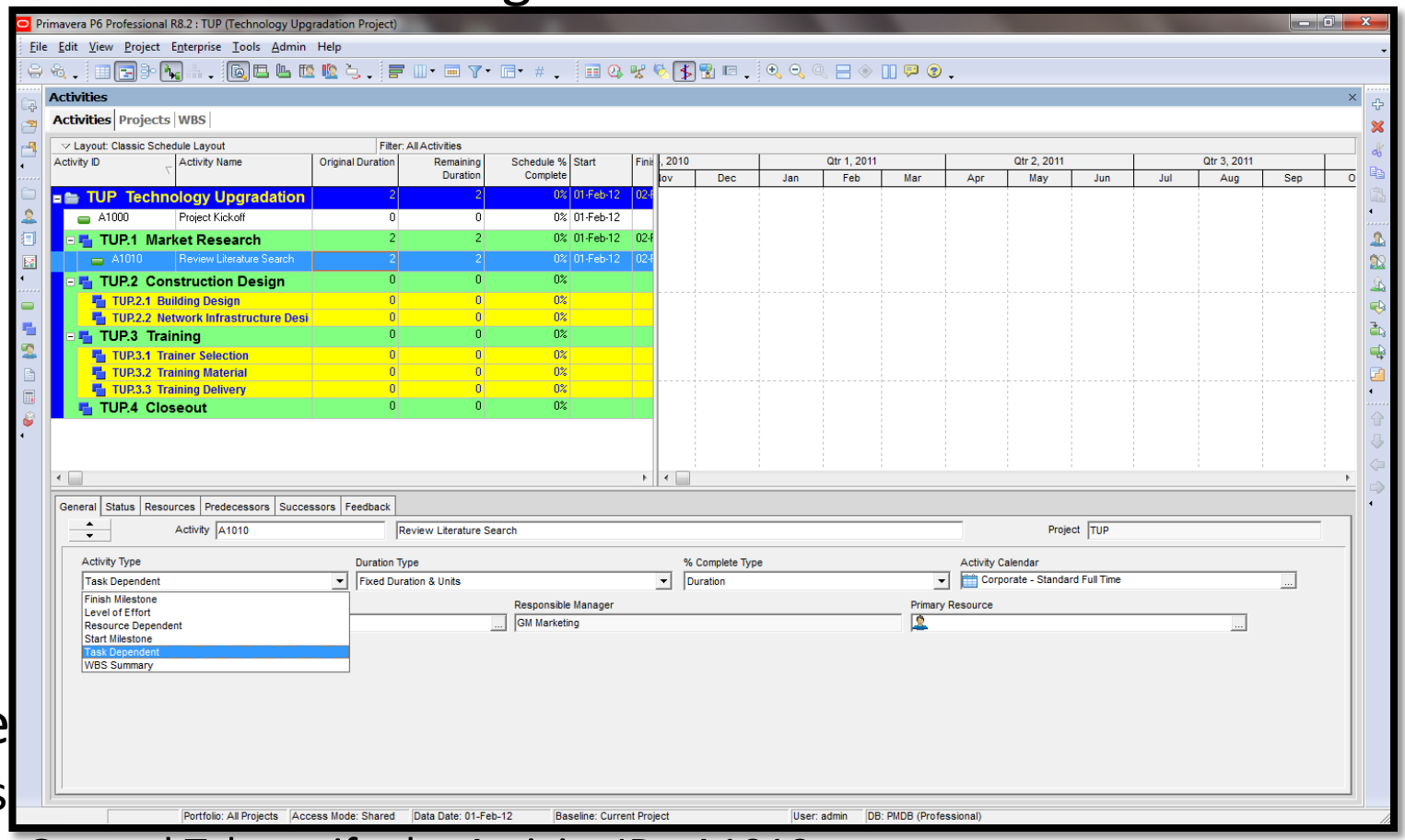
General Tab

- Use the ***General Tab*** to assign basic information about an activity.



- Exercise
  - Steps
    - In General Tab, verify the Activity ID <A1010>
    - In the Activity field, type <Review Literature Search>
    - In the Activity Type drop-down list, verify <Task Dependant>

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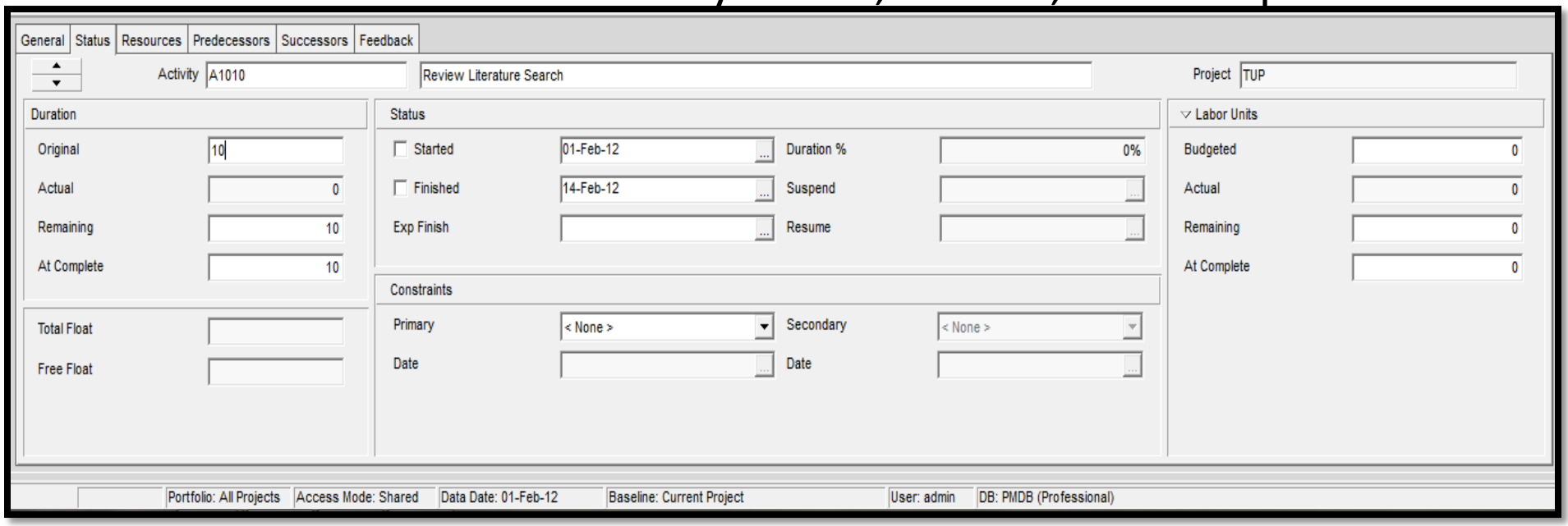
Status Tab

- Use the ***Status Tab*** to define the selected activity's duration, constraints, Start and Finish Dates, Labor and Non-labor Units and Costs, and Material Costs. You can also use the Status Tab to view the selected activity's float, actuals, and completion %.



- Exercise
  - ***Steps***
    - ***In the Activity Details, click the Status Tab***
    - ***In the Original Duration field, type <10>, and then press Enter***

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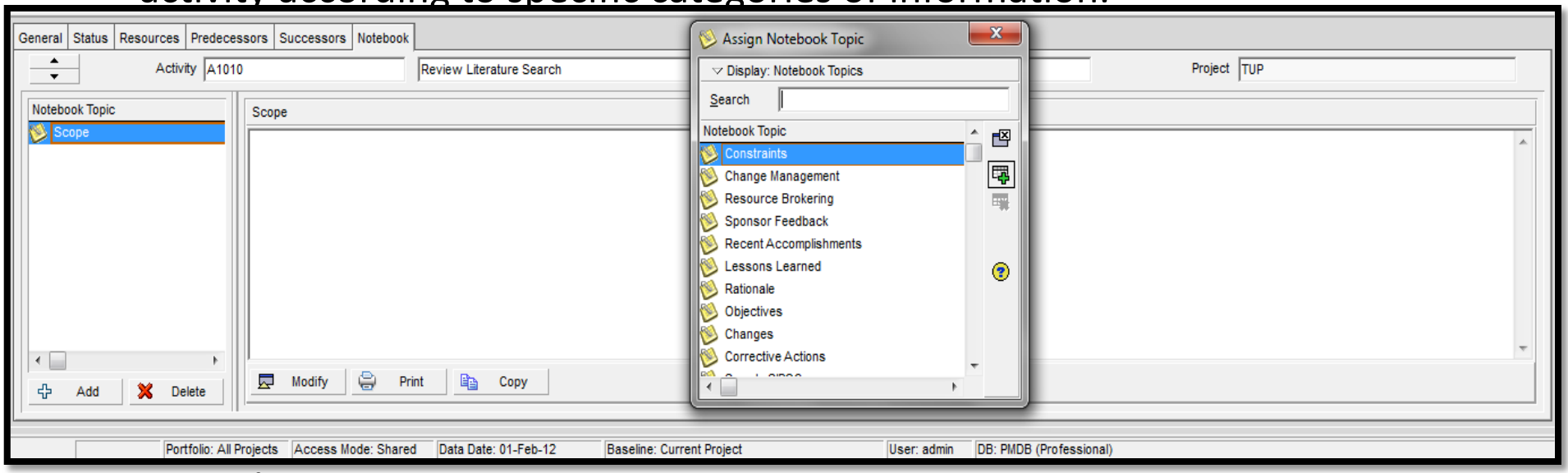
Notebook Tab

- The ***Notebook Tab*** enables you to assign notes to an activity. Notebook topics are typically instructions or descriptions that further describe the activity according to specific categories of information.



- Exercise
  - ***Steps***
    - ***Click the Notebook Tab***
    - ***In the Notebook Topic section, click Add***
    - ***Select a Notebook topic, Scope and click Assign button***
    - ***Close the Assign Notebook Topic dialog box***
    - ***Type a description in Modify section <Literature Review for Design of Building and Network including Internet, Market Survey>***

Adding an Activity via Column

- You can also use the columns in the Activity Table to add an activity and then enter additional information about it.

- Exercise
  - Steps
    - In the Activity Table, select a WBS band, Market Research
    - Press Insert on your keyboard
    - Verify the Activity ID, <A1020>
    - In the Activity Name column, type <Prepare Inventory & Vendor List>
    - In the Activity Type column, verify Task Dependent
    - In the Original Duration column, type <4>
    - Press Enter on your keyboard

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Activity Codes

- ***Activity Codes enable you to classify and categorize activities according to you organizational and project needs.***
- You can use activity codes to view and roll-up activities in the Activity Table; build reports in the Report Wizard or Report Editor; organize a layout by grouping activities into specific categories; and select and summarize activities.
- Examples include Phase, Area, Site, and Division.
- Activity codes can be defined at three levels
  - ***Global Level*** – Available to all activities in the database
    - Create an unlimited no. of global-level activity codes
    - Organize activities within a project or across the project structure
  - ***EPS Level*** – Available to all activities within the EPS node and its children
    - Create an unlimited no. of EPS-level activity codes
    - Organize activities within a project or across a portion of the EPS
  - ***Project Level*** – Available to activities only in the project in which code is defined
    - Create upto 500 activity codes per project
    - Filter and organize activities based on unique, project-specific requirements

Assigning Activity Codes to an Activity

- Assign activity code values in the Activities Window
  - Add a column for the activity code in the Activity Table
  - Use the Codes Tab in Activity Details

- Exercise
  - Steps
    - Select an activity A1020 – Review Literature Search
    - In the Activity Details, click the Codes tab
    - Click Assign
    - In the Assign Activity Codes dialog box, click the Display Option bar and choose Filter By, All Values
    - Click the Display Option bar and choose Collapse All
    - Expand the Department activity code
    - Within the Department activity code, select an activity code value, ISD – Information Systems, and then click Assign
    - Click Close

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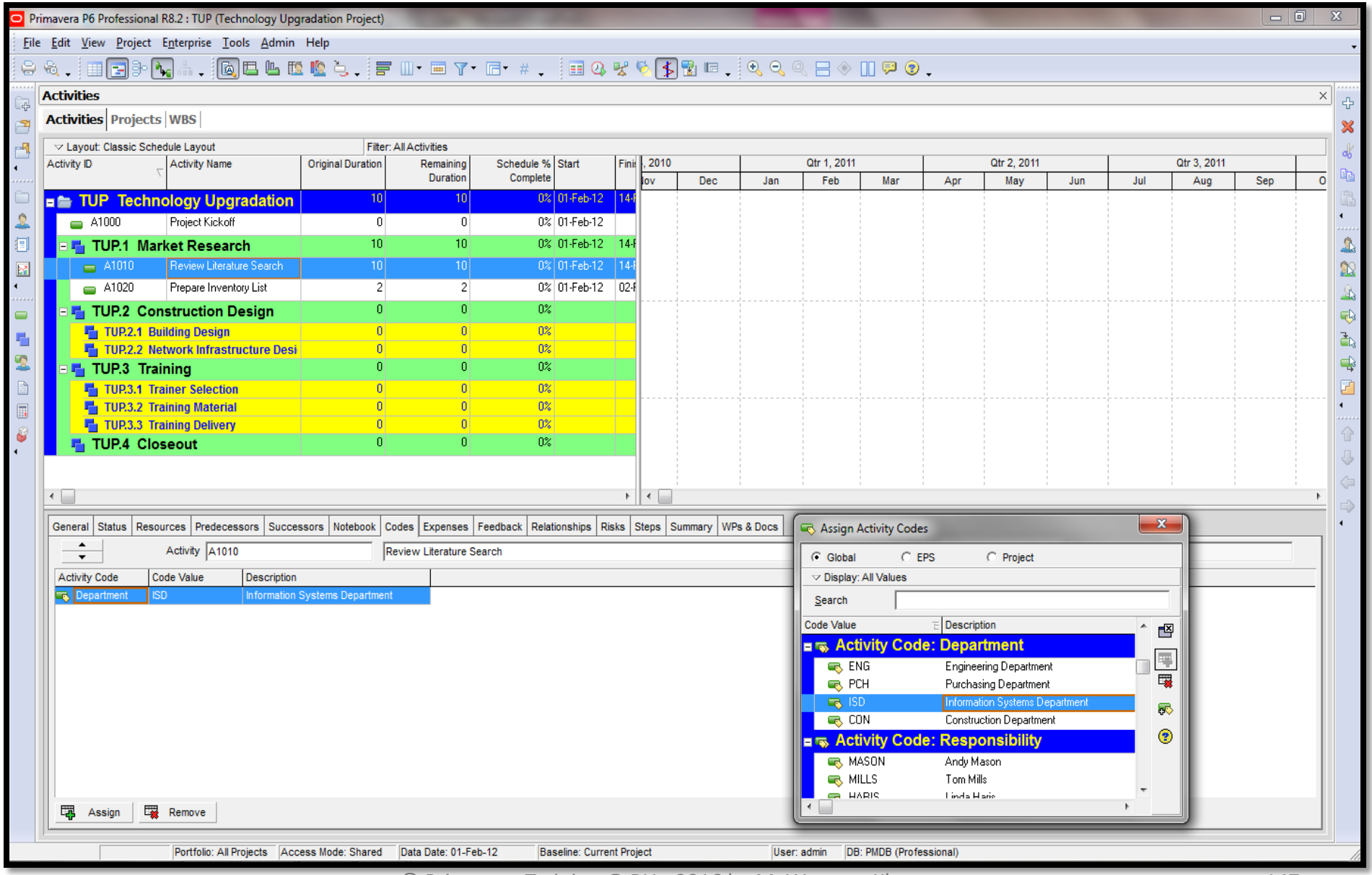
Assigning Activity Codes to an Activity

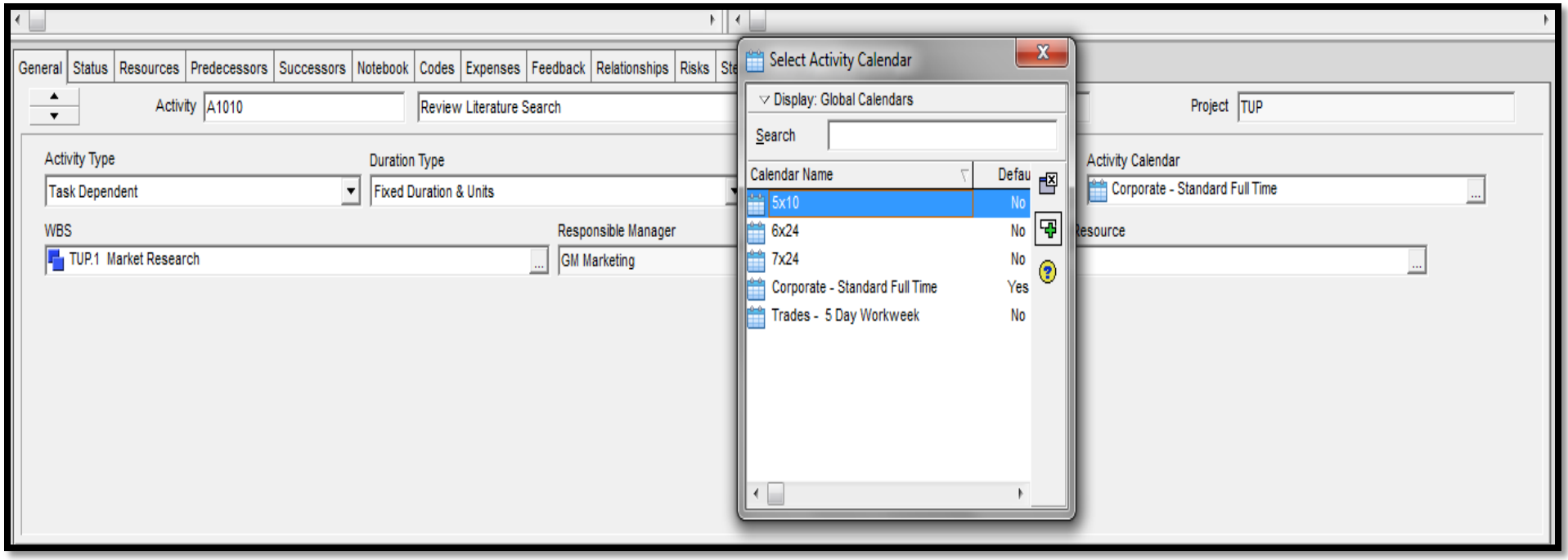


Calendar Assignments

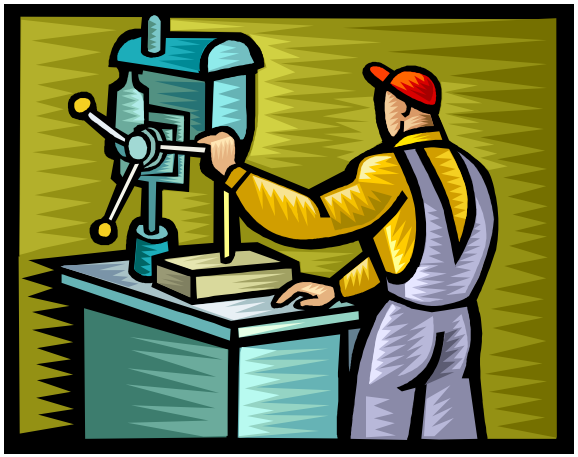
- *Calendars* can be created and assigned to each activity and resource.
- Calendar assignments are used to schedule activities and level resources.
- An unlimited no. of calendars can be created.
- The Activity Type determines whether the activity calendar or resource calendar is used during scheduling.
- There are three calendar types:
  - *Global Calendar*
    - Contains calendars that can be used by all projects in the database
    - Available for all resources and activities in the database
  - *Resource Calendar*
    - Contains separate calendars for each resource
  - *Project Calendar*
    - Contains a separate pool of calendars for each project
    - Available for the current project only

Calendar Assignments

- Exercise
  - Steps
    - Select and Activity, A1020
    - Click the General Tab
    - In the Activity Calendar field, click Browse button
    - View the available global calendars, and then close the dialog



WORKSHOP
Adding Activities



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Exercise: Add Activities

WBS	Activity ID	Activity Name	Activity Type	Original Duration	Calendar
Technology Upgradation Project				10	
TUP	A1000	Project Kick-off	Start Milestone	0	Corporate – Standard Full Time
TUP	A1250	Design Handover (Project Completion)	Finish Milestone	0	Corporate – Standard Full Time
Market Research				10	
TUP.MR	A1010	Review Literature Search	Task Dependent	10	Corporate – Standard Full Time
TUP.MR	A1020	Prepare Inventory & Vendor List	Task Dependent	4	Corporate – Standard Full Time
TUP.MR	A1030	Perform Market Survey	Task Dependent	10	Corporate – Standard Full Time
TUP.MR	A1040	Formulate Survey Findings	Task Dependent	5	Corporate – Standard Full Time
TUP.MR	A1050	Perform SWOT Analysis	Task Dependent	3	Corporate – Standard Full Time
TUP.MR	A1060	Document Results and Handover	Task Dependent	2	Corporate – Standard Full Time

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Exercise: Add Activities

WBS	Activity ID	Activity Name	Activity Type	Original Duration	Calendar
Construction Design				10	
Building Design				6	
TUP.CD.BLD	A1070	Prepare Concept Design	Task Dependent	10	13h/d
TUP.CD.BLD	A1080	Prepare Tender Documents	Task Dependent	10	13h/d
TUP.CD.BLD	A1090	Develop 100% Construction Document	Task Dependent	10	13h/d
Network Infrastructure Design				10	
TUP.CD.NID	A1100	Prepare LAN Layout	Task Dependent	10	Corporate – Standard Full Time
TUP.CD.NID	A1110	Prepare Domain/ Harwdware Layout	Task Dependent	10	Corporate – Standard Full Time
TUP.CD.NID	A1120	Handover Network Design	Finish Milestone	0	Corporate – Standard Full Time

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Exercise: Adding Activities

WBS	Activity ID	Activity Name	Activity Type	Original Duration	Calendar
Training				10	
Trainer Selection				10	
TUP.TR.TRS	A1130	Prepare & Review RFP/ Advertisement	Task Dependent	5	Corporate – Standard Full Time
TUP.TR.TRS	A1140	Open Technical Bids	Finish Milestone	0	Corporate – Standard Full Time
TUP.TR.TRS	A1150	Review and Score Technical Bids	Task Dependent	10	Corporate – Standard Full Time
TUP.TR.TRS	A1160	Open Financial Bids	Finish Milestone	0	Corporate – Standard Full Time
TUP.TR.TRS	A1170	Negotiate with Bidders	Task Dependent	5	Corporate – Standard Full Time
TUP.TR.TRS	A1180	Award Contract	Finish Milestone	0	Corporate – Standard Full Time
Training Material				8	
TUP.TR.TRM	A1190	Prepare and Review Draft Material	Task Dependent	8	Corporate – Standard Full Time
TUP.TR.TRM	A1200	Finalize Training Material with Client	Task Dependent	5	Corporate – Standard Full Time
TUP.TR.TRM	A1210	Print Training Material	Task Dependent	4	Corporate – Standard Full Time

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Exercise: Adding Activities

WBS	Activity ID	Activity Name	Activity Type	Original Duration	Calendar
Training Delivery				8	
TUP.TR.TRD	A1220	Deliver Training Course	Task Dependent	5	Corporate – Standard Full Time
TUP.TR.TRD	A1230	Prepare & Submit Assessment Report	Task Dependent	8	Corporate – Standard Full Time
Closeout				10	
TUP.CO	A1240	Prepare Closeout Documentation	Task Dependent	10	Corporate – Standard Full Time

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Lesson Review

- There are four ways to add an activity to a project:
  - In the Command Bar, click Add
  - Press Insert on keyboard
  - Right-click
  - Click Add
- You can also enable the New Activity Wizard to walk through the steps of adding activity information
- Activity Type controls how an activity dates are calculated
- Use steps to create a checklist for the activity, and mark step completion
- Use Activity Codes to group activities by a common attribute. Create an unlimited no. of code values for each activity code.
  - The Global level codes can be assigned to all activities in the database
  - EPS level codes can be assigned to all activities in the EPS and EPS children
  - Project level activity codes can be assigned to activities in the projects in which they are created

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Creating Relationships

Lesson 8

Creating Relationships

- Objectives
  - Create a Network Logic Diagram
  - Differentiate Between the Four Relationship Types
  - Create Relationships in the Activity Network
  - Create Relationships in Activity Details

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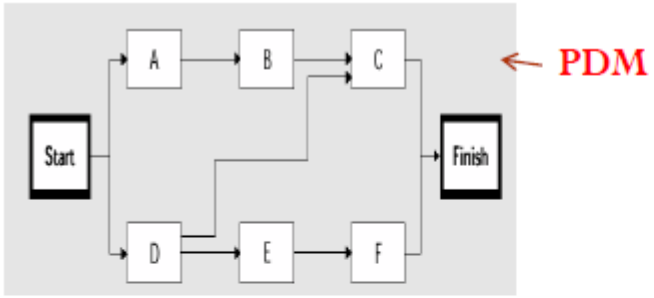
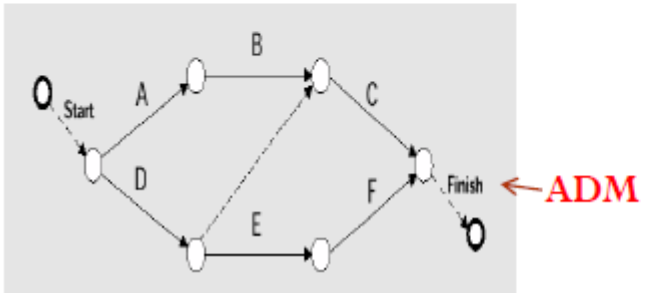
Network Logic Diagram

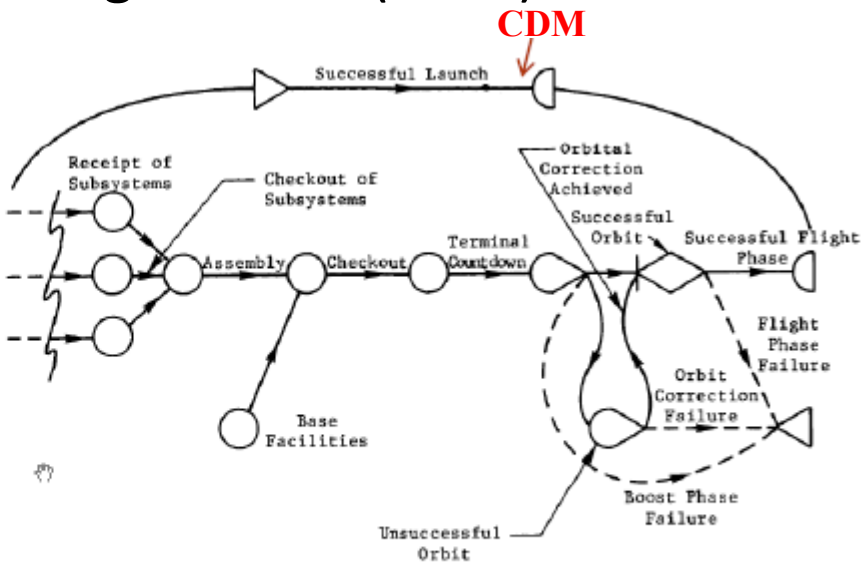
- ***A network logic diagram is a logical representation of all activities in a project showing their dependency relationships.***
  - Precedence Diagramming Method (PDM, AON)
  - Arrow On Arrow Diagramming Method (AOA)
  - Conditional Diagramming Method (CDM)



PDM



ADM



Network Logic Diagram

- Precedence Diagramming Method
  - ***A method of constructing a project network diagram using nodes to represent the activities and connecting them with arrows that show the dependencies***.
  - This technique is also called activity-on-node (AON)
  - A box or rectangle represents an activity
  - Lines with arrows connect the boxes and represent the logical relationships between the activities
    - *Predecessor:* Controls the start or finish of another activity
    - *Successor:* Depends on the start or finish of another activity

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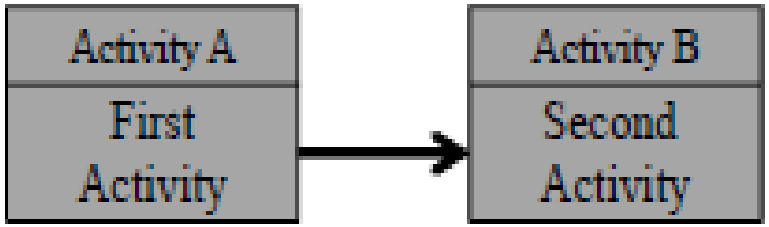
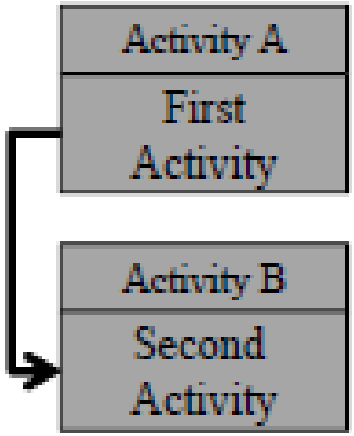
Relationship Types

- There are ***four relationship types***.
- In the following diagram, activity A represents the predecessor and activity B represents the successor.
  - *Finish-to-Start (FS)* – When A finishes, B can start



  - *Start-to-Start (SS)* – When A starts, B can start



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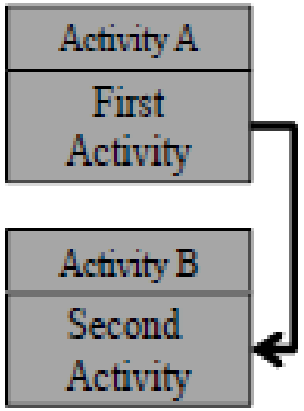
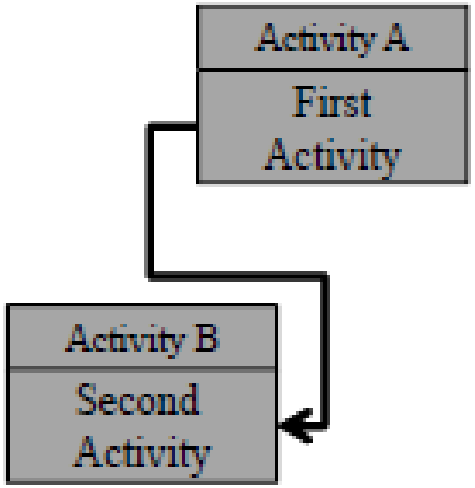
Relationship Types

- ***Finish-to-Finish (FF)*** – When A finishes, B can finish



- ***Start-to-Finish (SF)*** – When A starts, B can finish



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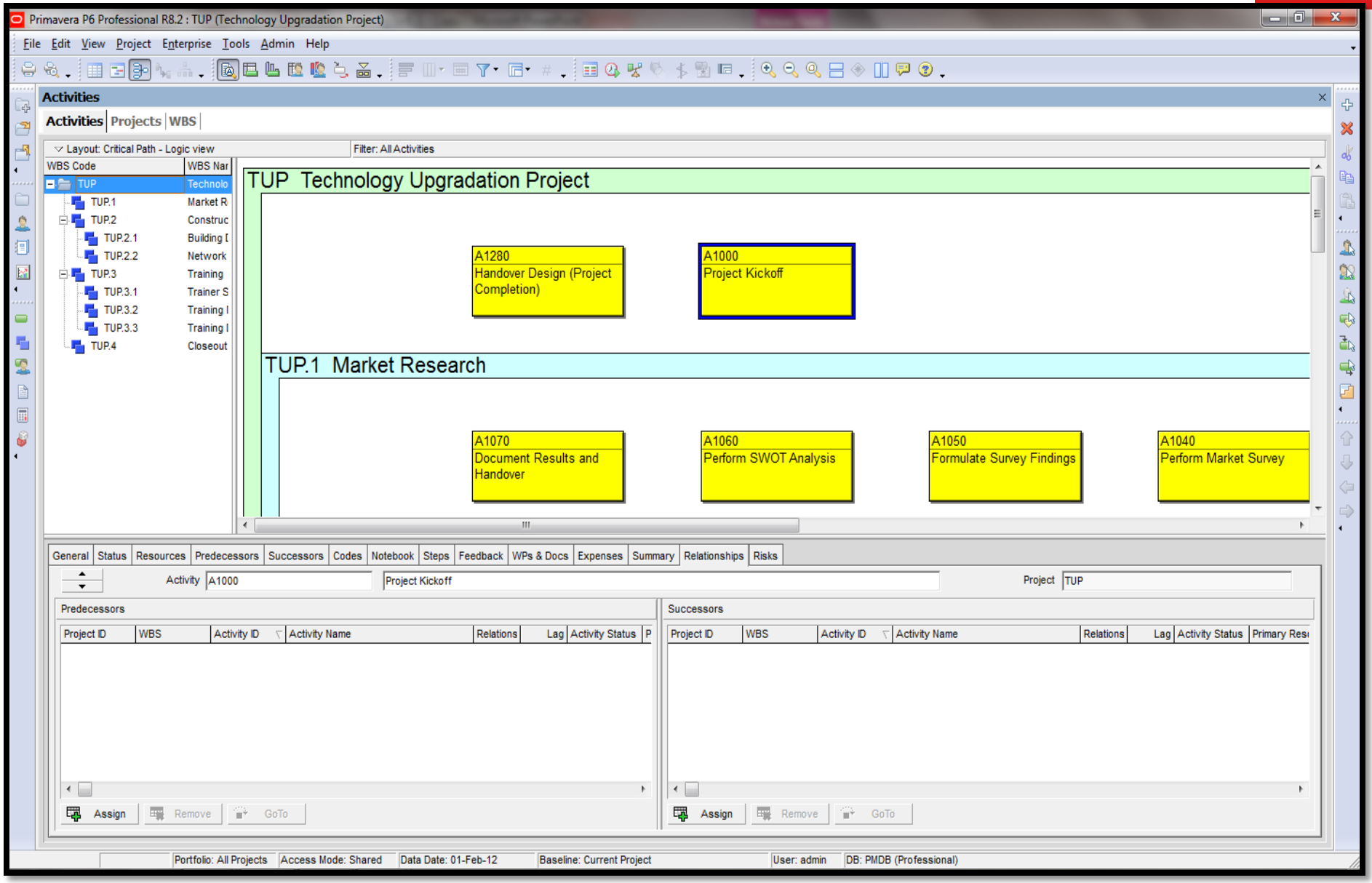
Relationships with Lag

- ***Lag specifies an offset or delay between an activity and its successor.*** It can be added to any type of relationship and have a positive or a negative value.
- Lag is scheduled based on the calendar selected in the GENERAL Tab in the Schedule Options dialog box.
  - Tools Menu→ Schedule→Options
- There are four calendar options for scheduling lag
  - Predecessor activity calendar
  - Successor activity calendar
  - 24-hour calendar
  - Project default calendar

Creating Relationship using Activity Network

- The ***Activity Network*** is useful when sequencing activities because it displays the activities graphically as you create relationships.
- Click Zoom to enlarge the size of activities viewable in the network.
- Exercise
  - Steps
    - Confirm you are in Activities Window (Directory bar, click Activities)
    - In the Layout Option bar, click Layout, Open
    - Select a Layout, Critical Path – Logic View, and then click Open
    - Select a WBS Code, TUP
    - Click Zoom in on activities in the Activity Network
    - Select an activity, A1000 – Project Kick-off
    - In Activity Details, click Relationship tab

Creating Relationship using Activity Network



Creating a Start-to-Start Relationship

- You can create a relationship between activities by clicking and dragging your mouse between the two activities:
  - The left-edge of the activity represents the start of the activity
  - The right-edge of the activity represents the finish of the activity

- Exercise
  - Steps
    - To create a SS relationship, place the mouse pointer to the left-edge of an activity, A1000-Project kickoff
    - Click and drag the mouse to the left-edge of a successor activity, A1010-Review Literature Search

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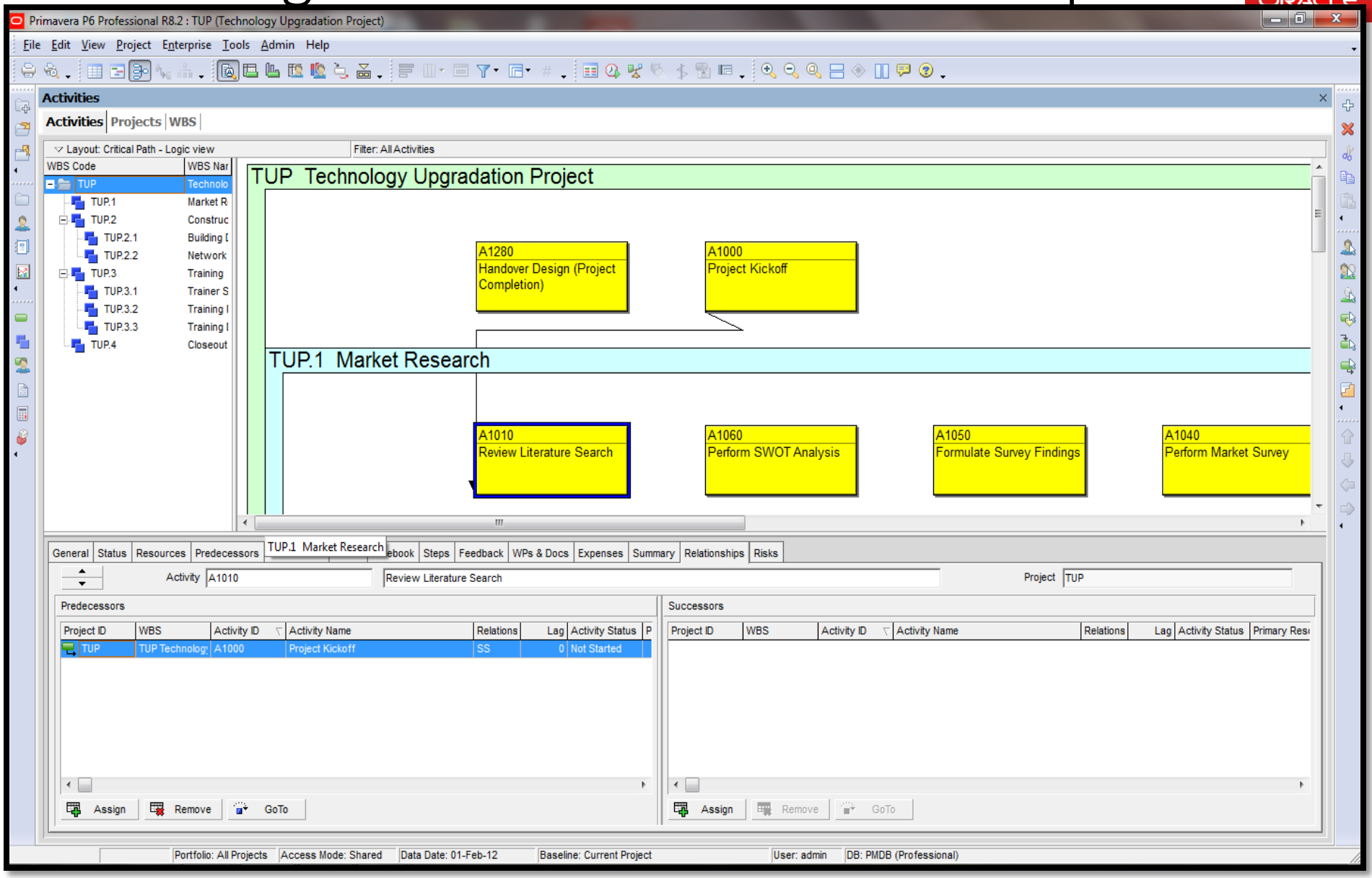
Creating a Start-to-Start Relationship



Creating Relationships in Activity Details

- You can also use ***Relationships Tab*** to create relationships. When creating a relationship in Activity Details, the default relationship type is Finish-to-Start (FS).
- Activities in the Assign Successor dialog box can be grouped and sorted in a variety of ways, including by EPS and by List. In the Display Options bar, click Group and Sort By to view the options

- Exercise
  - Steps
    - Select an activity A1010-Review Literature Search
    - In the Successor pane within Relationships tab, click Assign
    - Select an activity A1020-Prepare Inventory List and then click Assign button
    - Close the Assign Successor dialog box

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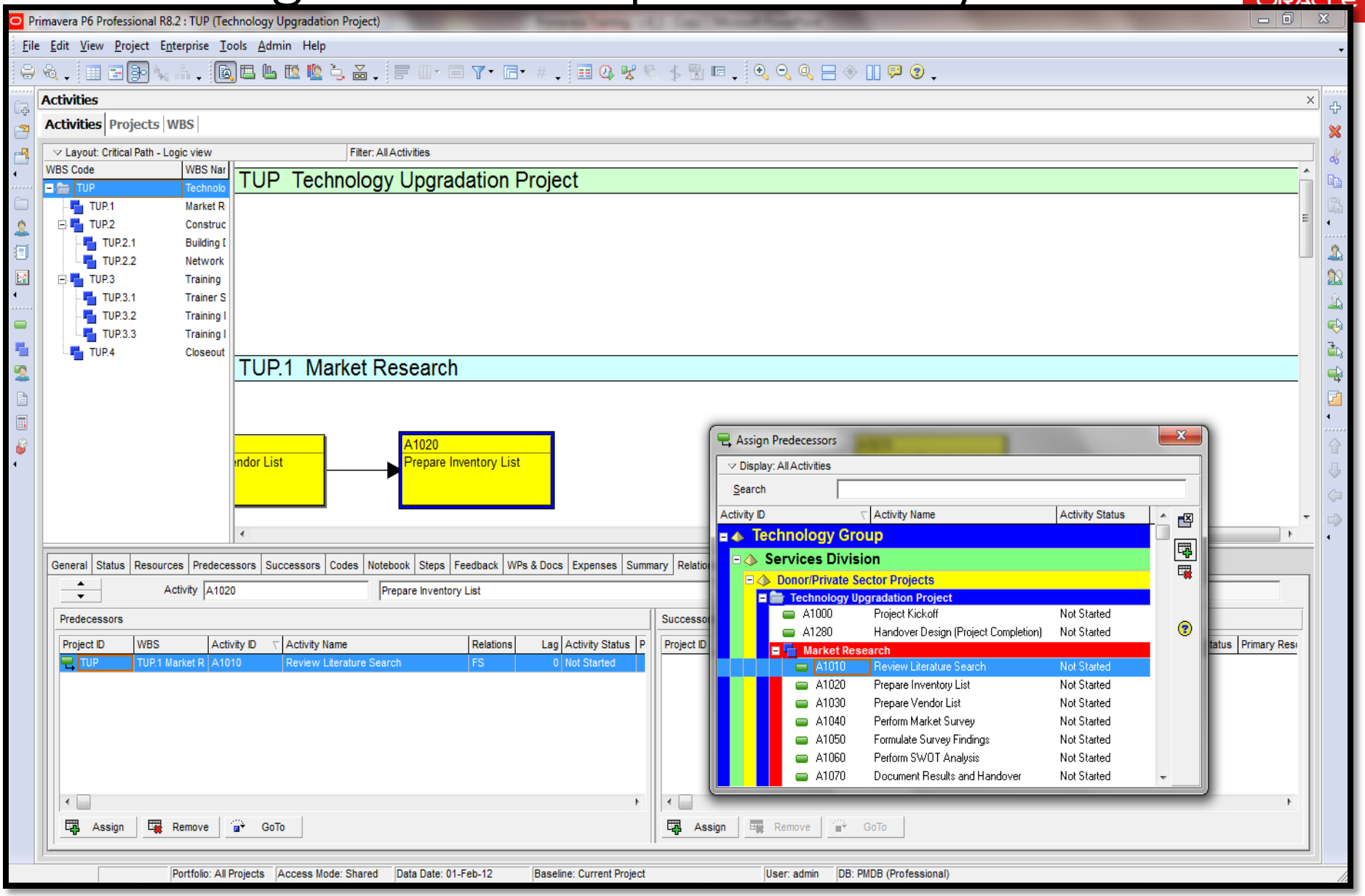
Creating Relationships in Activity Details



Using GoTo Feature

- Click

on the Relationship tab to change the selection in the Activity Table to the activity highlighted in the successor or predecessor pane.

Assigning Lag

- Although the default relationship type is FS with zero days of lag, but still you can use columns on the Relationships tab to make adjustments to the relationship type or to assign lag.

- Exercise
  - Steps
    - Select an Activity, A1010-Review Literature Search from Activity Network
    - In the Successor pane, select an activity A1030-Prepare Vendor List
    - Type the number of days of lag <1>
    - Press Enter

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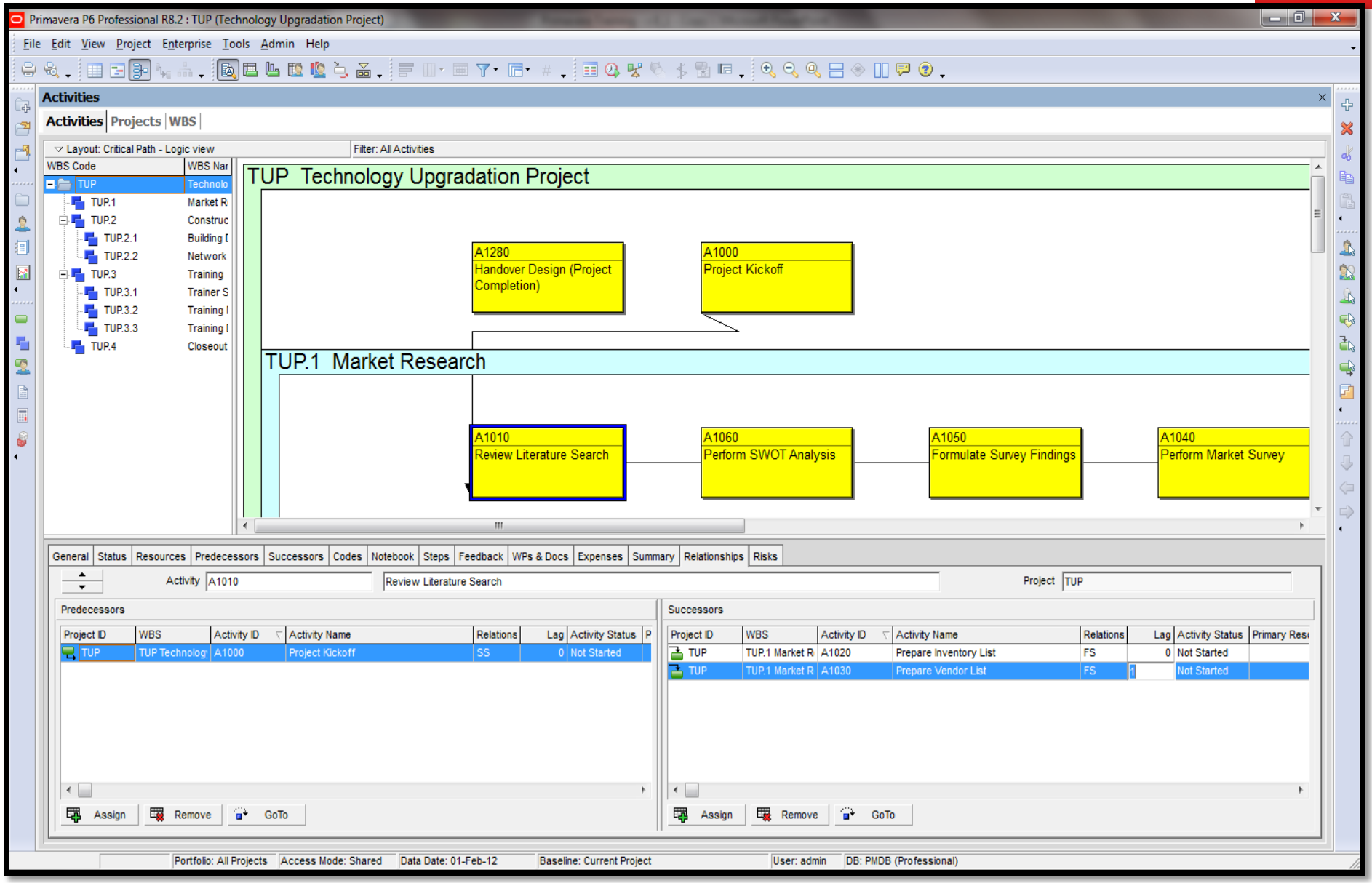
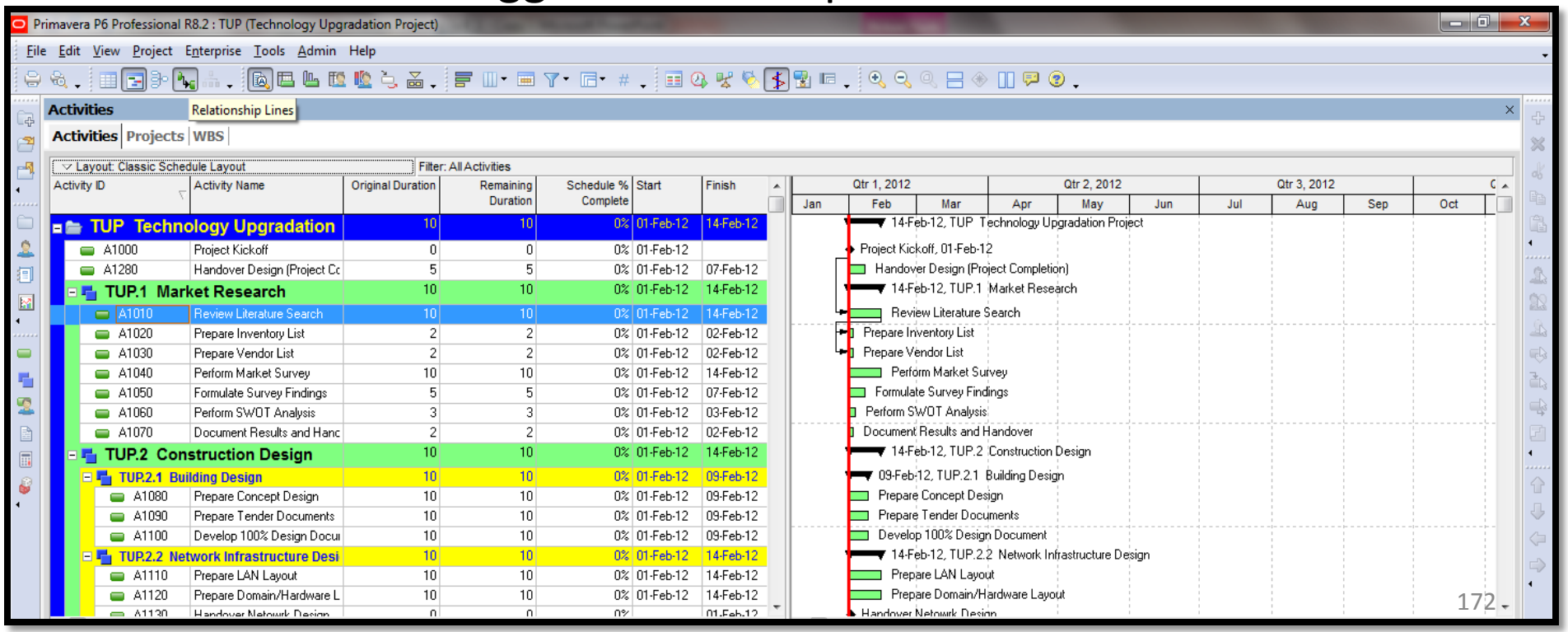
Assigning Lag

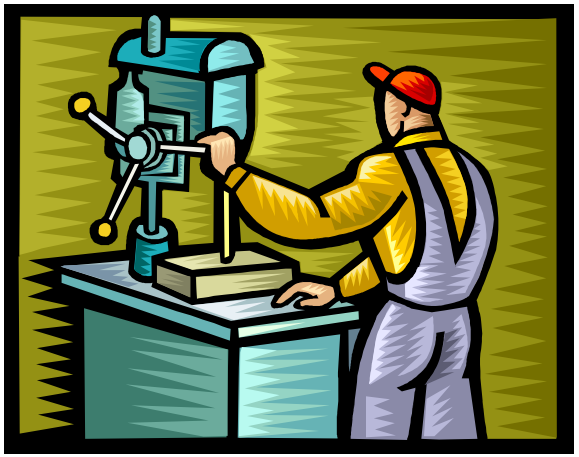


Viewing Relationship in Gantt Chart

- You can also view/ modify relationships in the Activity Table and Gantt Chart:
  - *Activity Table* – You can see Predecessor and Successor columns
  - *Gantt Chart* – Click the Relationship Lines icon on the Toolbar to toggle relationship lines on and off.



WORKSHOP
Creating Relationships



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Exercise: Create Relationships

Activity ID	Activity Name	Original Duration	Predecessors	Relationship Type
A1000	Project Kick-off	0		
A1010	Review Literature Search	10	A1000	SS
A1020	Prepare Inventory & Vendor List	4	A1010	FS with Lag 1
A1030	Perform Market Survey	10	A1020	FS
A1040	Formulate Survey Findings	5	A1030	FS
A1050	Perform SWOT Analysis	3	A1040	FS
A1060	Document Results and Handover	2	A1050	FS
A1070	Prepare Concept Design	10	A1060	FS
A1080	Prepare Tender Documents	10	A1070	FS
A1090	Develop 100% Construction Document	10	A1080	FS
A1100	Prepare LAN Layout	10	A1090	FS
A1110	Prepare Domain/ Harwdware Layout	10	A1100	FS
A1120	Handover Network Design	0	A1110	FS

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Exercise: Create Relationships

Activity ID	Activity Name	Original Duration	Predecessors	Relationship Type
A1130	Prepare and Review RFP/ Advertisement	5	A1070	SS with Lag 10
A1140	Open Technical Bids	0	A1130	FS with Lag 5
A1150	Review and Score Technical Bids	10	A1140	FS
A1160	Open Financial Bids	0	A1150	FS
A1170	Negotiate with Bidders	5	A1160	FS
A1180	Award Contract	0	A1170	FS
A1190	Prepare and Review Draft Material	8	A1180	FS
A1200	Finalize Training Material with Client	5	A1190	FS
A1210	Print Training Material	4	A1200	FS
A1220	Deliver Training Course	5	A1210	FS
A1230	Prepare & Submit Assessment Report	8	A1220	FS
A1240	Prepare Closeout Documentation	10	A1230	FS
A1250	Design Handover (Project Completion)	0	A1240	FS

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Lesson Review

- Use Precedence Diagramming Method (PDM) to create a Network Logic Diagram and to show relationships between activities. Create logical relationships between activities by specifying predecessor and successor activities.
- Four relationship types exist, namely: Finish-to-Start, Start-to-Start, Finish-to-Finish, and Start-to-Start. The default relationship type is Finish-to-Start (FS).
- Use Lag to specify a delay between an activity and its successor.
- You can create relationships in Activity Network via a graphical display, or in the Relationships tab in Activity Details.

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Scheduling

Lesson 9

Scheduling

- Objectives
  - Perform a forward and backward pass
  - Describe float and its impact on a schedule
  - Identify loops and open ends
  - Calculate a schedule
  - Analyze the scheduling log report

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Critical Path Method Scheduling

- The ***Critical Path Method (CPM)*** scheduling technique is utilized to calculate project schedules. CPM uses activity durations and relationships between activities to calculate schedule dates.
- This calculation is done in two passes through the activities in a project:
  - Forward Pass
  - Backward Pass
- Critical Path
  - The critical path is the series of activities that determines a project's completion date.
  - The duration of activities on the critical path controls the duration of the entire project. A delay to any of these activities will delay the Finish Date of the entire project.
  - Critical activities are defined by either the Total Float or the Longest Path in the project network.

Data Date

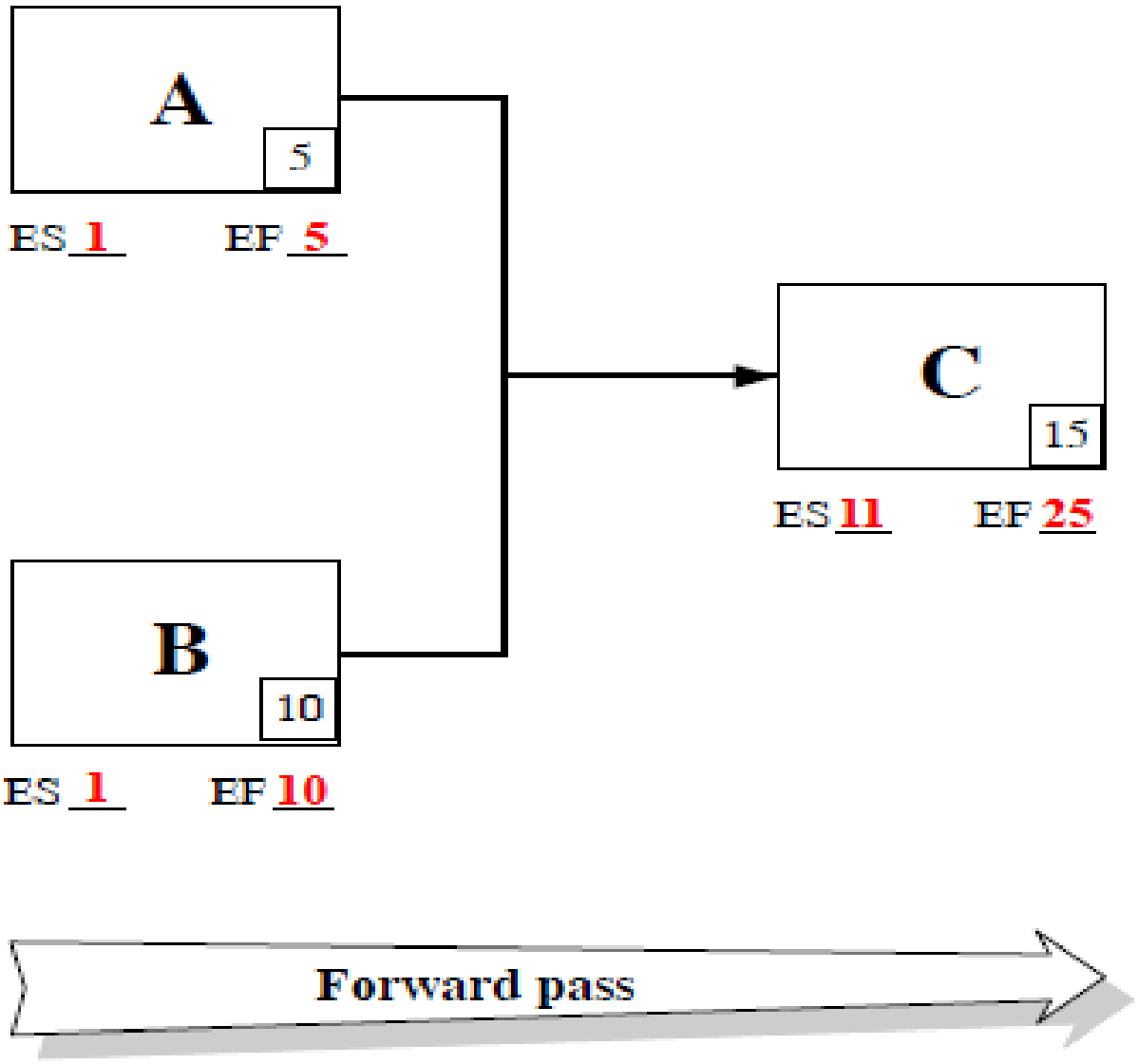
- The ***Data Date*** is the date that is utilized as the starting point for schedule calculations. It is the date used to schedule all remaining work.
- Duration the Planning Phase the data date should match the project Start Date.

Scheduling – Forward Pass

- The ***forward pass*** calculates an activity's early dates
- Early dates are the earliest times an activity can start and finish once its predecessors have been completed

- The calculation begins with the activities without predecessors
- Early Start (ES) + Duration - 1 = Early Finish (EF)

Scheduling – Forward Pass

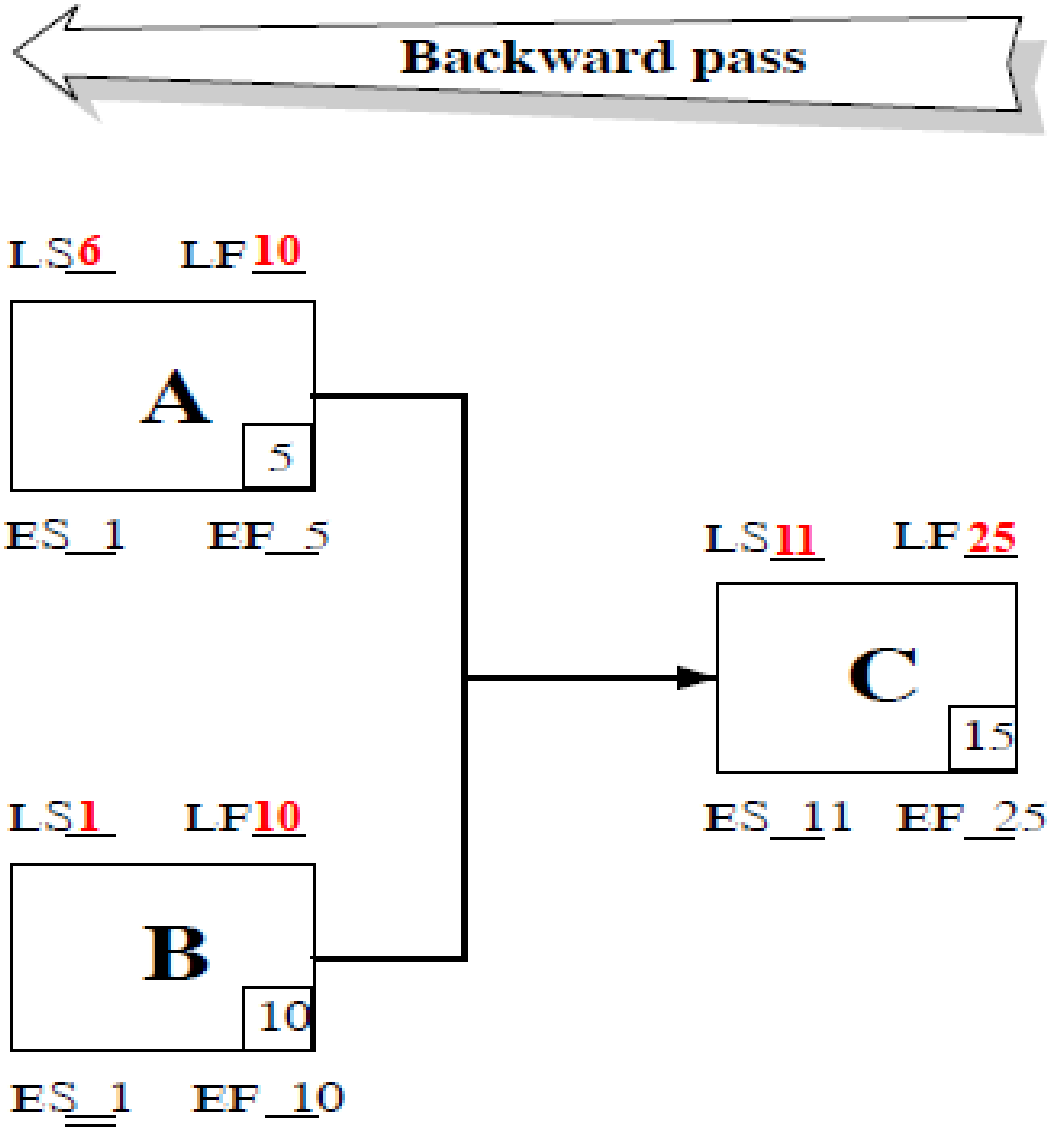


Scheduling – Backward Pass

- The ***backward pass*** calculates an activity's late dates
- Late dates are the latest times an activity can start and finish without delaying the end date of the project

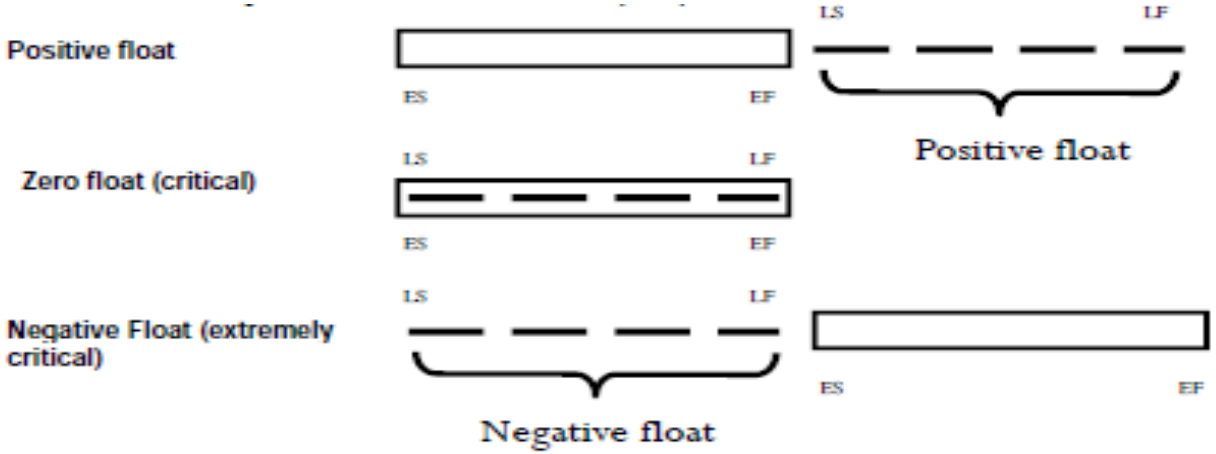
- The calculation begins with the activities without successors
- For projects without a Must Finish By date, activities without successors are assigned a Late Finish equal to the latest calculated Early Finish date
- Late Finish (LF) - Duration + 1 = Late Start (LS)

Scheduling – Backward Pass



Scheduling - Total Float

- ***The total amount of time that a schedule activity may be delayed from its early start date without delaying the project finish date or violating a schedule constraints.***
- The difference between an activity's late dates and early dates
- Activities with zero Total Float are critical
- Late date - Early date = Total Float (TF)



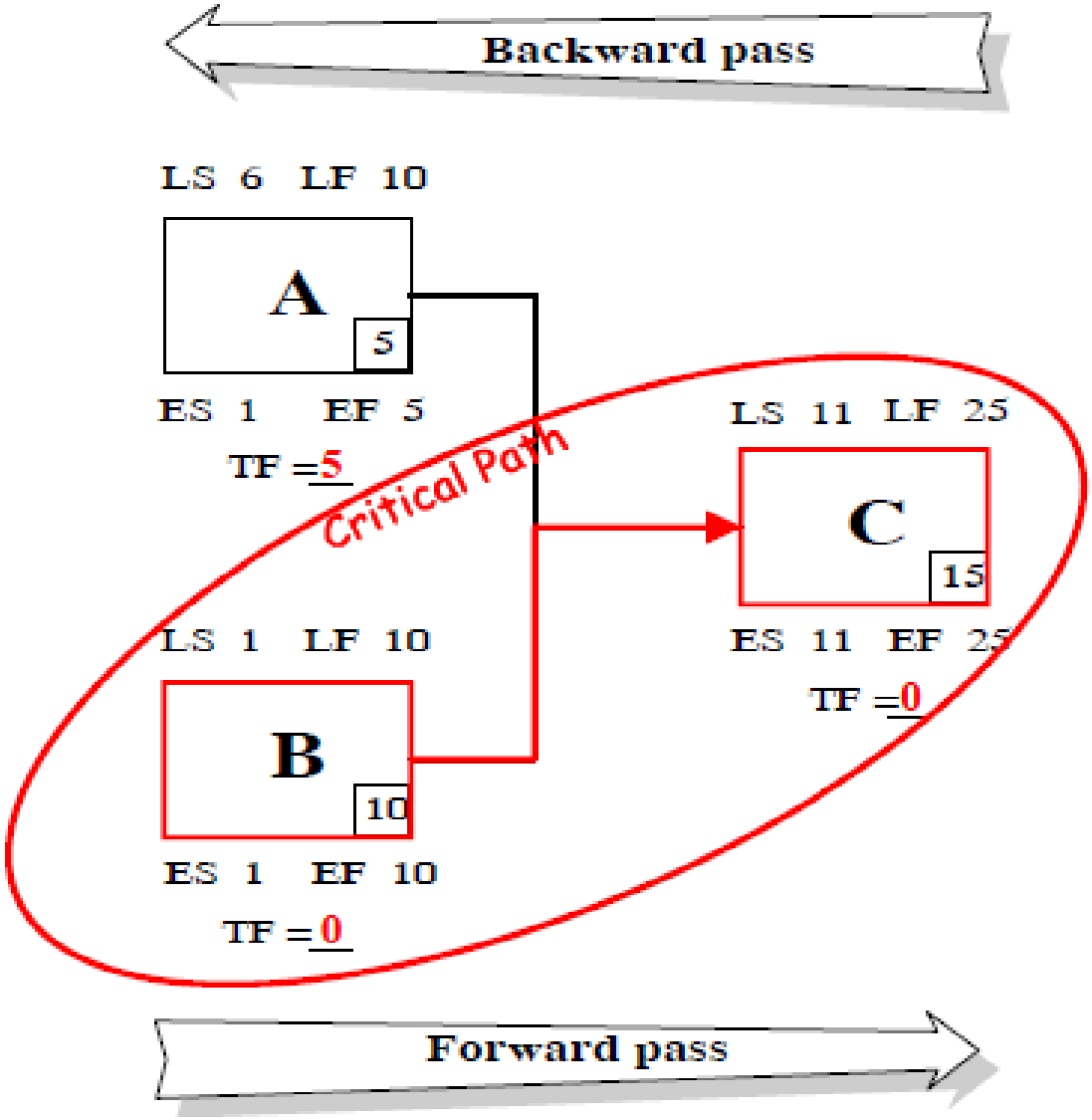
- The activity's total Float is automatically calculated each time you schedule the project. You cannot edit an activity's float values directly.

Scheduling – Free Float

- ***The amount of time that schedule activity can be delayed without delaying the early start date of immediately following schedule activities.***
- It is calculated by subtracting the early finish date of the activity from the earliest start date of the closest of its successor.

- Critical activities has zero free float.
- Free Float cannot be negative.

Scheduling – Passes & Float



Scheduling – Backward Pass with Required Finish

- One of the most common project scenarios is a required finish date for the project
- Used only during the backward pass
- Required finish date specifies when the project must finish regardless of the network's duration and logic

- Late Finish - Duration + 1 = Late Start

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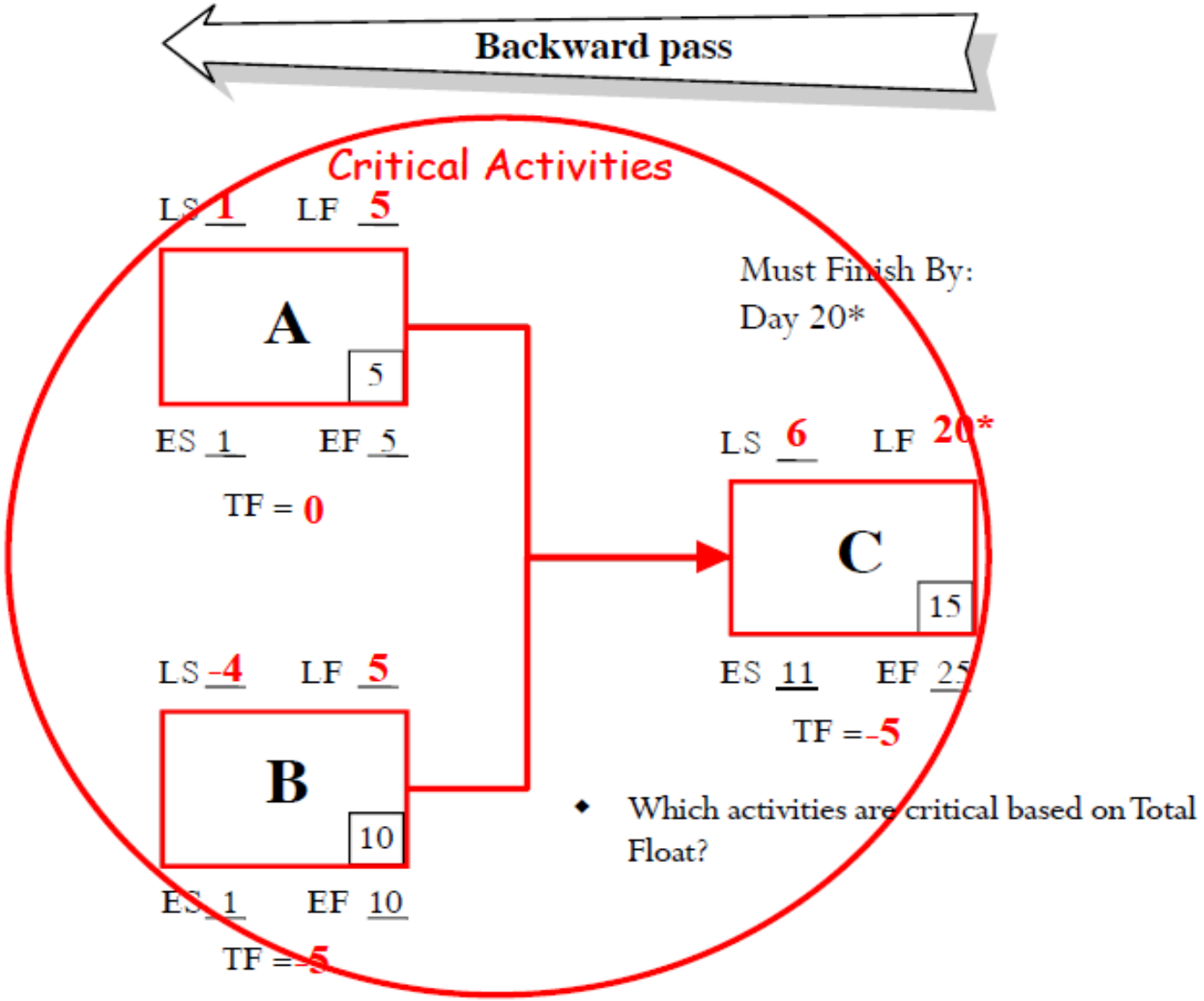
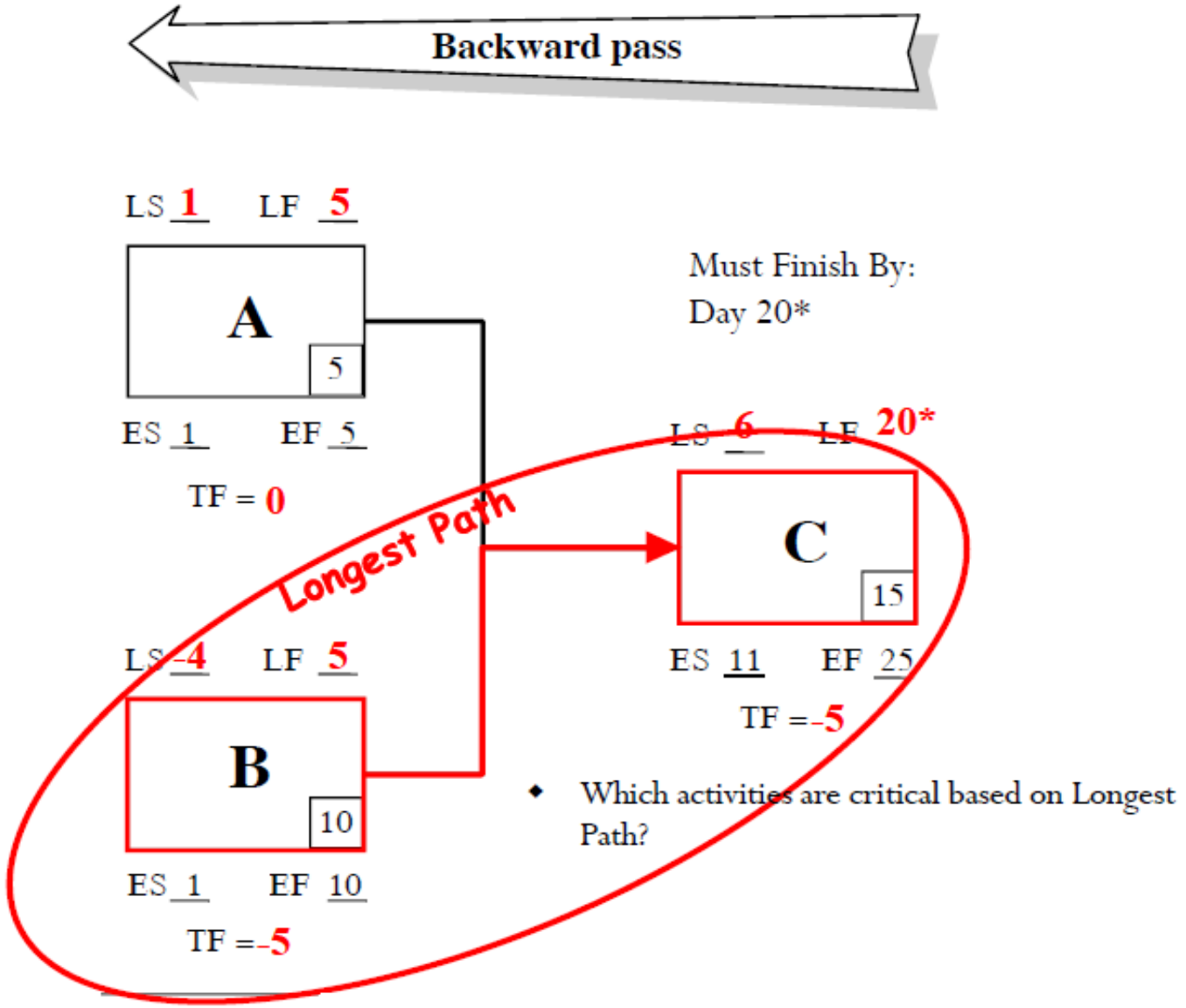
Scheduling – Backward Pass with Required Finish

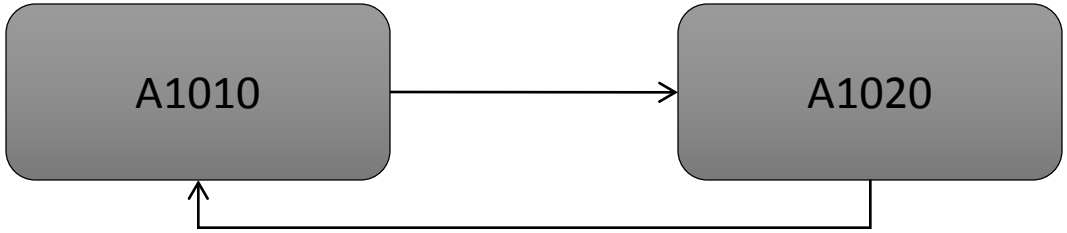


Scheduling – Backward Pass with Required Finish



Scheduling – Circular Relationships

- ***Loops*** indicate circular logic between two activities.
- Primavera will not calculate a schedule until the loop is eliminated.



- To eliminate a loop:
  - Determine proper logic
  - Re-run the schedule

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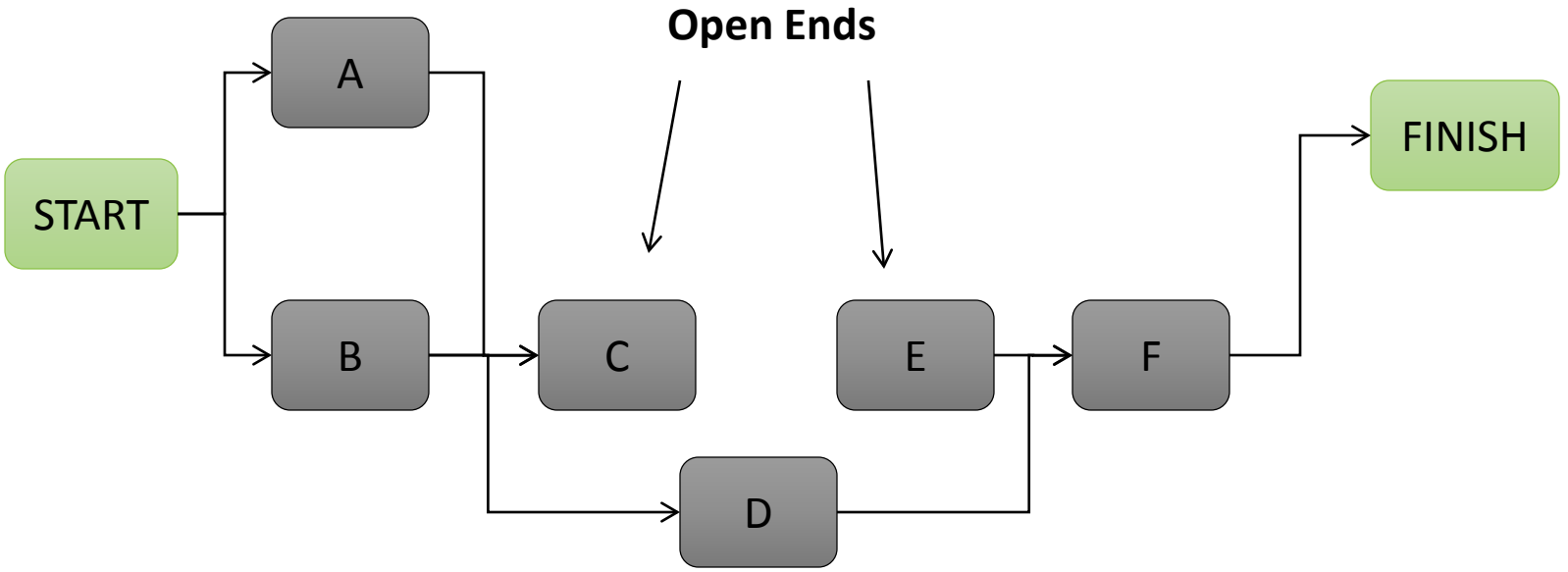
Scheduling – Open Ends

- ***Open Ends*** are activities without a predecessor or successor:
  - No Predecessor: Activity uses Data Date as its Early Start
  - No Successor: Activity uses Project Finish as its Late Finish
- Open-ended activities can portray an unrealistic amount of positive Total Float.



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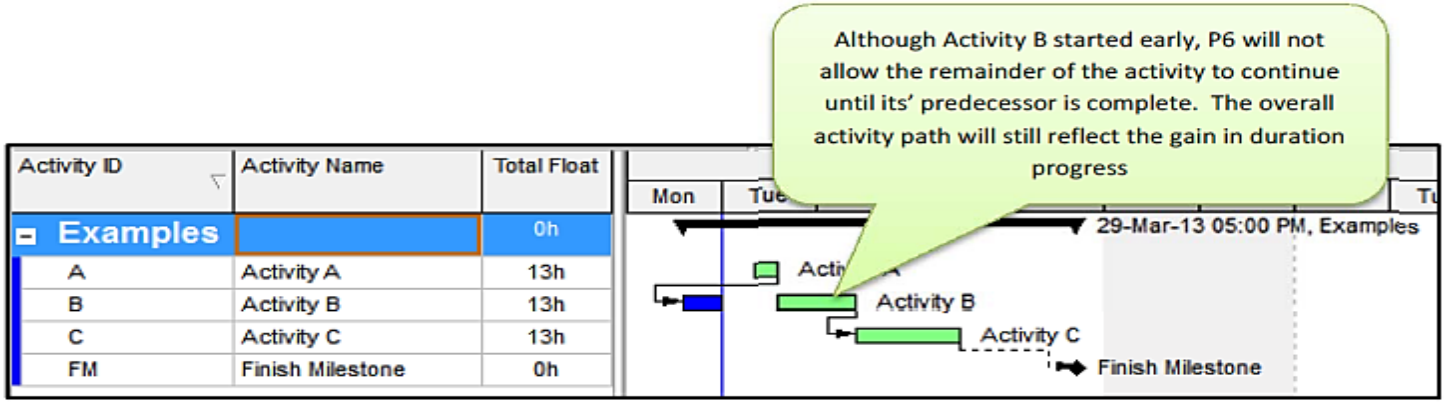
Out-of-Sequence Activities

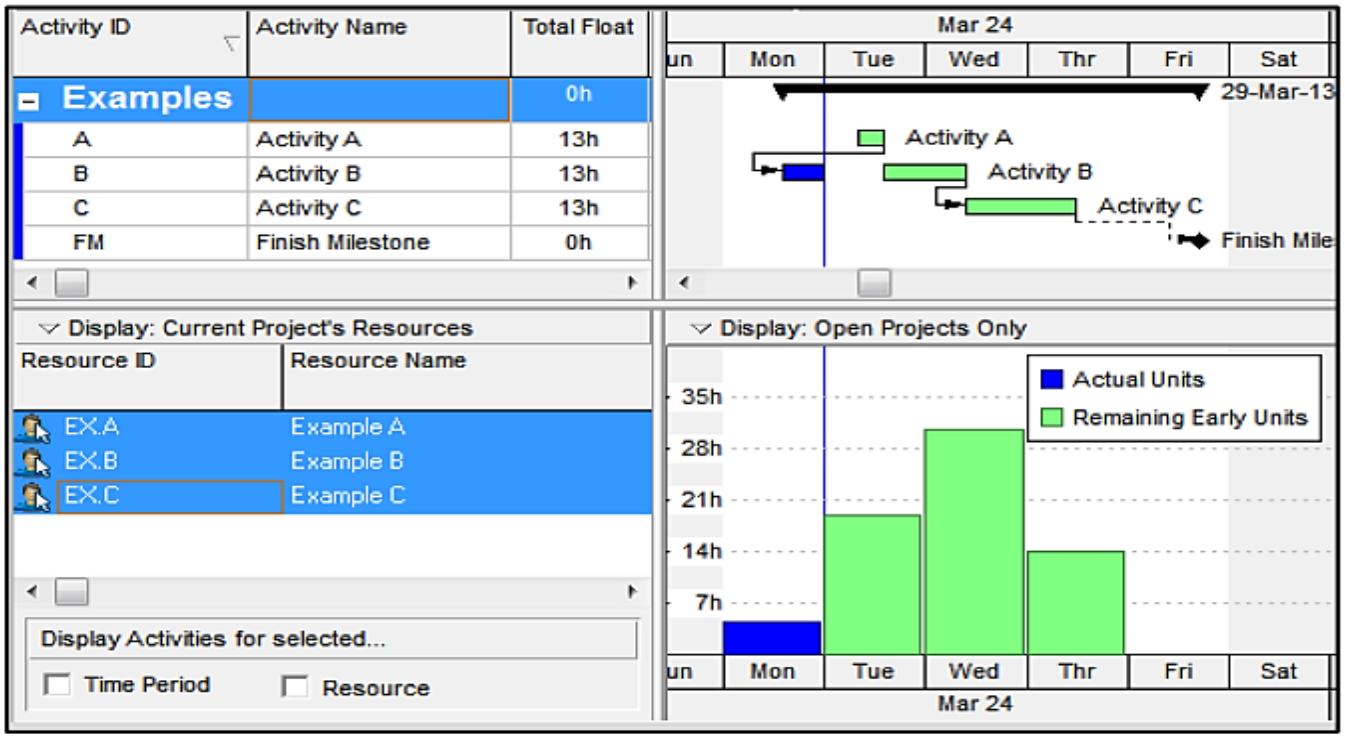
- Retain Logic
- Progress Override
- Actual Start

Retained Logic: The remaining duration of a progressed activity is not scheduled until all predecessors are complete. It also prevents tasks from "front-loading" since the remainder of the work is held out.

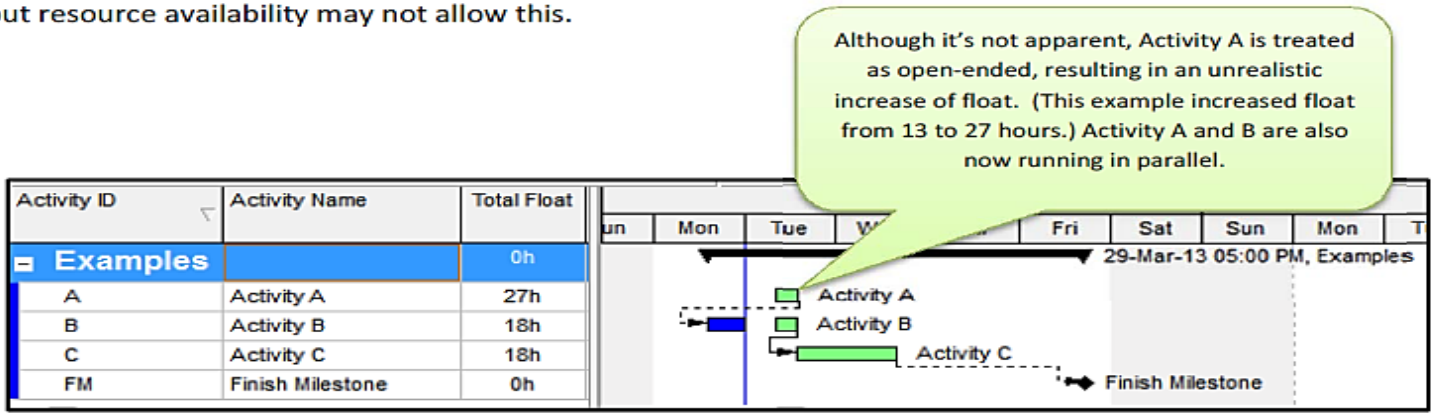


As you can see, even though Activity B started early, P6 will not allow the remainder of the activity to continue until its predecessor Activity A is complete.

The staffing plan below shows how Retained Logic prevents "front end- loading".

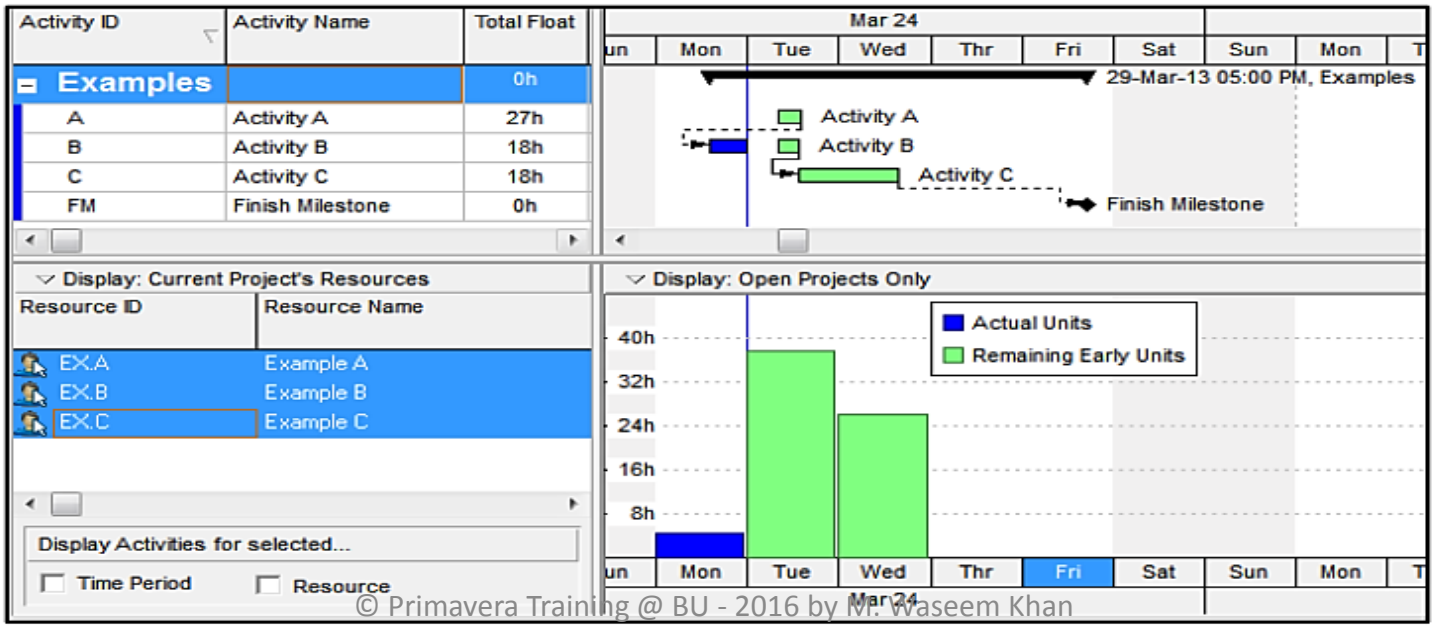


Progress Override: Network logic is ignored and Activity B can progress without delay. Although the predecessor logic remains intact, **the relationship is ignored and the predecessor is treated as if it has an open end, resulting in unrealistic positive float.** It also shows the task now capable of running in parallel, but resource availability may not allow this.



This type of scheduling does not prevent "front end-loading" which could lead to an increased staffing plan or improper staffing of the work.

As you can see, Activity B is now running in parallel with Activity A. Activity C was originally scheduled to Finish on March 28th, but is now scheduled to Finish on March 27th; doing so has pulled all scheduled work back and increased the staffing.



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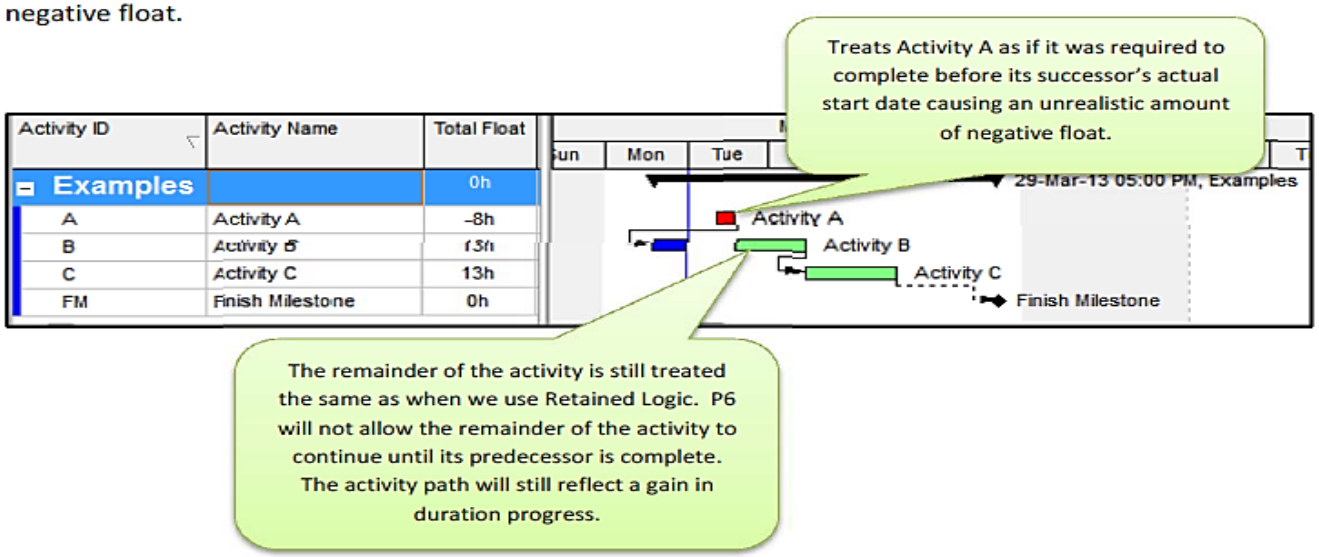
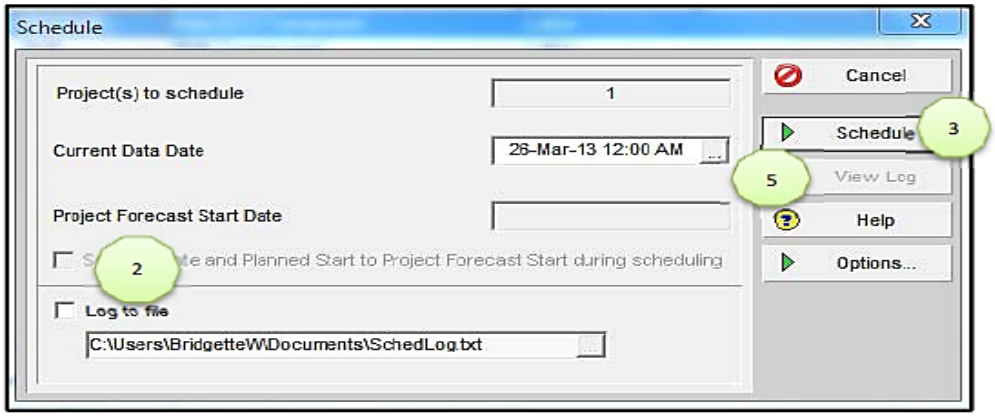
Actual Dates: Similar to Retained Logic, but the actual dates are used to calculate the forward and backward pass and treats the actual dates similar to constraints. The result can be an unrealistic amount of negative float.



Viewing the Schedule Log will provide details about your project and its settings. Out-of-sequence activities are one of these items that can be viewed by running the log.

To view the Schedule Log for your project follow the steps below:

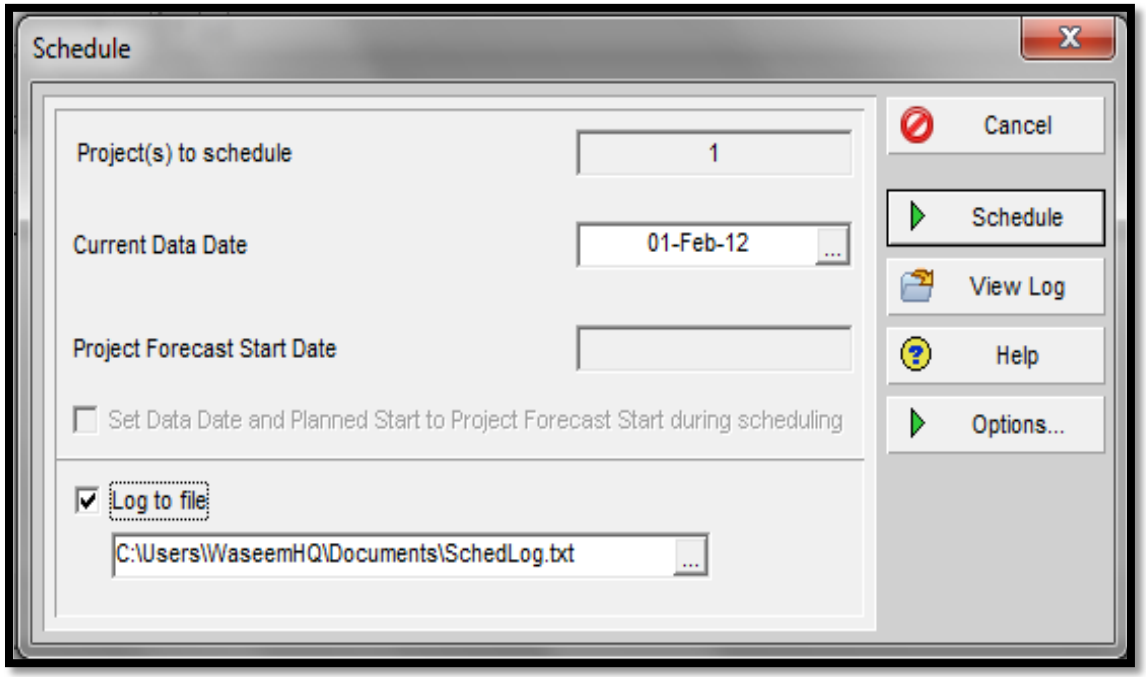


1. Click F9 on your Keyboard
2. Check the Log to file box
3. Click Schedule
4. Click F9 on your Keyboard again
5. Now that Log to file location has been selected you can select View Log

Scheduling the Project

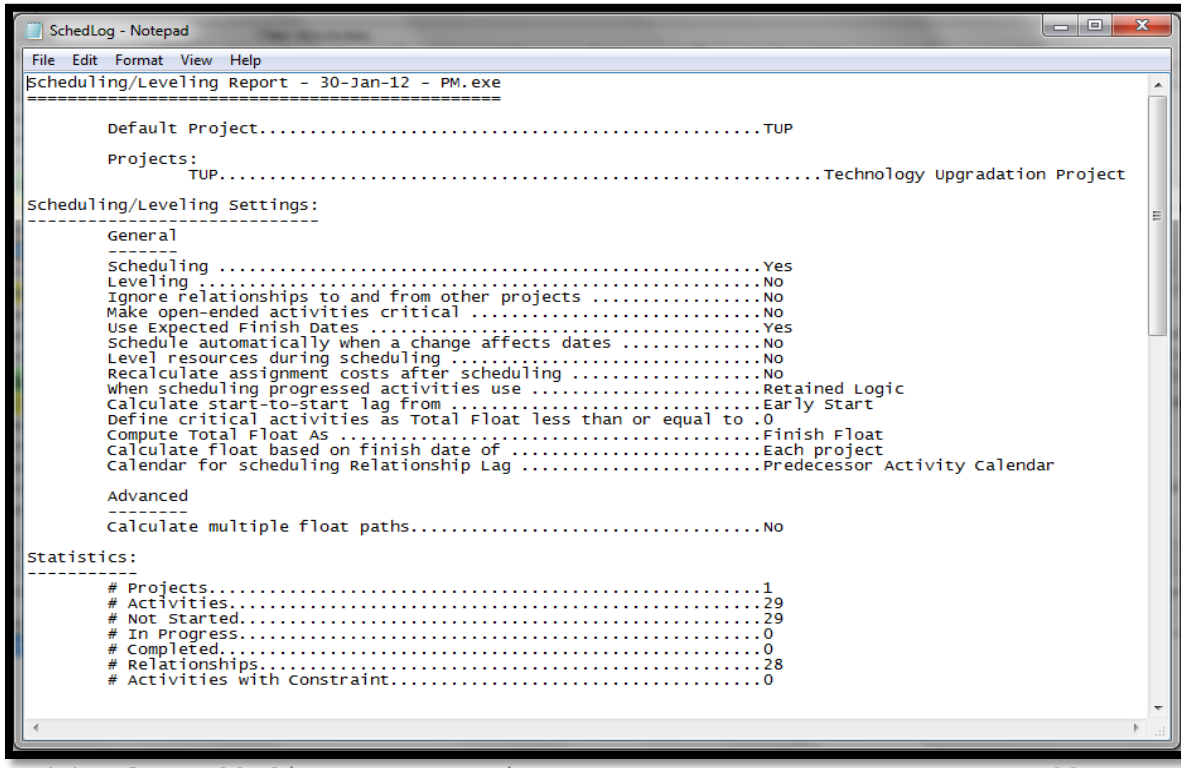
- When you schedule a project, activity dates are calculated according to durations and logic.
- Mark the Log to file checkbox to record scheduling results in a log file (.txt).
- After you schedule the project, note the change in the position of activities on the Gantt Chart. Activities are displayed according to their calculated start and finish dates. Critical activities are displayed in red.

- Exercise
  - Steps
    - Confirm you are in Activities Window.
    - In the Tool menu, click Schedule
    - Verify the date in the Current Data Date
    - Check Log to File
    - Click Schedule



Schedule Log

- The ***Schedule Log*** records scheduling results, including:
  - Scheduling/ Leveling Settings
  - Statistics
  - Errors
  - Warnings
  - Schedule/ Leveling Results
  - Exceptions



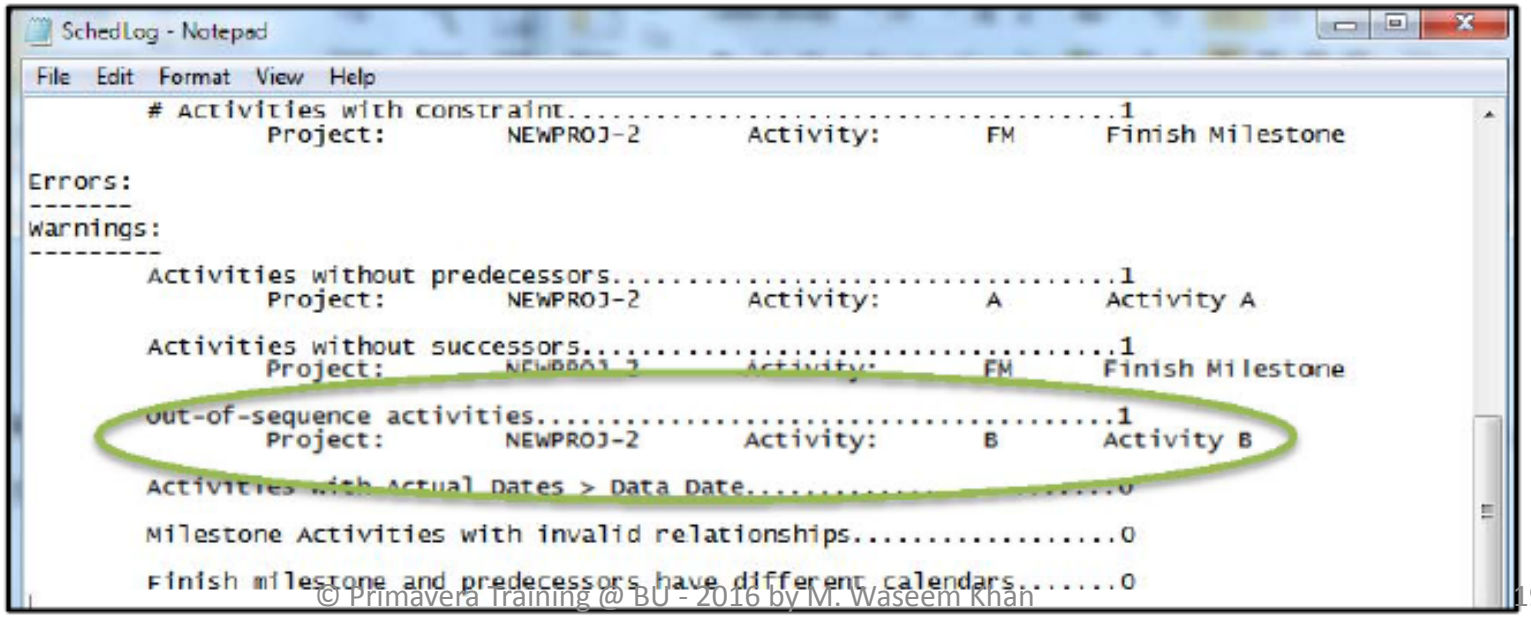
- Exercise
  - Steps
    - In the Tool menu, click Schedule
    - Click View Log

Schedule Log *(Out-of-Sequence Activities)*

Viewing the Schedule Log

The Schedule Log records scheduling results, including:

- Scheduling / leveling settings
- Statistics
- Critical activities
- Errors, warnings (Out-of-sequence activities)
- Scheduling / leveling results
- Exceptions



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Schedule Log

- Find-out the problems in the Schedule Log
- We have relationship problems
- Now fixing these problems

Driving Relationships

- ***An activity may have a relationship from a predecessor that determines its Early Start. This logic-tie is called a driving relationship.***

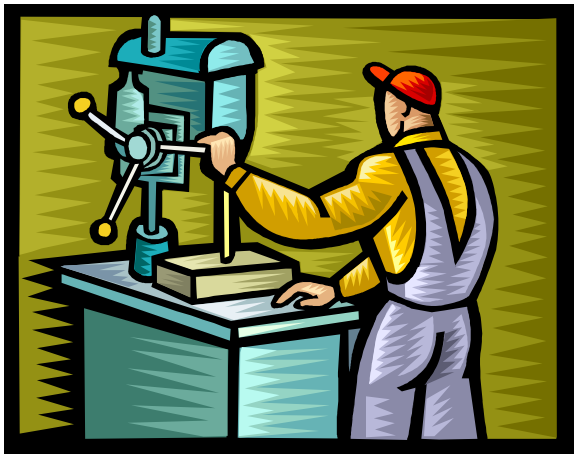
  - A solid relationship line indicates a driving relationship

    _____

  - A dashed relationship line indicates a non-driving relationship

    ----

WORKSHOP
Calculating Schedule



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Lesson Review

- After relationship logic has been defined, schedule the project to determine when the activities will take place.
- Schedule dates can be calculated based on the critical path, a series of activities that determine a project's completion date.
- When scheduling using Critical Path Method (CPM), activity Early Start and Finish dates are calculated during a Forward Pass, and Late Start and Finish dates are calculated during Backward Pass.
- The Data Date is used as a starting point when scheduling all remaining work for the project.
- After scheduling activities will have a total float that represents the amount of time an activity can be delayed without delaying the project.
- After scheduling results are recorded in a Schedule Log. Problems can be seen and rectified using this log.

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Assigning Constraints

Lesson 10

Assigning Constraints

- Objectives
  - Apply an overall deadline to a project
  - Apply a constraint to an individual activity
  - Add Notebook topics to constrained activities
  - Describe the available types

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Constraints

- ***Constraints*** are the imposed restrictions used to reflect project requirements that cannot be built into the logic.
- Use constraints to build a schedule that more accurately reflects the real-world aspects of the project, provide added control to the project, and impose a restriction on the entire project or an individual activity.
- Constraints are user-imposed.
- Two constraints can be assigned to an activity.
- After applying a constraint, the project must be re-scheduled to calculate the new dates.

Constraints

- **Project Constraints**
  - Project Finish Constraints (Must Finish By)
  - Project Start Constraints (Must Start By)
- **Activity Constraints**
  - Start On or After
  - Start On or Before
  - Start On
  - Mandatory Start
  - Finish On or After
  - Finish On or Before
  - Finish On
  - Mandatory Finish
  - As Late As Possible
  - As Soon As Possible

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Constraints – Must Finish By

- Used when an overall project deadline must be met.
- Forces all activities in the project to finish by the date (and time) specified.
  - By default, the time associated to the Must Finish By date is set to 12:00 am.
  - This means that if the project must finish by the end of day on 1-Nov, assign a Must Finish By of 2-Nov.
- Must be applied in the Dates tab in Project Details.

- Exercise
  - Steps
    - Open Project, EC00515 - City Center Office Building Addition
    - In the Directory bar, click Projects
    - In the Project Table, select a

    project EC00515 - City Center Office Building Addition
    - Click the Dates tab in Project Details
    - Click Must Finish By field

    (browse button)
    - Select a date, 27-Dec-13

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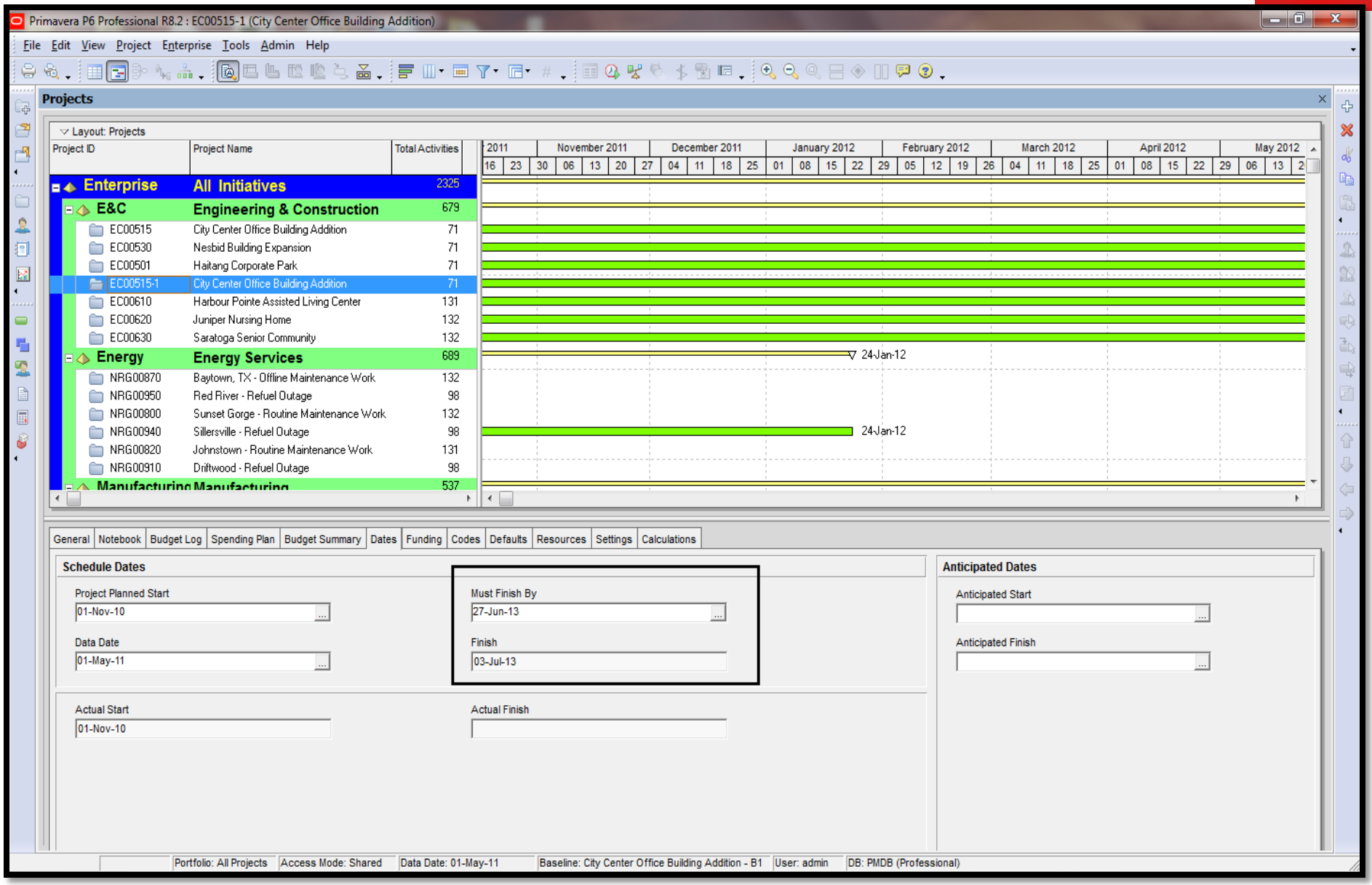
Constraints – Must Finish By



Constraints – Must Finish By

- Exercise
  - Steps
    - In the Directory bar, click Activities
    - In the Layout option bar, click Layout, Open, Classical Schedule Layout.
    - In the Tools menu, click Schedule
    - Now see Total Float column (both in Activity Table and Project Table)

Constraints – Must Start By

- Used only during the forward pass
- Required start date specifies when the project must start regardless of the network's duration and logic
- Early Start (ES) + Duration - 1 = Early Finish (EF)

Constraints – Start On or After

- Used to set the earliest date an activity can begin
- Forces the activity to start no earlier than the constraint date
- Pushes the Early Start to the constraint date
- Affects the early dates of its successors

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Constraints – Start On or After

- Exercise
  - Steps
    - Select an activity, EC1640-Install Wiring and Cable
    - Verify the Status tab is selected in Activity Details (bottom)
    - In the Primary drop-down list, select a constraint, Start On or After
    - In the Date field, click browse button
    - Select a date, 2-Jul-12
    - In the Tool menu, click Schedule

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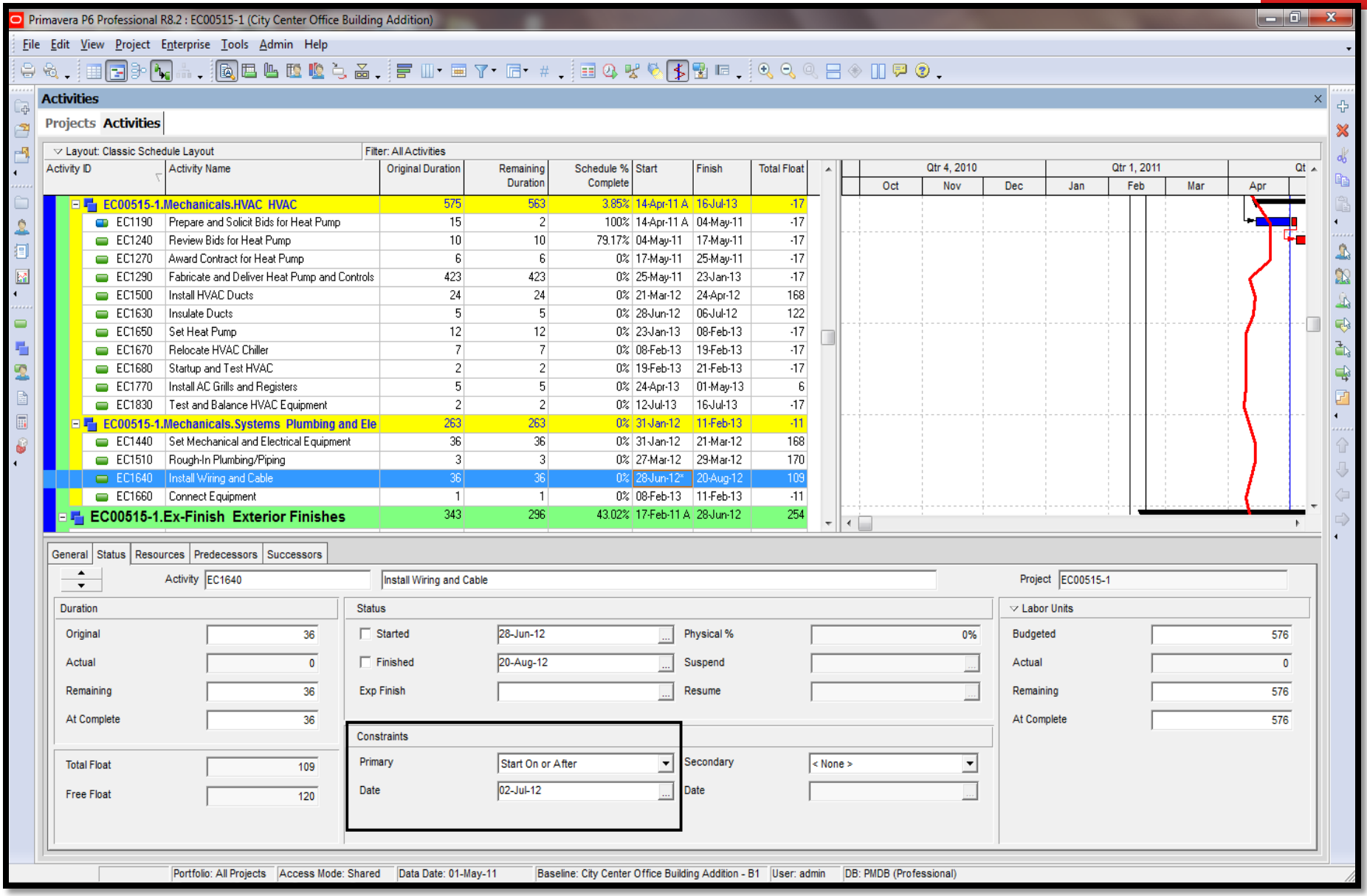
Constraints – Start On or After



Adding Notebook Topic

- When a constraint is assigned to an activity, it is recommended that you add a note to document why the constraint was assigned. You can use the Notebook tab in the Activity Details window to document these reasons.

- Exercise
  - Steps
    - Verify activity selection, EC1640-Install Wiring and Cable
    - Click the Notebook tab (bottom)
    - Click Add
    - Assign a Notebook Topic, Constraints
    - Close the Assign Notebook Topic dialog box
    - Type a description <Cables are not available until 2-Jul-12>

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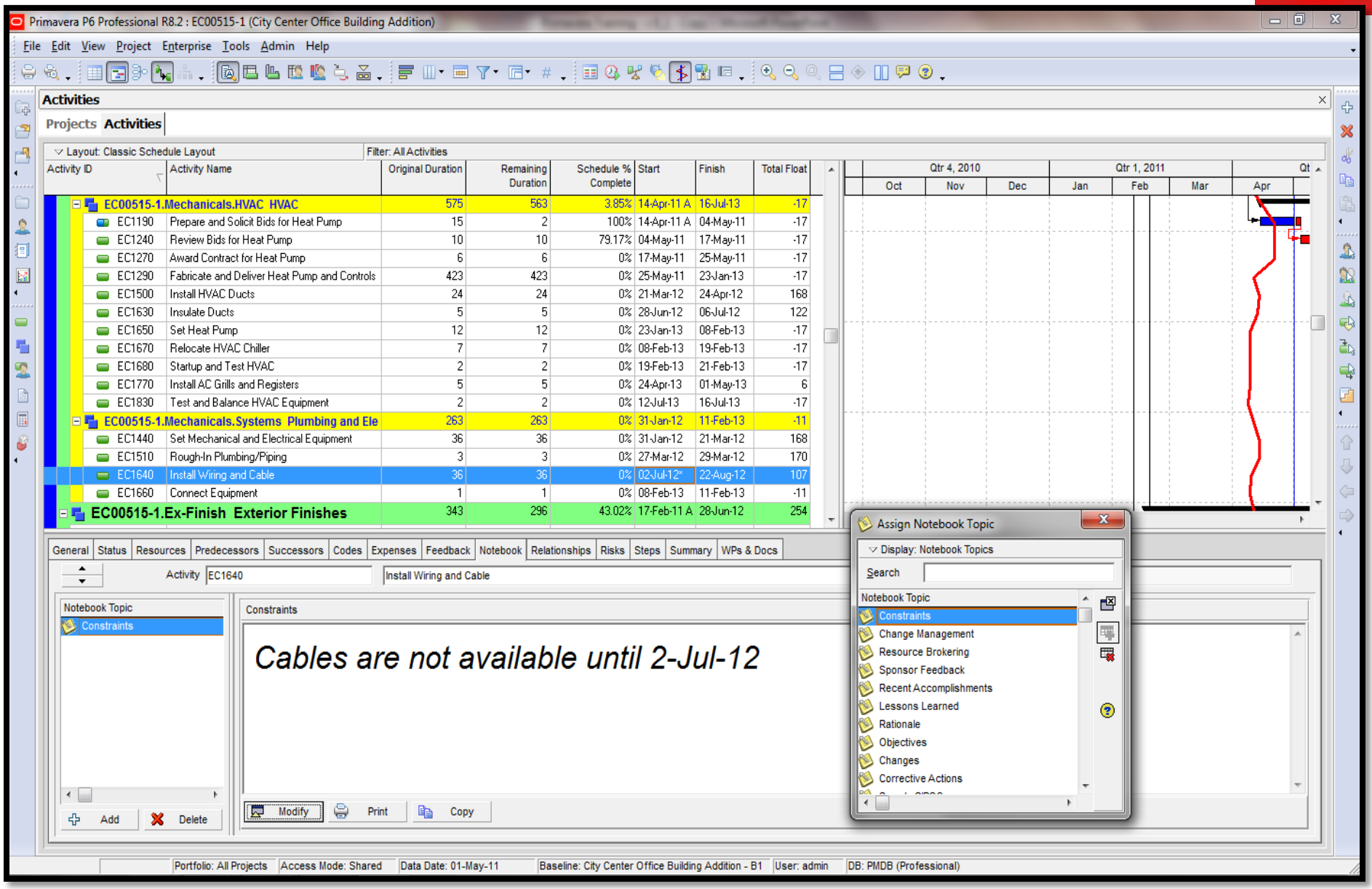
Adding Notebook Topic



Constraints – Finish On or Before

- Used to set intermediate completion points

- Forces the activity to finish no later than the constraint date
- Pulls the late finish date to the constraint date
- Affects the late dates of its predecessors

- Exercise
  - Steps
    - Select an activity, EC1740-Install Ceiling Grid
    - Click the Status tab
    - In the Primary drop-down list, select a constraint type, Finish On or Before
    - Click browse in the Date field
    - Select a date, 3-Jun-13
    - In the Tools menu, click Schedule

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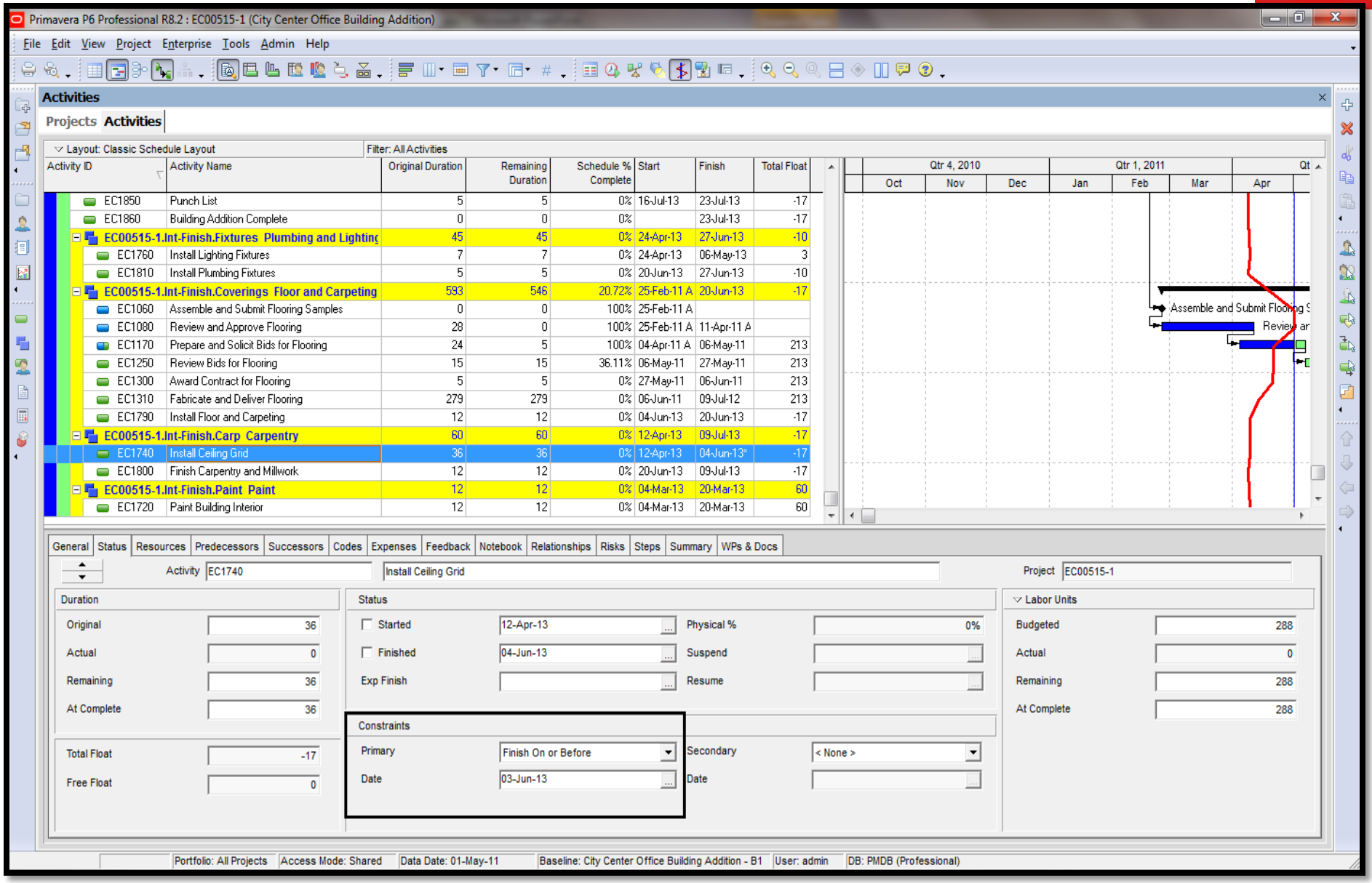
Constraints – Finish On or Before



Constraints – Start On

- Forces the activity to start on the constraint date

- Shifts both Early and Late Start dates
- Delays an Early Start or accelerates a Late Start

- Used to specify dates submitted by contractors or vendors

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Constraints – Start On or Before

- Used to set intermediate start points

- Forces the activity to start no later than the constraint date

- Pulls the late start date to the constraint date
- Affects the late dates of its predecessors

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Constraints – Mandatory Start

- Forces the activity to start on the constraint date

- Forces early and late dates to be equal to the constraint date
- Affects late dates of predecessors and early dates of successors

- May violate network logic

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Constraints – Finish On or After

- Forces the activity to finish no earlier than the constraint date

- Shifts the Early Finish to the constraint date
- Affects the early dates of its successors

- Used to prevent an activity from finishing too early

Constraints – Finish On

- Forces the activity to finish on the constraint date

- Shifts both Early and Late Finish dates
- Delays an Early Finish or accelerates a Late Finish

- Used to satisfy intermediate project deadlines

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Constraints – Mandatory Finish

- Forces the activity to finish on the constraint date

- Forces early and late dates to be equal to the constraint date
- Affects late dates of predecessors and early dates of successors

- May violate network logic

Constraints – As Late as Possible

- Delays an activity as late as possible without delaying its successors
- Shifts the early dates as late as possible
- Also called a **zero free float constraint**

Lesson Review

- Assign constraints to activities and projects to reflect real-world restrictions.
- A maximum of two constraints can be assigned to an activity (Primary and Secondary).
- The Must Finish By constraint is used when overall project deadline must be met.
- Use the Start On or After constraint to set the earliest date an activity can begin.

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Maintaining the Project Document Library

Lesson 11

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Maintaining the Project Document Library

- Objectives
  - Describe the difference between a work-product and a reference document
  - Create a document record
  - Link the document record to a project document or work-product
  - Assign the project document to an activity or WBS

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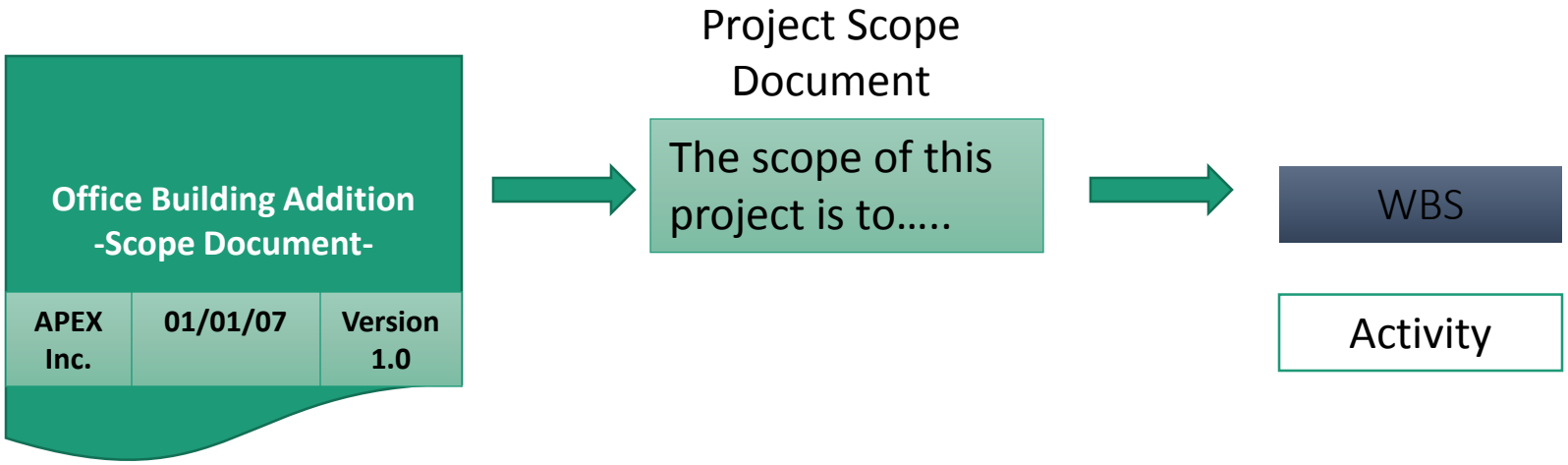
Project Documents

- The *Work Products and Documents (WPs & Docs) window* enables you to maintain general information about the project documents including links to the actual document files. Documents are organized hierarchically to enhance categorization.
- You can catalog and track project-related documents and deliverables and provide standards and guidelines for performing work on an activity.
  - Store documents on a network file server or website
  - Maintain general information about project documents such as version, revision date, and author.
  - Create a link to the actual document file (path of file).
- Documents can be designated as a work product or reference document:
  - *Work Products* – Includes project or activity deliverables that will be turned-over to the end-user or customer. E.g. CAD files, testing plans, maps etc.
  - *Reference Documents* – Includes documents that can be referenced by a project participant to provide standards and guidelines for performing work. E.g. guidelines, policies, procedures, design templates, checklists, and worksheets.

Creating a Document Record

- Documents do not reside in the Primavera Database. To access documents via Primavera, a document record must be created in the Work Products and Documents window.



1) Create Document Record

2) Establish Link to Actual Document File

3) Assign Document Record to WBS element and/or to an Activity

Creating a Document Record

- Exercise
  - Steps
    - Open a Project, City Center Office Building Addition
    - In the Directory bar, click WPs & Docs
    - In the Command bar, click Add
    - In the Title field in General tab, type a title <Construction Safety Regulations>, and then press Enter
    - In the Reference No. field, type <1918.14>
    - In the Document Category field, click browse
    - Select a document category, Regulatory/Compliance
    - In the Revision Date field, select a date, 11-Jan-07

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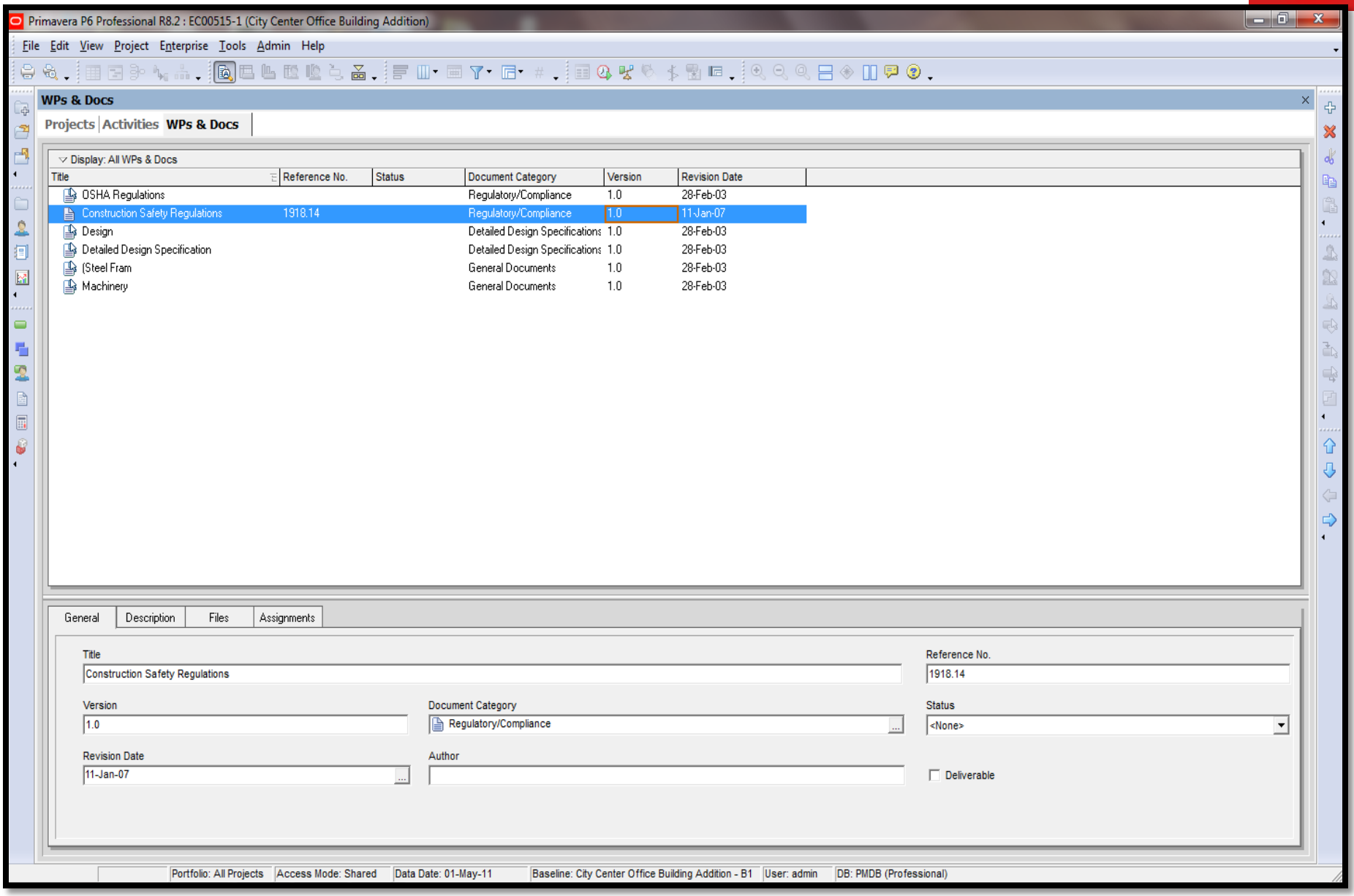
Creating a Document Record



Files Tab

- After you add a document record, you must establish a link to the document by specifying a file path.
- There are two kinds of document location references:
  - *Private Location* – References can be viewed only by Primavera client/server application users. E.g. Invoices, Purchase Orders, or Contracts.
  - *Public Location* – References can be viewed by all project participants including timesheet users. E.g. Procedure Guidelines or Project Checklists.
- Exercise
  - Steps
    - Click the Files tab
    - In the Public Location field, click browse button
    - Browse to file location (any document file)
    - In the Select File Name dialog box, click Open
    - Click Launch to view the document
    - In the File menu in Notepad, click Exit

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Assigning a Project Document

- Project Documents can be assigned to both WBS elements and activities.

- Exercise
  - Steps
    - Click Assignments tab (bottom)
    - Click Assign Activity
    - Select an activity, EC1090-Begin Building Construction
    - Click Assign button to assign the document to the activity
    - Close the Assign Activities dialog box

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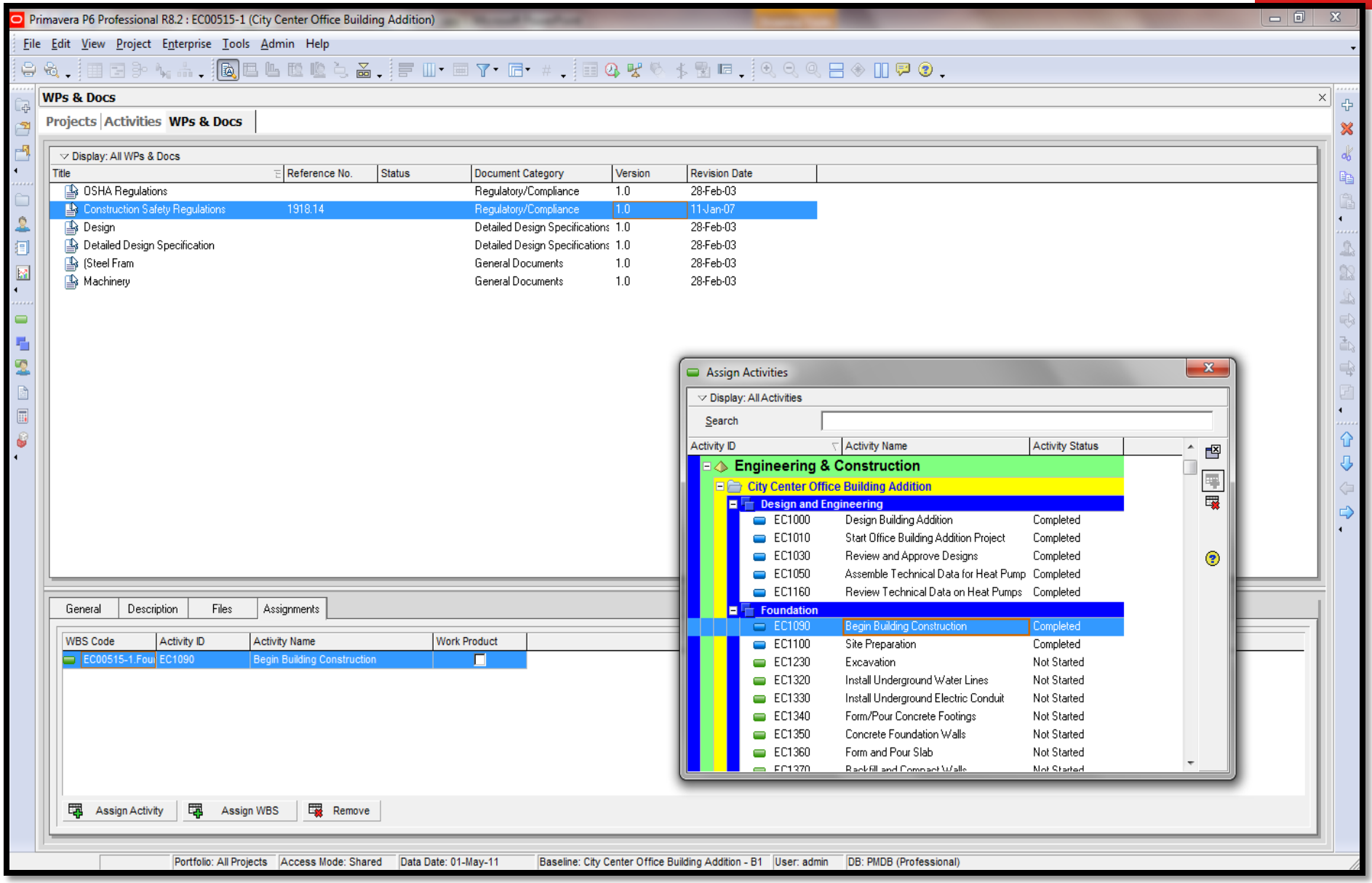
Assigning a Project Document



Assigning a Project Document

- Exercise
  - Steps
    - In the Directory bar, click Activities
    - Select an activity, EC1090-Begin Building Construction
    - In the Layout Option bar, click Layout, Open
    - Select a Layout, Classic WBS Layout, and then click Open
    - Click the WPS & Docs tab
    - Verify that the Construction Safety Regulations document has been assigned to activity EC1090-Begin Building Construction

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Viewing Document Details

- Use the ***Work Product and Document Details*** dialog box to view details about and/or open the selected work product or document. Fields in the dialog box are summarized below:
  - ***Title*** – The name of the selected work product or document
  - ***Author*** – The name of the person who created the selected the work product or document
  - ***Version*** – The selected work product or document's version number
  - ***Date*** – The entered Revision Date
  - ***Private/ Public Location*** – The work product or document's file name with complete path
  - ***Launch*** – Opens the work product or document in its native application
  - ***Description*** – A narration of the selected work product or document

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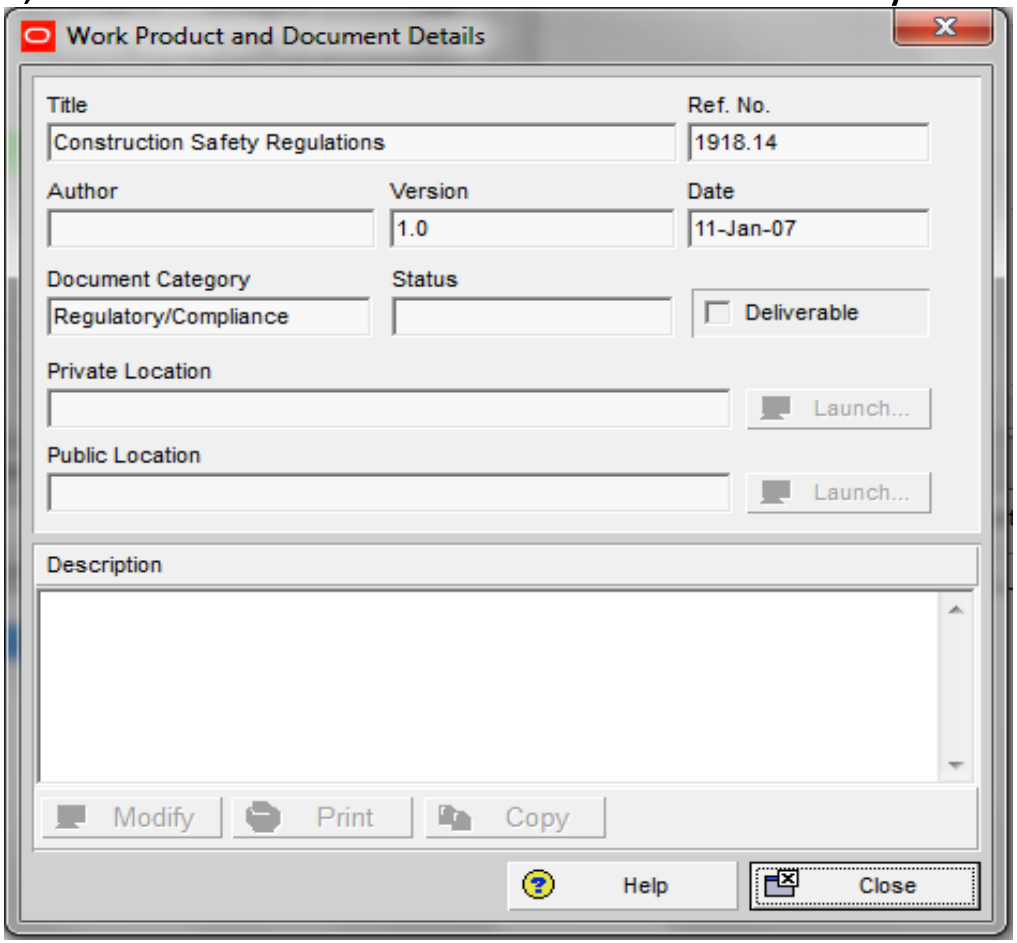
Viewing Document Details

- Exercise
  - Steps
    - In the WPs & Docs tab, select a document <Construction Safety Regulations>
    - Click Details… button
    - Click Launch button
    - Click File, Exit
    - Click Close button



Lesson Review

- Documents do not reside in the Primavera database. To access documents via Primavera, a document record must be created in the WPs & Docs window.
- After adding a document record, specify its private and/or private location. Specifying a public location enables all project participants to view the document.
- You can designate a document as a work product or reference document and assign it to an activity or WBS element.
- Maintain general information of each project document such as version, revision date, and author.

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Formatting the Schedule Data

Lesson 12

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Formatting Schedule Data

- Objectives
  - Group activities according to a specific criteria
  - Sort activities
  - Apply a filter
  - Create a filter

Grouping Data

- ***Grouping*** is a flexible way to organize data into categories that share common attributes.
- You can group data to create customized layouts. You can also use grouping to quickly view subtotal data in the group title bands, view summary bars in the Gantt Chart, and summarize data for reporting purposes.
- Grouping is available in all windows and most dialog boxes
  - Each window or dialog box has its own grouping options
  - Some windows have customized/ pre-defined groups
- Activities can be grouped by hierarchical fields such as WBS, activity codes, and project codes.
- Activities can be grouped by data fields such as dates, costs, total float, and other numeric data.

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Group & Sort Dialog Box

- The ***Group & Sort dialog box*** is used to set up the organization of activities on screen:
  - Show Group Totals – Choose to display or hide the total values for grouping bands. If you mark the Show Group Totals checkbox, you have the additional options to Show Grand Totals and Show Summaries Only.
    - ***Show Grand Totals*** – Mark to display a grand total row at the top of the layout
    - ***Show Summaries Only*** – Mark to hide the activities within each group title band
  - Shrink Vertical Grouping Bands – Minimize the width of the vertical grouping bands displayed in the Activity Table. This setting is available in windows that have the Group and Sort By, Customize Layout option

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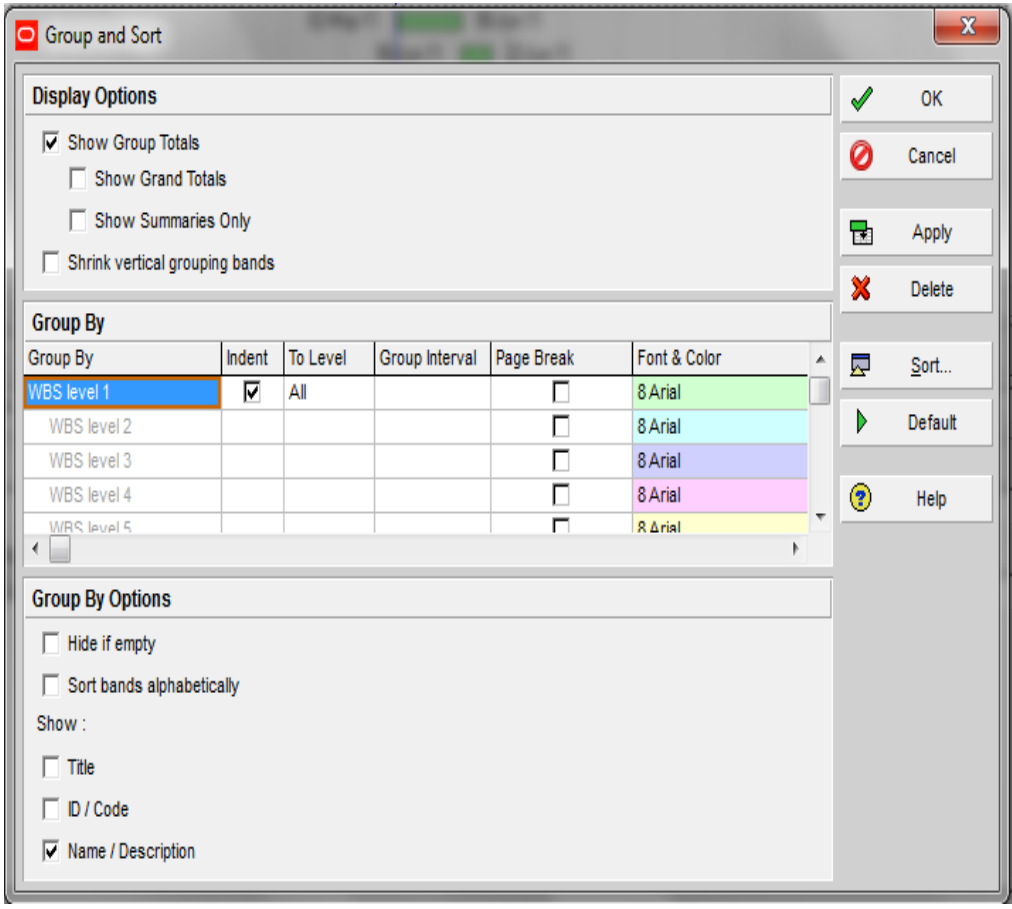
Group & Sort Dialog Box

- Group By – Lists data items used to group the current display
  - *Indent* – Available if the selected data item is hierarchical
  - *To Level* – Indicates the no. of levels to display when grouping by a hierarchical data item
  - *Group Interval* – Indicates the interval by which you want to group the selected data item
  - *Font & Color* – Displays the font/color for each group title band
  - *Hide if empty* – Mark to hide the group title bands that do not contain activities
  - *Sort Bands Alphabetically* – Mark the checkbox to sort the grouping bands alphabetically rather than their order in their respective hierarchy. This checkbox is disabled for any grouping that is not hierarchical
  - *Show Title* – Mark to display the name of the field that the layout is grouped by; the value is also displayed
  - *Show ID/Code* – Mark the checkbox to display the ID or code value on the grouping band
  - *Show Name/Description* – Mark the checkbox to display the name or description on the grouping band

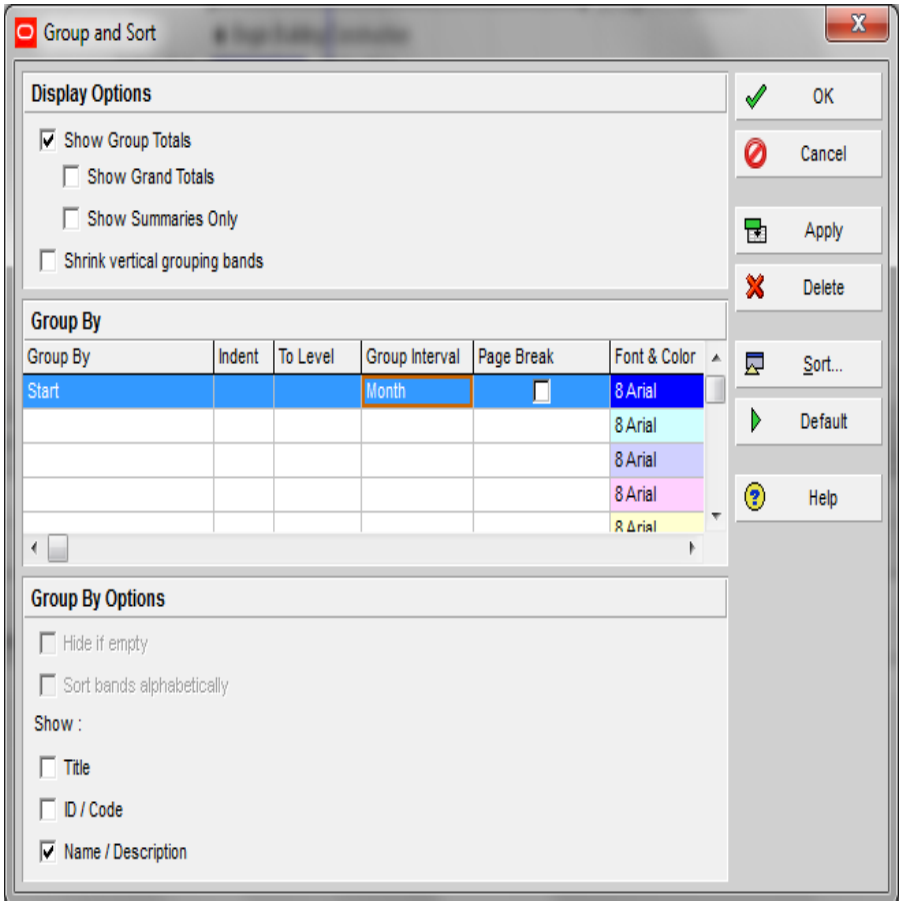
Group & Sort Dialog Box

- Exercise
  - Steps
    - Open a project, EC00515
    - Confirm you are in Activities window
    - In the Layout option bar, click Layout, Open
    - Select a layout, Classic WBS Layout, and click Open
    - In the Layout option bar, click Group & Sort…



Grouping By Date

- Grouping a layout by date allows you to identify activities that are scheduled to occur within a particular time period.



- Exercise
  - Steps
    - In the Group By column, select Start
    - In the Group Interval column, select Month
    - Click Ok
    - In the Layout option bar, click Layout, Save As
    - Type a Layout name <Monthly Schedule>, and then click Save

Collapsing/Expanding Grouped Data

- Collapse group bands are used to control the level of detail you are viewing. This functionality is especially useful if you want to focus on a specific portion of the layout.
- In the Activity Table, view summary information for the displayed columns.
- In the Gantt Chart, summary bars are displayed to represent the Start/Finish dates in each group band.

- Exercise
  - Steps
    - In the Layout option bar, click Collapse All
    - Click + (sign) to expand a group band

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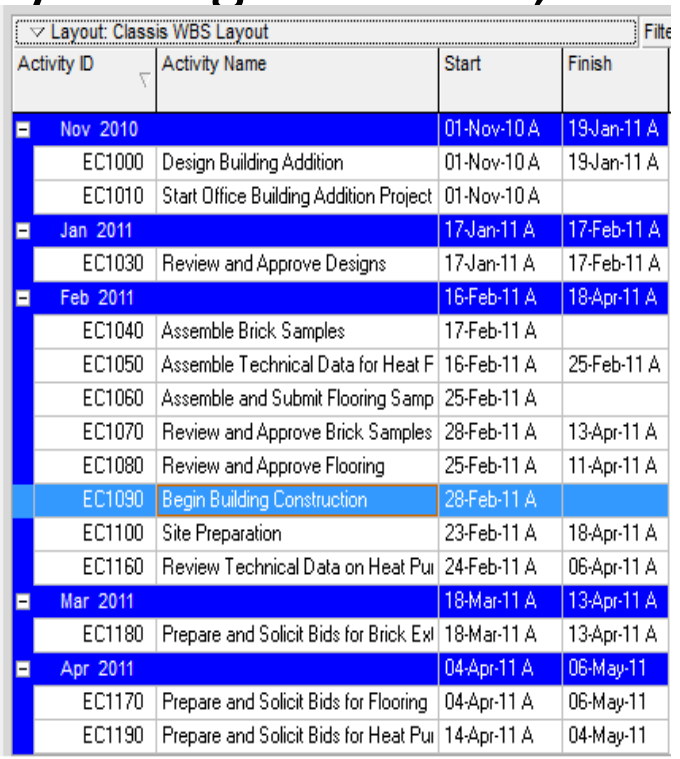
Sorting Activities

- ***Sorting*** determines the sequence in which activities are listed within each grouping band. Based on the data item you choose, you can sort alphabetically, numerically, or chronologically.
- Sorting by Single Criteria – To sort by a single criteria, click the data item's column title
  - indicates sort in ascending order
  - indicates sort in descending order



Layout: Classis WBS Layout

Activity ID	Activity Name	Start	Finish
Nov 2010		01-Nov-10 A	19-Jan-11 A
EC1000	Design Building Addition	01-Nov-10 A	19-Jan-11 A
EC1010	Start Office Building Addition Project	01-Nov-10 A	
Jan 2011		17-Jan-11 A	17-Feb-11 A
EC1030	Review and Approve Designs	17-Jan-11 A	17-Feb-11 A
Feb 2011		16-Feb-11 A	18-Apr-11 A
EC1040	Assemble Brick Samples	17-Feb-11 A	
EC1050	Assemble Technical Data for Heat F	16-Feb-11 A	25-Feb-11 A
EC1060	Assemble and Submit Flooring Samp	25-Feb-11 A	
EC1070	Review and Approve Brick Samples	28-Feb-11 A	13-Apr-11 A
EC1080	Review and Approve Flooring	25-Feb-11 A	11-Apr-11 A
EC1090	Begin Building Construction	28-Feb-11 A	
EC1100	Site Preparation	23-Feb-11 A	18-Apr-11 A
EC1160	Review Technical Data on Heat Pu	24-Feb-11 A	06-Apr-11 A
Mar 2011		18-Mar-11 A	13-Apr-11 A
EC1180	Prepare and Solicit Bids for Brick Ext	18-Mar-11 A	13-Apr-11 A
Apr 2011		04-Apr-11 A	06-May-11
EC1170	Prepare and Solicit Bids for Flooring	04-Apr-11 A	06-May-11
EC1190	Prepare and Solicit Bids for Heat Pu	14-Apr-11 A	04-May-11

- Exercise
  - Steps
    - Click on column title, Original Duration

Filtering Activities

- A *filter* is a set of instructions that determines which activities should display on screen.
- Filters enable you to create customized layouts by limiting the no. of activities displayed; helping you to focus on critical activities.
- A set of pre-defined filters is provided, however user-defined filters can also be created.
- Filters are divided into the following groupings:
  - Default
    - Available to all users
    - 15 pre-defined filters
    - Cannot be deleted or modified
  - Global
    - Available to all users
  - User-defined
    - Available to current user for all accessible projects

Filtering Activities

- One or more filters may be applied to a layout at a time
- Multiple criteria for selection may be used within a single filter
- Filter specifications can be saved and re-applied
- Filters can be saved as a part of a layout

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Filter Dialog Box

- *All Activities* – Mark to show all activities in the current layout
- Show activities that match – When more than one filter is marked, you must select one of the following options:
  - *All selected filters* – Mark to include the activities that meet the criteria of each selected filter
  - *Any selected filter* – Mark to include the activities that meet the criteria of atleast one of the selected filters
- Replace activities shown in current layout – Displays only the activities that meet the criteria of each selected filter
- Highlight activities in current layout which match criteria – Highlights only the activities in the current layout that meet the criteria of each selected filter

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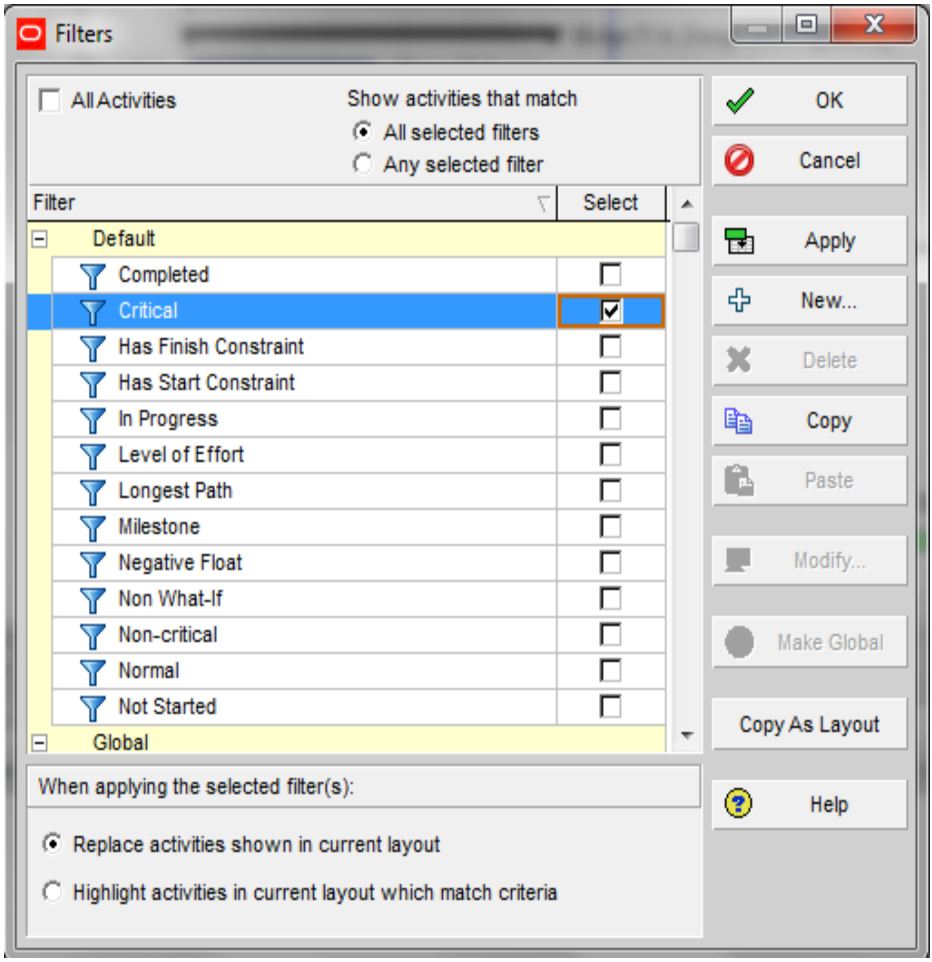
Applying a Default Filter

- To view critical activities, you can run the Critical default filter Sorting By descending order.

- Exercise
  - Steps
    - In the Layout option bar, click Filters
    - In the Select column, mark the checkbox Critical
    - In the When applying the selected filter(s) section, Select Highlight activities in the current layout with match criteria
    - Click Ok to execute the filter



Create a Filter

- You can create filters based on single line of criteria or multiple criteria.
- A convenient single-criteria filter to use throughout the lifecycle of a project is a lookahead filter. It displays the activities that are scheduled to occur within a given amount of time. E.g. the next month.
- You will execute the new filter to display all activities scheduled to occur within the next month, and then save the layout as One Month Lookahead
- Exercise
  - Steps
    - In the Filters dialog box, click New
    - In the Filter Name field, type <One month lookahead>
    - Click in the Parameter cell and select a data item, Early Start
    - Double-click in the Is cell and select a filter criteria, is within range of
    - Double-click in the Value cell and select a date, DD (data date)
    - Double-click in the High value cell and type <DD+1M>
    - Click Ok to close the Filter Specification dialog box

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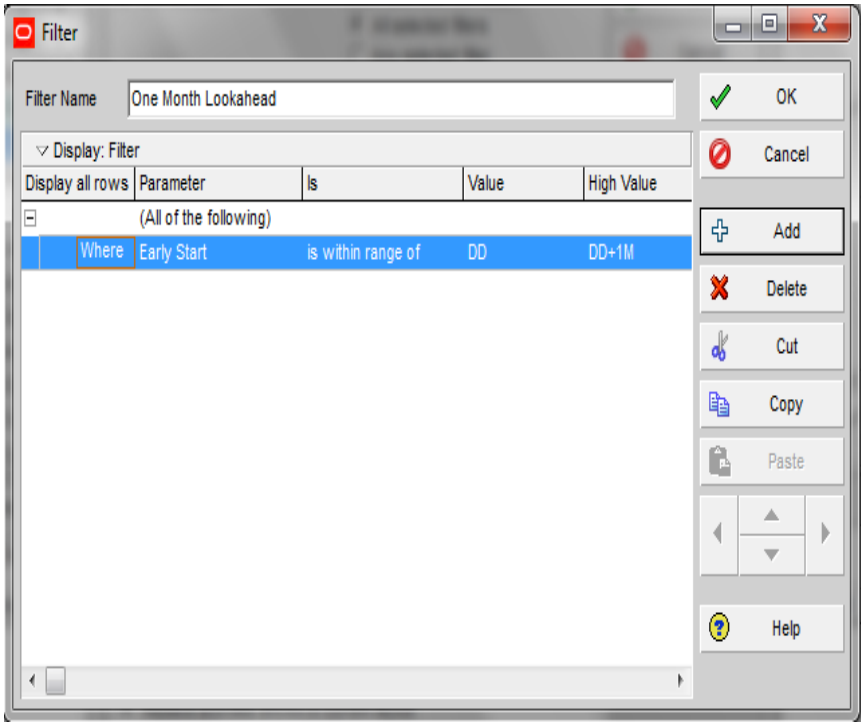
Create a Filter

- Exercise
  - Steps
    - Verify the new filter is selected, One Month Lookahead
    - Verify Replace activities shown in the current layout is selected
    - Click Ok to execute the filter
    - In the Layout option bar, click Group & Sort
    - Mark the checkbox, Hide if empty
    - Click Ok
    - In the Layout option bar, click Layout, Save As, type a layout name <One Month Lookahead>
    - Click Save



Using Multiple Filters

- If you are unable to achieve your goal with single filter, then you can also run two filters simultaneously.
- Exercise
  - Steps
    - In the Layout option bar, click Filters
    - In the Select column, mark the checkbox next to filter, Critical
    - Scroll-down and confirm that the One Month Lookahead filter is also selected
    - Click Ok to execute filters
    - In the Layout option bar, click Save As
    - Type a layout name, One Month Lookahead – Critical Activities
    - Click Save

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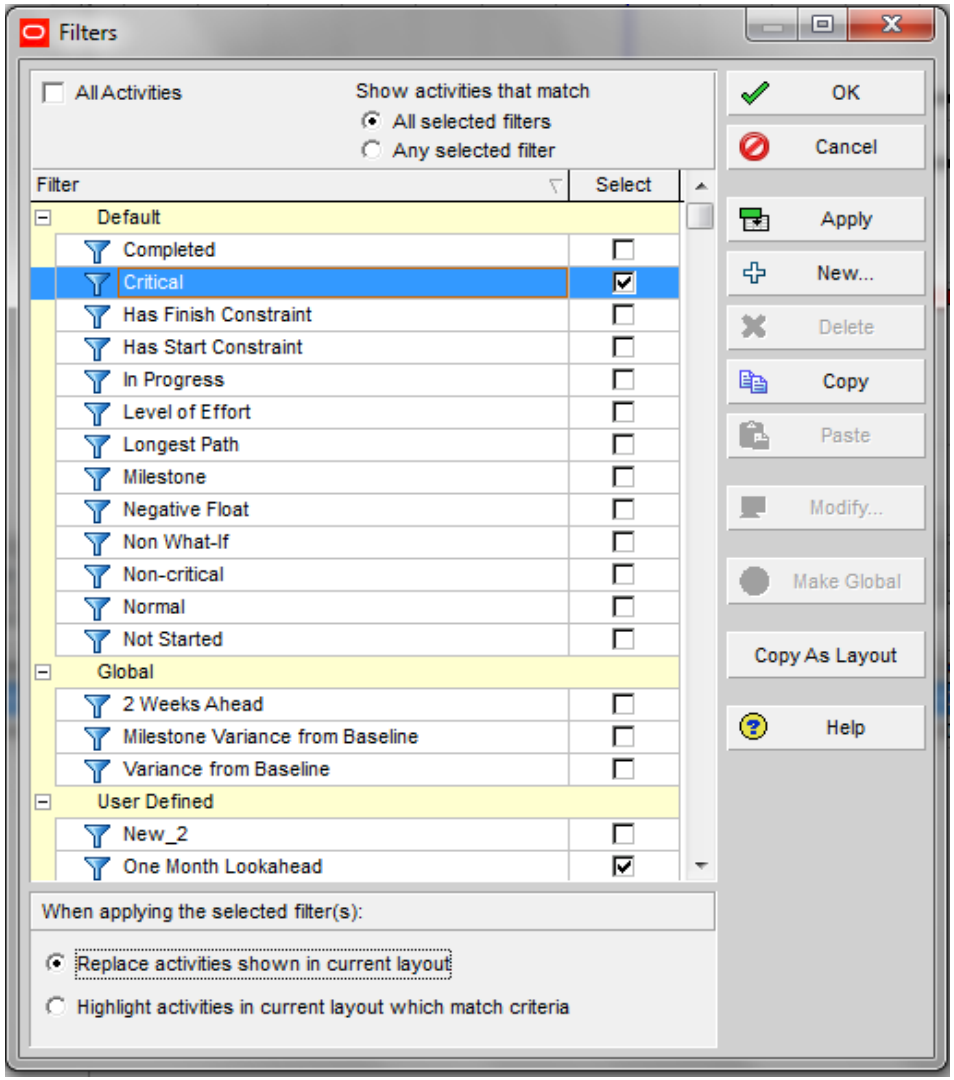
Applying All Activities Filter

- To refresh your screen with all activities , you can run the all Activities filter.

- Exercise
  - Steps
    - In the Layout option bar, click Filters
    - Mark the All Activities checkbox
    - Click Ok to execute the filter



Lesson Review

- Use grouping and sorting to organize activities in a layout
- Grouping is available in all windows and most dialog boxes
- The Group & Sort dialog box provides options to show grand totals and summaries and modify the font and color for each grouping selected. You can also sort the groups alphabetically, numerically, or chronologically
- Use filters to customize the layout or only show activities that satisfy the filter criteria. You can apply multiple filters to a layout

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Assigning Resources & Cost

Lesson 13

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Assigning Resources & Cost

- Objectives
  - Assign labor, non-labor, and material resources to activities
  - Adjust budgeted units/time for a resource
  - Assign expenses to activities

Steps for Resource Management

- Following are the basic steps for resource management:
  - Defining resources in the Resource window
    - Define resource availability
    - Set up the resource name, description, cost, roles, and attributes that control the resource's effect on the schedule
  - Assigning resources in the Activity window
    - Enter the resource name and amount of work planned
    - The cost is calculated based on the resource quantity and price/unit as defined in the Resource window
  - Analyze resources and costs in the Activity window
    - Use the Resource Usage Profile to view resource quantity/cost information graphically. The profile helps you analyze when, and to what extent, a resource is allocated
    - Use the Resource Usage Spreadsheet to view resource quantity/cost information in a tabular format. The spreadsheet also helps you analyze resource allocation
    - Use columns to view total costs

Defining Resources

- A resource is anything used to complete an activity.
- The ***Resources window*** contains information about all resources within the organization, enabling centralized resource management.
- Resources are divided into three categories:
  - ***Labor (People)*** – Measured in units of time
    - Generally re-used between activities/ projects
    - Recorded in terms of price/unit – E.g. Rs. 300/hour
  - ***Non-labor (Equipment)*** – Measured in units of time
    - Recorded in terms of price/unit
  - ***Material*** – Measured in units other than time – E.g. Rs. 15/sq.ft

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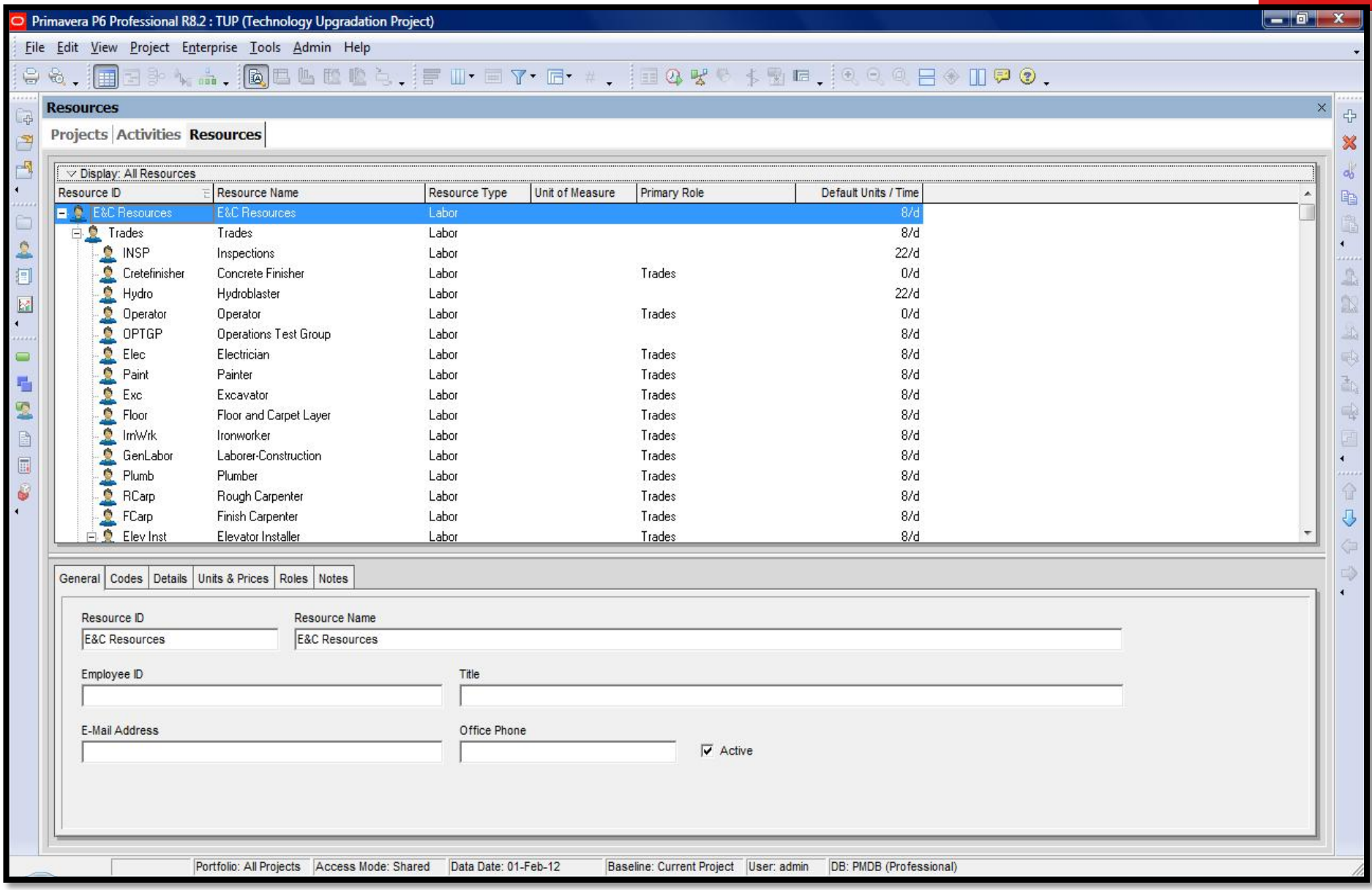
Defining Resources

- Exercise
  - Steps
    - In the File menu, click Close All
    - In the Directory bar, click Resources
    - In the Display option bar, click Filter By, All Resources

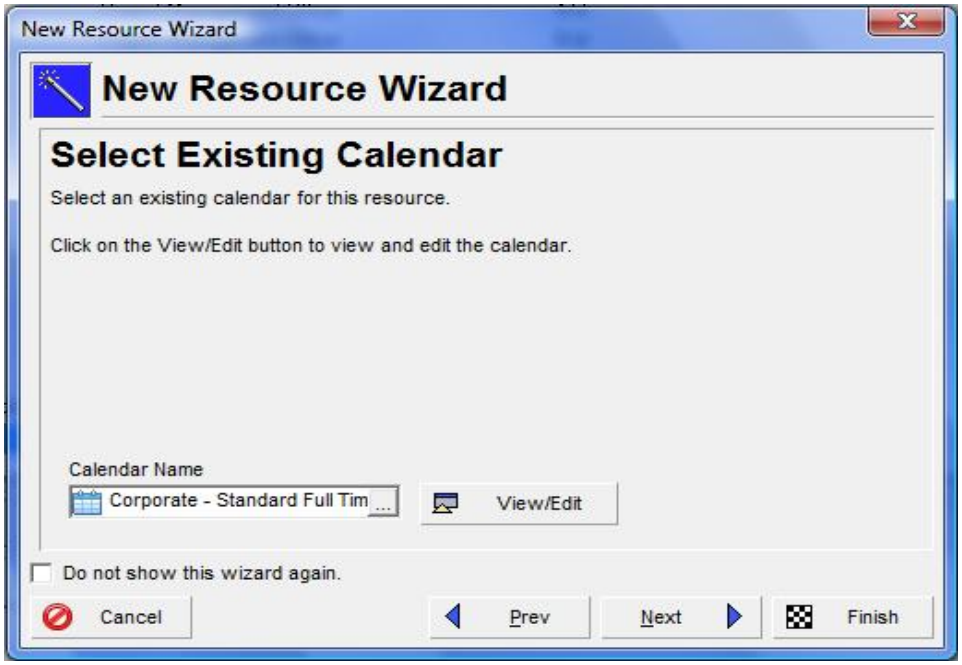
Defining Resources



Defining Resources

- Exercise
  - Steps
    - Click Add on the Command bar
    - Write ID: MEX
    - Name: Marketing Executive
    - Click Next
    - Select Resource Type: Labor
    - Click Next
    - Write Cost: 100
    - Click Next
    - Click Finish

Defining Resources



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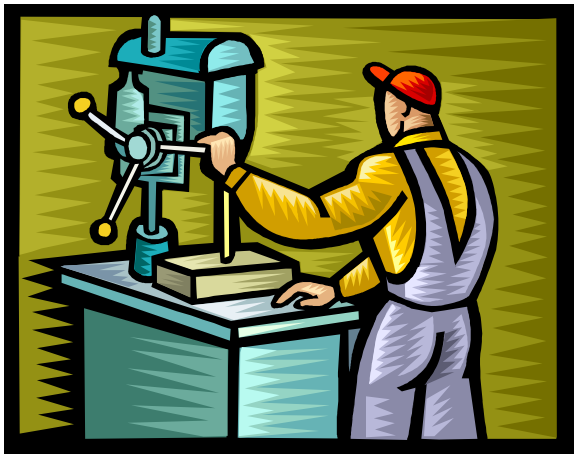
WORKSHOP
Defining Resources



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Resource Dictionary

ID	Name	Units	Price	Type
MEX	Marketing Executive	Hour	100	Labor
PM	Project Manager	Hour	500	Labor
ITO	IT Officer	Hour	200	Labor
TM	Training Material	Number	100	Material
DAR	Design Architect	Hour	300	Labor

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Assigning Resources

- Depending on numerous factors; including the type of activity or type of resource, you may need to adjust Budgeted Units or Units/Time when assigning a resource
  - ***Budgeted Units*** – The number of units (e.g. hours) that a resource is assigned to work on activity
  - **Units/time** – The no. of units (hours) a resource is scheduled to work in a specific time period (e.g. 8 hrs/day)

Assigning a Labor Resource

- Assign a resource directly from the Resource Dictionary. Resources in the dictionary can be used on any activity. An unlimited no. of resources can be assigned.
- The Search feature can help you quickly search the resource item in the dictionary.
- Exercise
  - Steps
    - Select an Activity, A1020- Prepare Inventory List
    - In the Resources tab (bottom), click Add Resource
    - Select MEX-Marketing Executive, click Assign button
    - Close the Assign Resource Dialog

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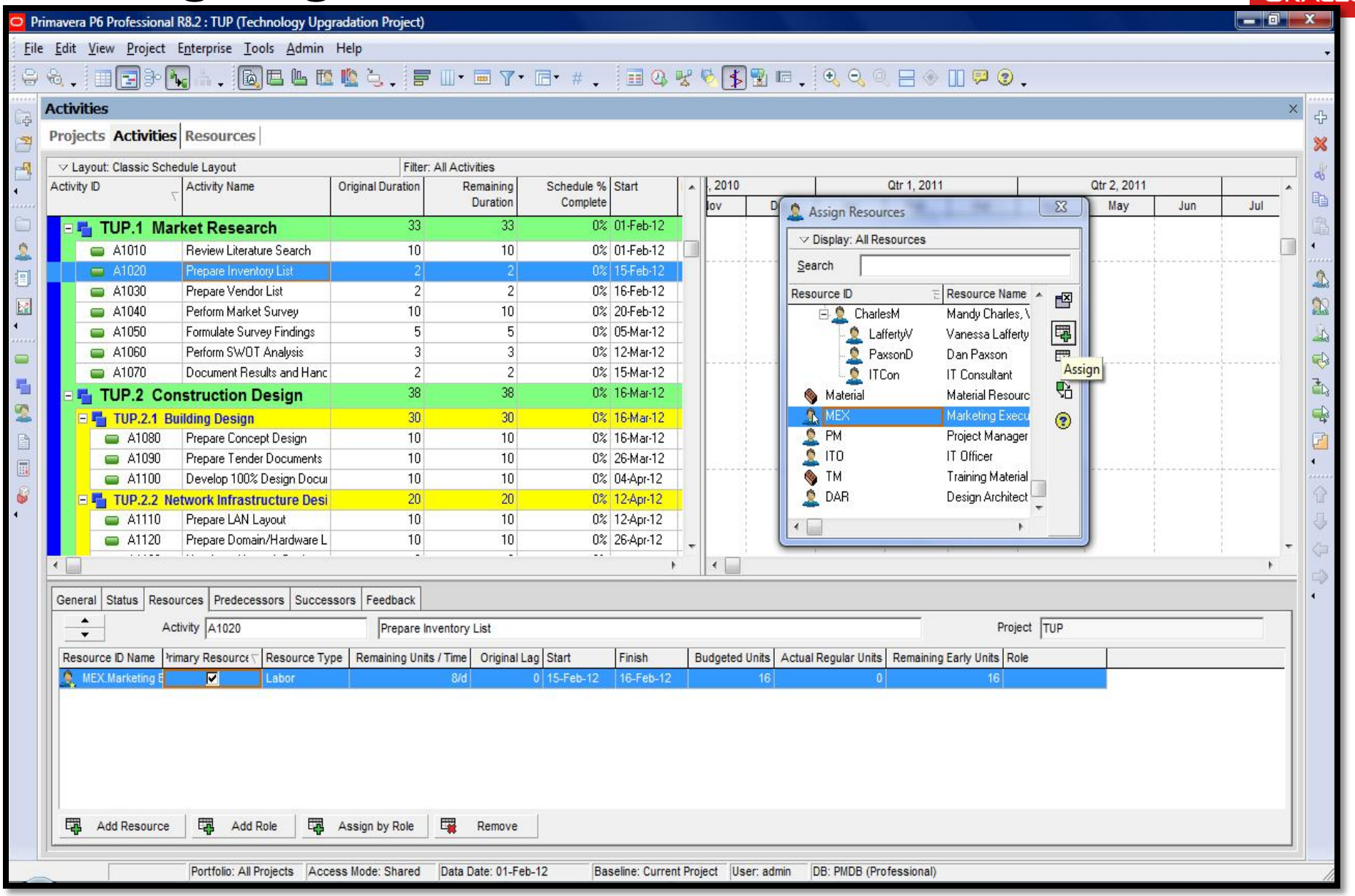
Assigning a Labor Resource



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Adjusting Resource's Budgeted Units/Time

- You can adjust Budgeted Units/time after making a resource assignment. You can manually type Budgeted Units/Time value for a resource in Resources tab to adjust two laborers to perform an activity.

- Exercise
  - Steps
    - In Resources tab, enter 16/d in Budgeted Units/Time column

Assigning a Material Resource

- Material resources are not measured in units of time.
- You can add units of measurement in Admin→Admin Categories.
- After the units of measure is created, it is assigned to the material resource in the Resource Dictionary.
- Exercise
  - Select an Activity, A1240-Print Training Material
  - Add a Resource TM-Training Material from Resources tab
  - Enter 40 in Budgeted Units column

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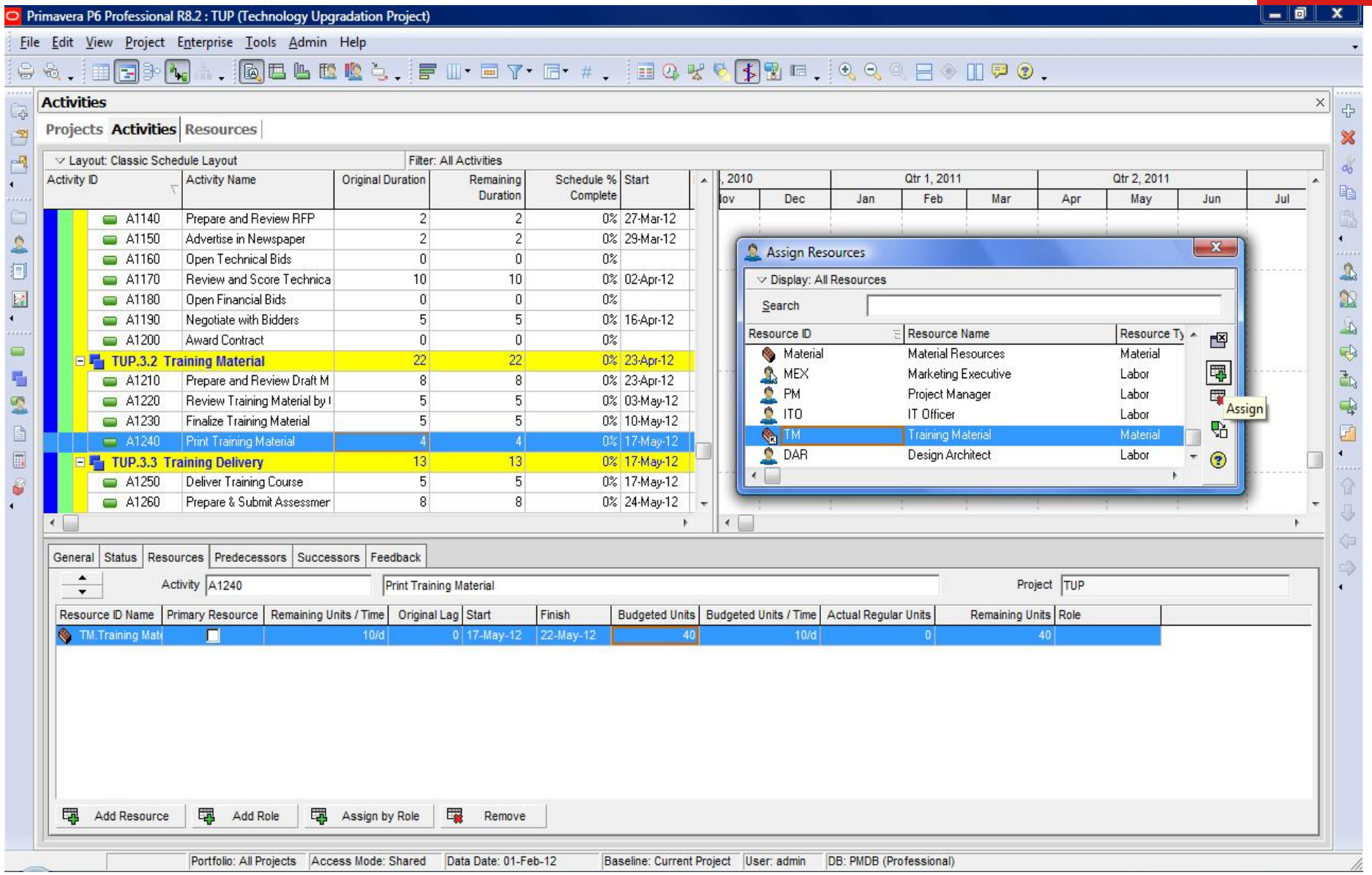
Assigning a Material Resource



Planning Costs

- Costs are planned and managed at the activity level.

- There are two types of costs:
  - Resource – Calculated based on resource assignments
  - Expense – Lump sum costs that are manually entered

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Planning Costs - Resources

- The cost of a resource can be calculated based on the Price/Unit defined in the Resource Dictionary and the Budgeted Units assigned to the activity

- Budgeted Cost = Budgeted Units x Price/Unit

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Planning Costs - Expenses

- ***Expenses*** are non-resource costs associated with a project. They are typically one-time expenditures for non-usable items. E.g. Facilities, Travel, Overhead, and Training.
- Expenses are manually assigned at activity level. You can enter a single lump sum expense or you can enter the number of units and the Price/Unit.
- Expense categories can be assigned to classify the expense.
- Expenses can be accrued at the start, end, or uniformly over the duration of an activity.
- A unit of measure can be used to label the quantity. E.g. each, pounds, square feet.

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Planning Costs - Expenses

- Exercise
  - Steps
    - Select an Activity, A1030- Perform Market Survey
    - Click the Expense tab (bottom)
    - Click Add
    - Type a Expense Item <Market Travel>
    - Double-click in the Expense Category field
    - Select an Expense Category <Travel>
    - In the Accrual Type field, verify Uniform over Activity
    - In the Budgeted Units field, type <10.00>, press Enter
    - In the Unit of Measure field, type <visit> and press Enter
    - In the Price/Unit field, type <500> and press Enter.

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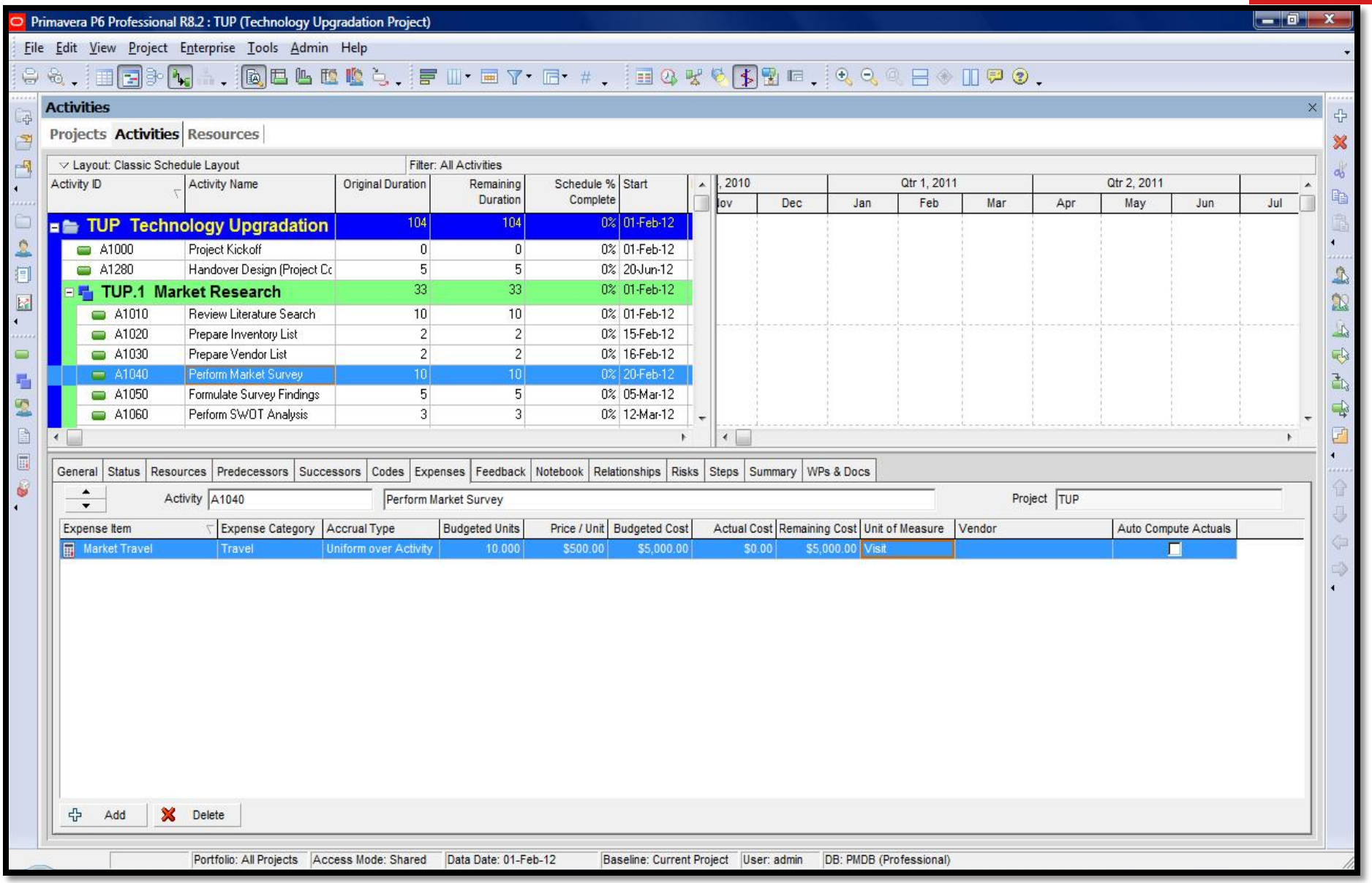
Planning Costs - Expenses



Summary Tab

- Use the ***Summary tab*** to display unit, cost, or date information for the selected activity
- Select Display Cost at the bottom of the page to display the itemized and total cost of the selected activity. The activity's costs are broken into
  - Labor Cost
  - No-Labor Cost
  - Material Cost
  - Expenses
  - Total Cost
- Exercise
  - Steps
    - Verify an Activity, A1020-Prepare Inventory & Vendor List
    - Click the Summary tab (bottom)
    - Select Display Cost (option)

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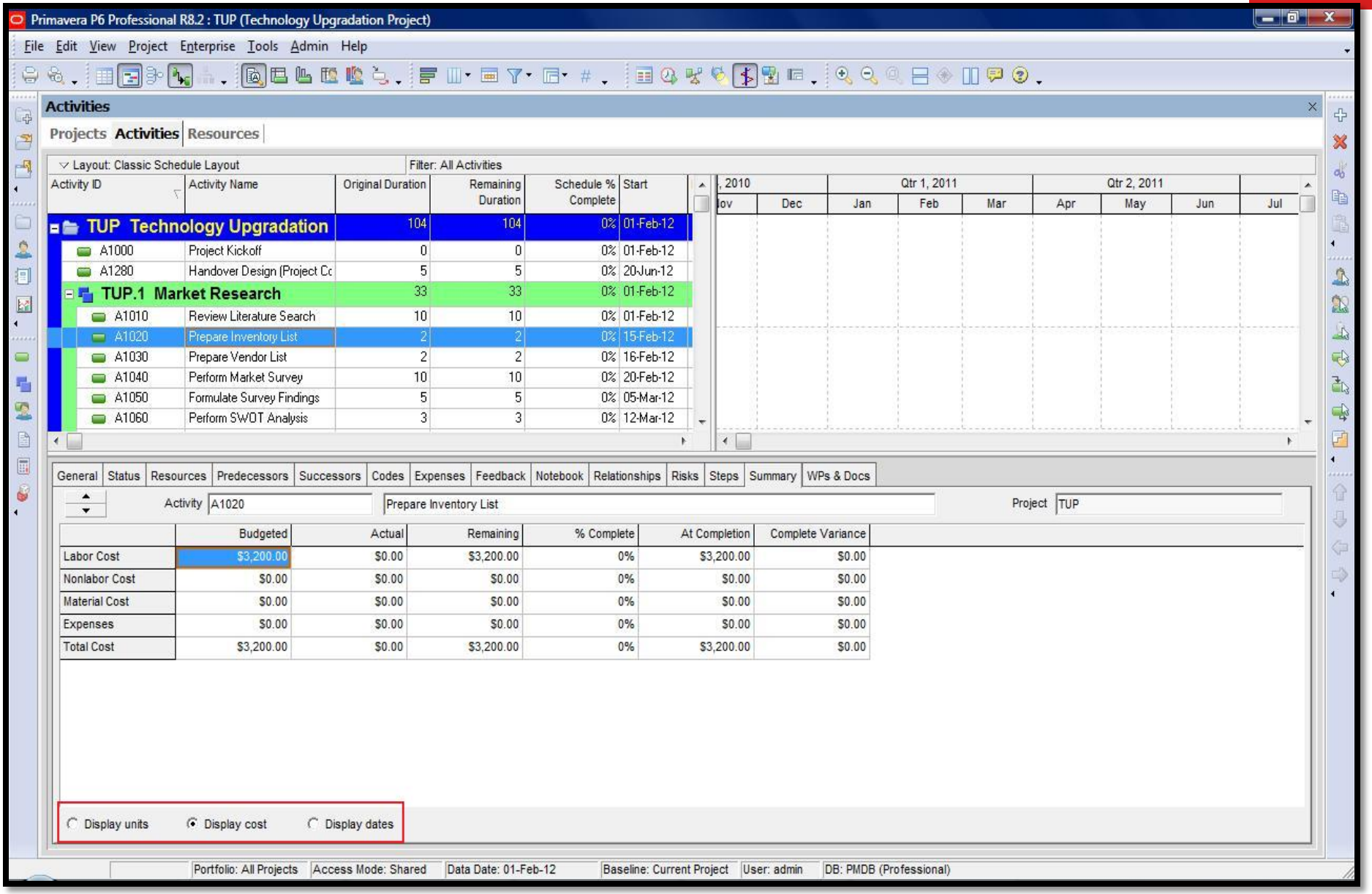
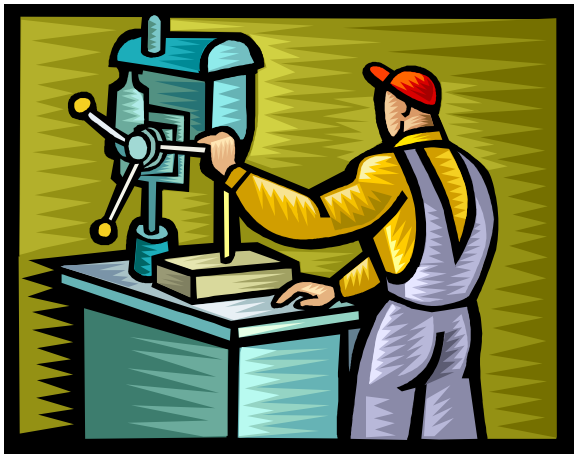
Summary Tab


Primavera P6 Professional R8.2 : TUP (Technology Upgradation Project)
File Edit View Project Enterprise Tools Admin Help
Activities
Projects Activities Resources
Layout: Classic Schedule Layout
Filter: All Activities
Activity ID
Activity Name
Original Duration
Remaining Duration
Schedule % Complete
Start
TUP Technology Upgradation 104 104 0% 01-Feb-12
A1000 Project Kickoff 0 0 0% 01-Feb-12
A1280 Handover Design (Project Cc 5 5 0% 20-Jun-12
TUP.1 Market Research 33 33 0% 01-Feb-12
A1010 Review Literature Search 10 10 0% 01-Feb-12
A1020 Prepare Inventory List 2 2 0% 15-Feb-12
A1030 Prepare Vendor List 2 2 0% 16-Feb-12
A1040 Perform Market Survey 10 10 0% 20-Feb-12
A1050 Formulate Survey Findings 5 5 0% 05-Mar-12
A1060 Perform SWOT Analysis 3 3 0% 12-Mar-12
Qtr 1, 2011
Qtr 2, 2011
Dec Jan Feb Mar Apr May Jun Jul
General Status Resources Predecessors Successors Codes Expenses Feedback Notebook Relationships Risks Steps Summary WPs & Docs
Activity A1020
Prepare Inventory List
Project TUP
Budgeted Actual Remaining % Complete At Completion Complete Variance
Labor Cost $3,200.00 $0.00 $3,200.00 0% $3,200.00 $0.00
Nonlabor Cost $0.00 $0.00 $0.00 0% $0.00 $0.00
Material Cost $0.00 $0.00 $0.00 0% $0.00 $0.00
Expenses $0.00 $0.00 $0.00 0% $0.00 $0.00
Total Cost $3,200.00 $0.00 $3,200.00 0% $3,200.00 $0.00
Display units
Display cost
Display dates
Portfolio: All Projects
Access Mode: Shared
Data Date: 01-Feb-12
Baseline: Current Project
User: admin
DB: PMDB (Professional)

WORKSHOP
Assigning Resources & Costs



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Lesson Review

- Three steps in resource management are defining resource; assigning resources; and analyzing resources
- Assign a resource directly from the Resource dictionary
- When you assign a resource to an activity, the calculation is performed: Duration x Units/Time = Units
- When you assign a resource, you can adjust Units/Time or Budgeted Units
- You can also designate a primary resource

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Analyzing Resources

Lesson 14

Analyzing Resources

- Objectives
  - Display the Resource Usage Profile
  - Format a Profile
  - Format the Timescale

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Resource Analysis Settings

- The ***Resource Usage Profile*** which can be displayed in the Activities Window, enables you to view resources/ role unit and cost distribution over the period of time. You can specify how data is played in the profile via the Resource Analysis tab in User Preferences:
- All Projects
  - ***All closed projects (except what-if projects)*** – Displays resource/ cost usage data for
    - All projects that are open, and
    - All projects that are closed (except what-if projects)
  - ***All closed projects with a leveling priority*** – When electing to show remaining values for open vs. closed projects, choose this option to include data for all closed projects with the specific leveling priority
  - ***Opened projects only*** – Focus on resource/ cost usage in the projects currently opened
- Time-Distributed Data
  - Display data based on Remaining Early or Forecast dates
  - Select the time interval for displaying live resource allocation: hour, day, week, or month

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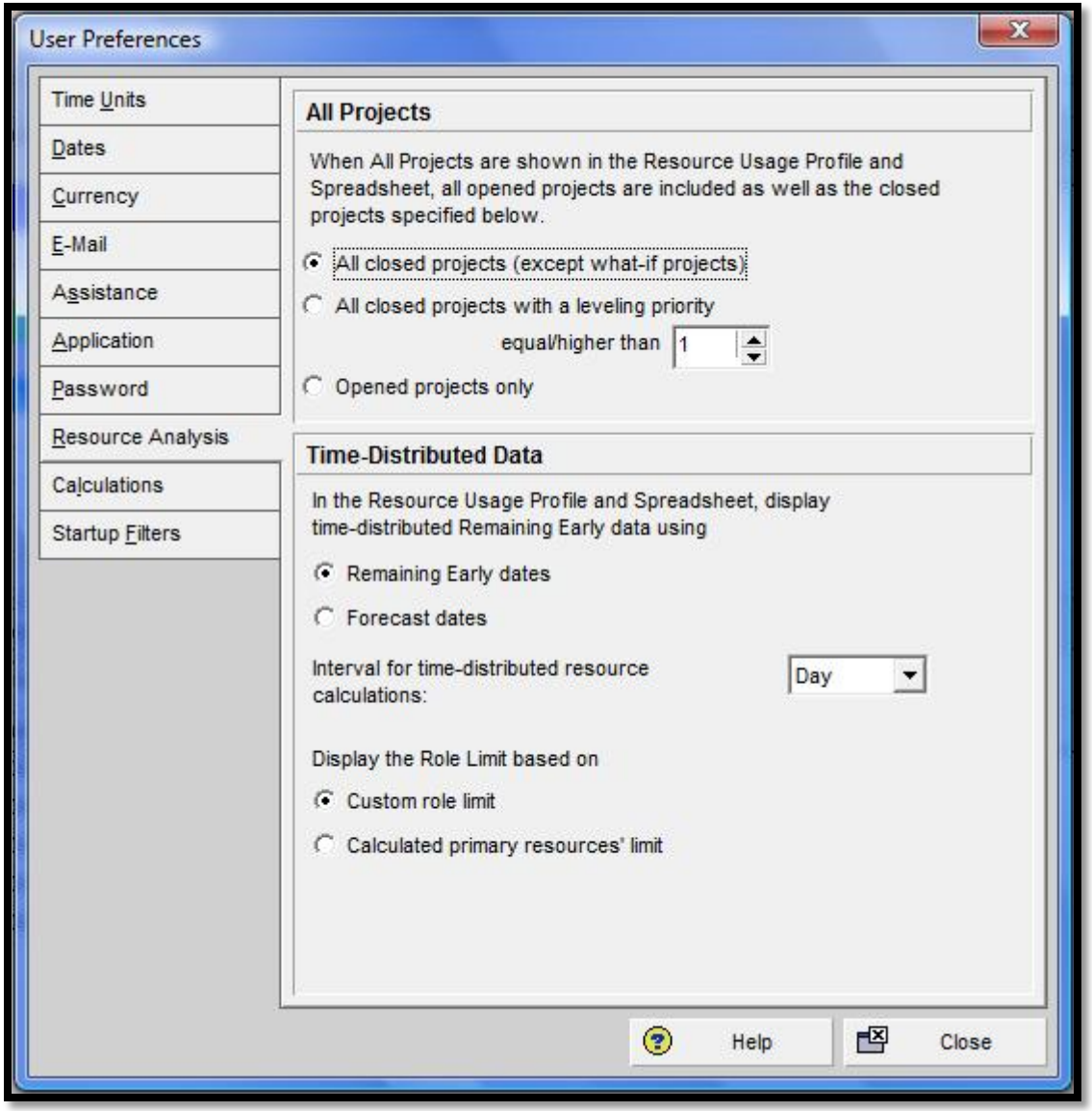
Resource Analysis Settings

- Exercise:
  - Steps
    - In the Edit menu, click User Preferences
    - Click the Resource Analysis tab
    - Verify All closed projects (except what-if-projects)
    - is selected
    - In the Interval for time-distributed resource calculations drop-down, select Day
    - Close the User Preferences dialog box

Resource Analysis Settings



Resource Usage Profile

- The ***Resource Usage Profile*** provides a graphical view of unit/ cost distributions over the period of time. It displays the amount of effort needed from each resource/ role on the project during each time period.
- Use the profile to determine how many hours each resource is scheduled to work; identify over-allocated resources; track expenditures per time period; and display a “banana-curve” to compare early and late dates.
- View unit/cost distributions from a specific project or all projects to which you have access.
- Display separate bars for one of the following:
  - Budgeted units/costs
  - Actual units/costs
  - Remaining Early units/costs
  - Remaining Late units/costs

Resource Usage Profile

- The Resource Usage Profile timescale matches the timescale for the Gantt Chart
  - Formats columns, group, sort, and filter resources/ roles in the profile
  - It can be saved as a part of a layout
- You can use Resource Usage Profile information to determine which resources/ roles are over-allocated and which of them are underutilized.

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Displaying Resource Usage Profile

- Exercise
  - Steps
    - Open a project, EC00515 City Center Office Building Addition
    - Confirm you are in Activities Window
    - In the Layout Option bar, click Layout, Open
    - Select a layout, Resource Overallocation Profile, and then click Open
    - In the Layout Option bar, click Show on Bottom, Resource Usage Profile
    - In the Left Pane of Display Option bar of Resource Usage Profile, click Filter by, Current Project's Resources
    - Select a Resource, Operator
    - Right-Click in Histogram area, select Resource Usage Profile Options… ;
    - In Data tab→ Additional Data Options, mark Show Overallocation

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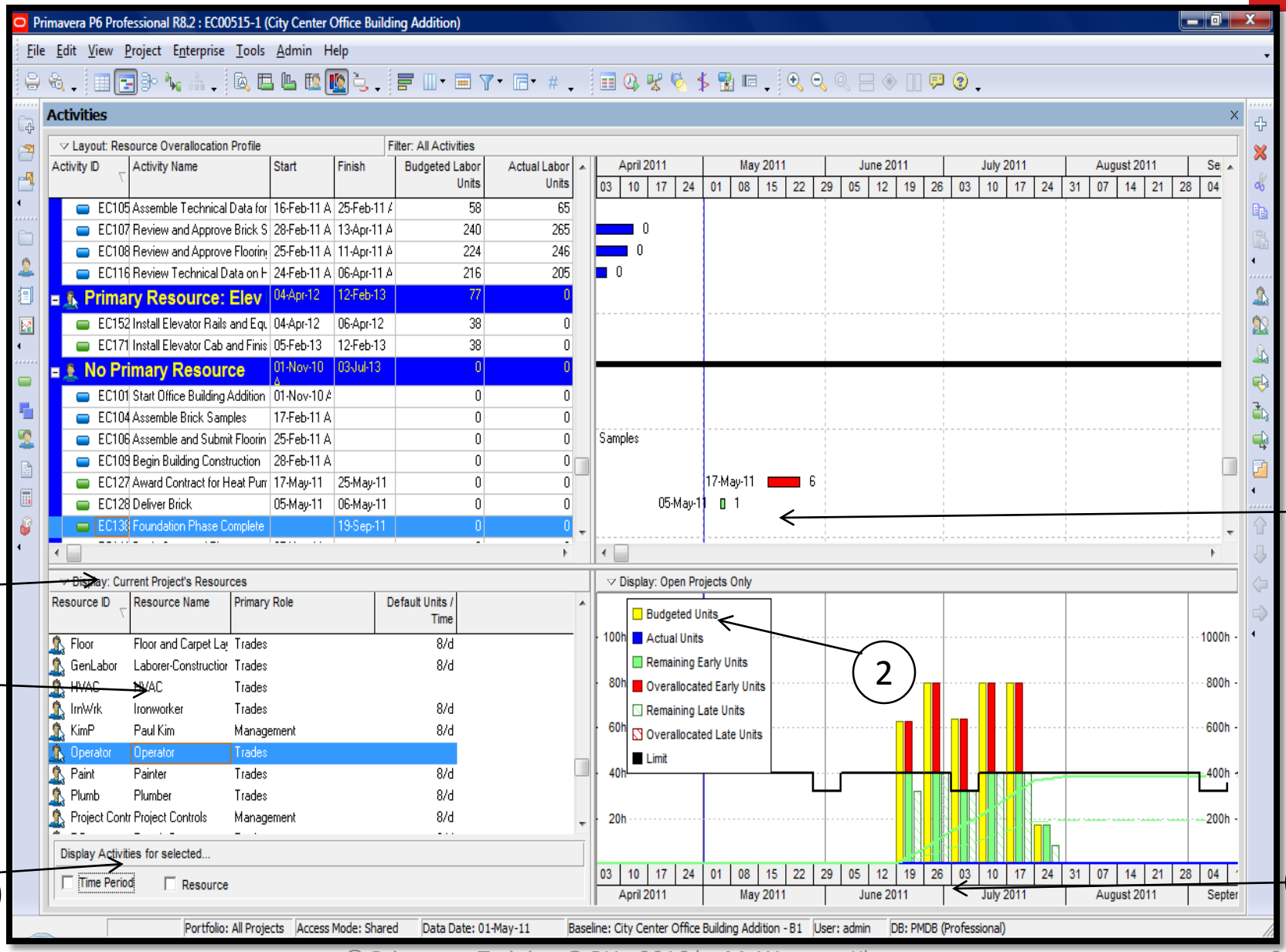
Displaying Resource Usage Profile



1

2

3

4

5

6

Displaying Resource Usage Profile

Item	Functionality
1. Right Pane Display Option bar	Displays a menu of the following options available for the Resource/ Role profile
2. Legend	Displays a legend for the profile's bar and/or lines. This will change depending on the data/formatting options selected.
3. Timescale	Displays the date intervals: major increment displayed on the bottom and minor increment displayed on the top.
4. Display Activities for Selected	When viewing Open Projects Only, you can mark Time Period or Resource to filter the activities in the top layout.
5. Resource/ Role Hierarchy	Lists the names of the resources/ roles. Can be filtered to show a shorter list of hierarchy. E.g. the Current Project's Resources.
6. Left Pane Display Option bar	Displays a menu of the formatting options available for the Resource/Role Hierarchy.

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Viewing All Projects or Open Projects Only

- When you select the User Preferences setting to All closed projects (except what-if-projects), you can toggle the Resource Usage Profile to display either:
  - All open projects
  - All closed projects except what-if-projects
- This option is available on the Right Pane Display Options bar
- Once you have only the open projects displayed, you can filter the top layout by either Time Period or Resource
- Exercise
  - Steps
    - In the right-pane Display Option bar, clear Show All Projects
    - In the Display Activities for Selected section, mark Time Period
    - In the right-pane, click a Time Period, 19-June-2011
    - Select a Resource, Operator

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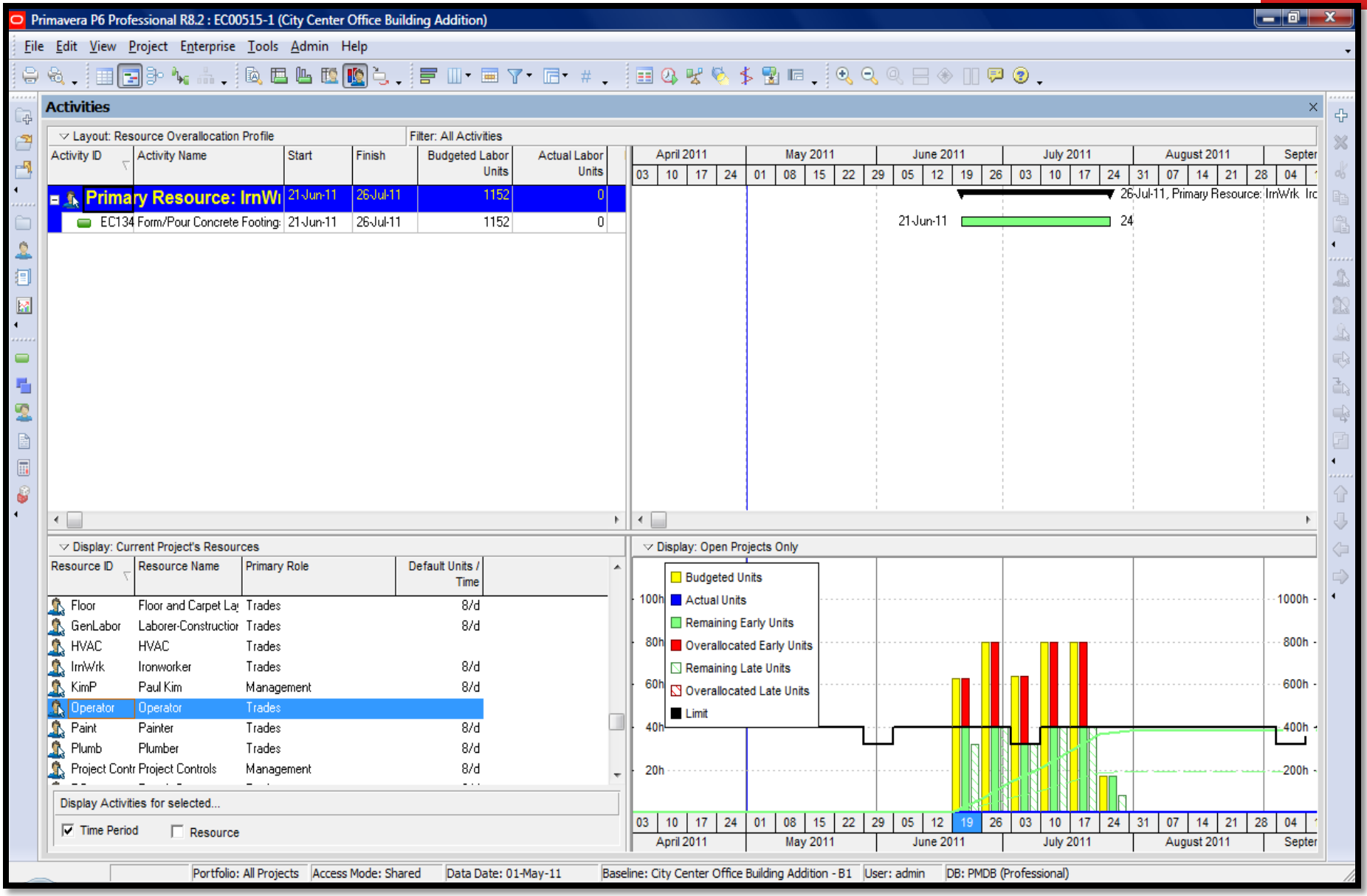
Viewing All Projects or Open Projects Only



Formatting the Profile

- The Resource Usage Profile can be modified by adjusting Data and Graph settings in the Resource Usage Profile Options dialog box
- Data Settings (Data Tab)
  - *Display* – Select to display units or costs
  - *Show Bars/Curves* – Mark to display By Date (periodic) bars and/or Cumulative curves and format their colors.
  - *Show Remaining Bars As* – Select a solid color to display early bars and a hatched color to display late bars.
  - *Additional Data Options* – Mark to display a line indicating resource limits; resource/role over-allocation; resource availability; or resource overtime units.

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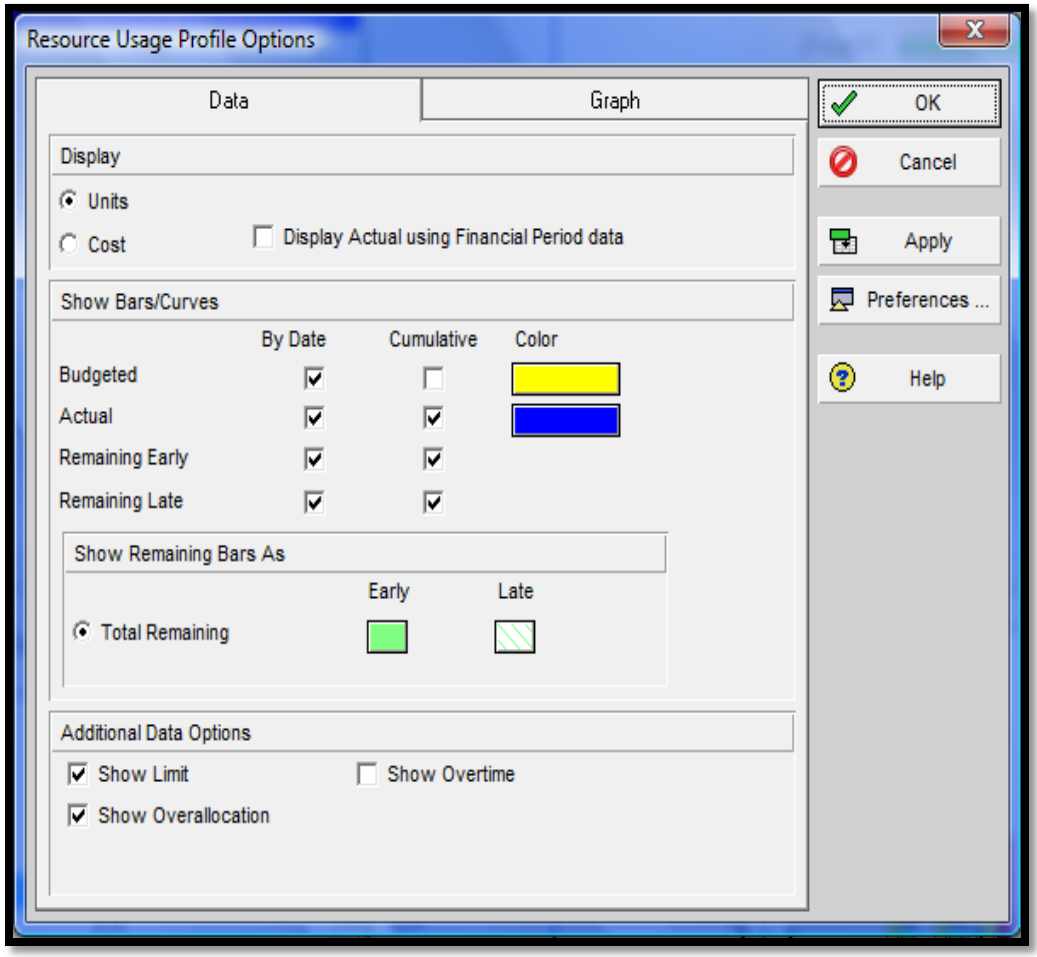
Formatting the Profile

- Exercise
  - Steps
    - In the right-pane Display Option bar, click Resource Usage Profile Options
    - In the Remaining Early row, mark Cumulative



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Formatting the Profile

- Graph Settings (Graph Tab)
  - *Vertical Lines* – Choose to display major/minor sight lines based on the timescale interval.
  - *Horizontal Lines* – Choose the line style and color.
  - Additional display options
    - *Show Legend* – Display the data item; each color represents units
    - *3D Bars* – Add a third dimension to the bars
    - *Background Color* – Specify the color displayed in the background of the Resource Usage Profile
    - *Calculate Average* – Specify the values you want to use to divide the timescale interval to

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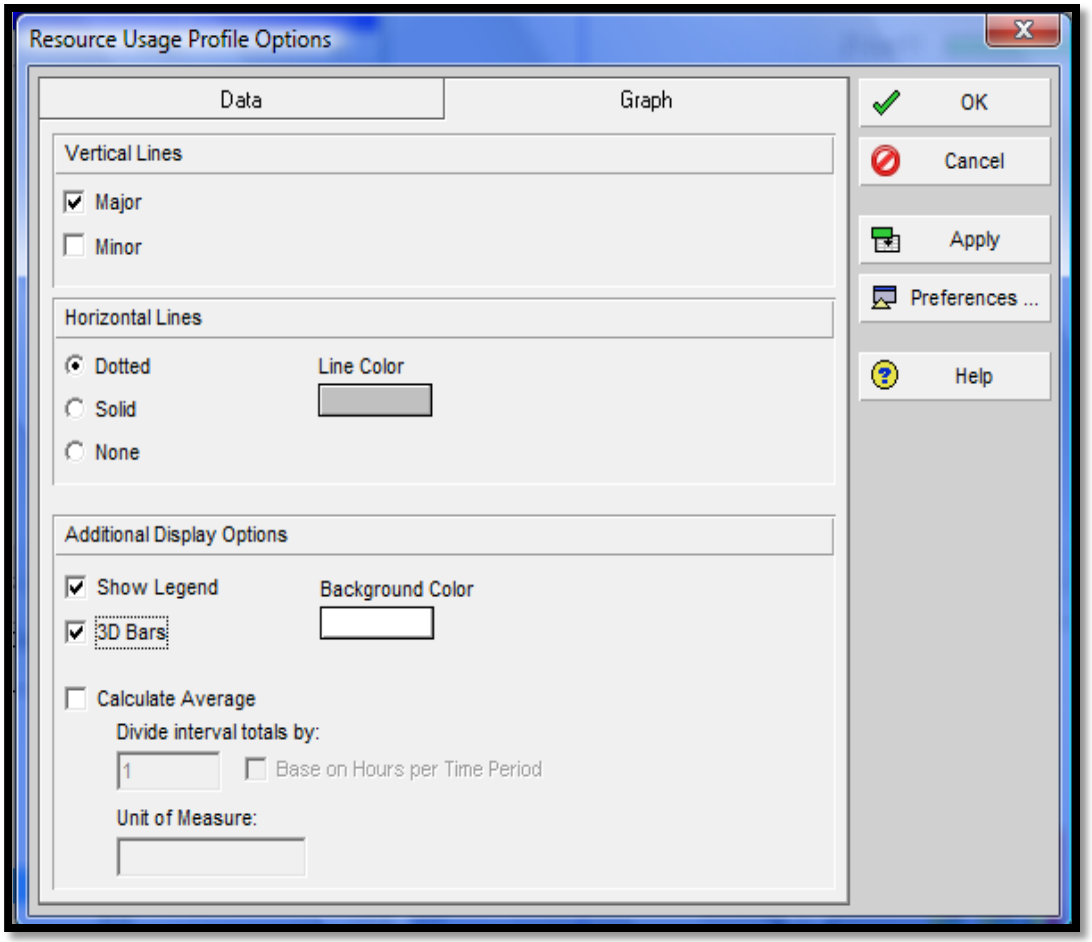
Formatting the Profile

- Exercise
  - Steps
    - Click the Graph tab
    - Clear the checkbox, Show Legend
    - Check 3D Bars
    - Click Ok



Formatting the Profile

- Exercise
  - Steps
    - In the Display Activities for selected section, clear Time Period
    - Double-click the bar for the week of 19-June-2011, and review data
    - Close the window

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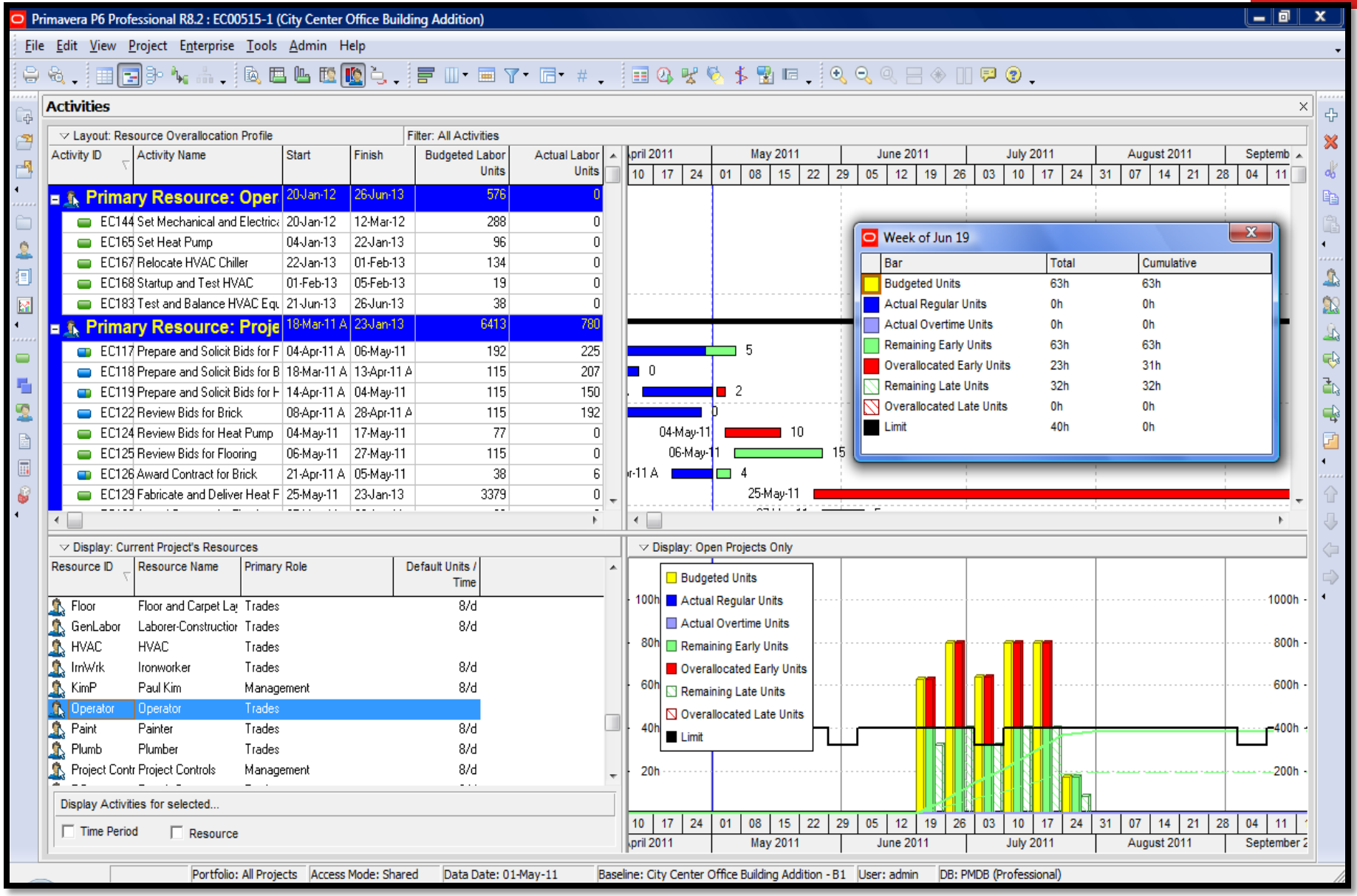
Formatting the Profile



Formatting the Timescale

- You can specify the timescale you want to display in the Resource Usage Profile and the Gantt Chart
  - *Timescale Start* – Specify the date from which the timescale should start for the profile or Gantt Chart
  - *Date Interval* – Choose the units of the timescale in years, quarters, months, weeks, days, hours, and shifts

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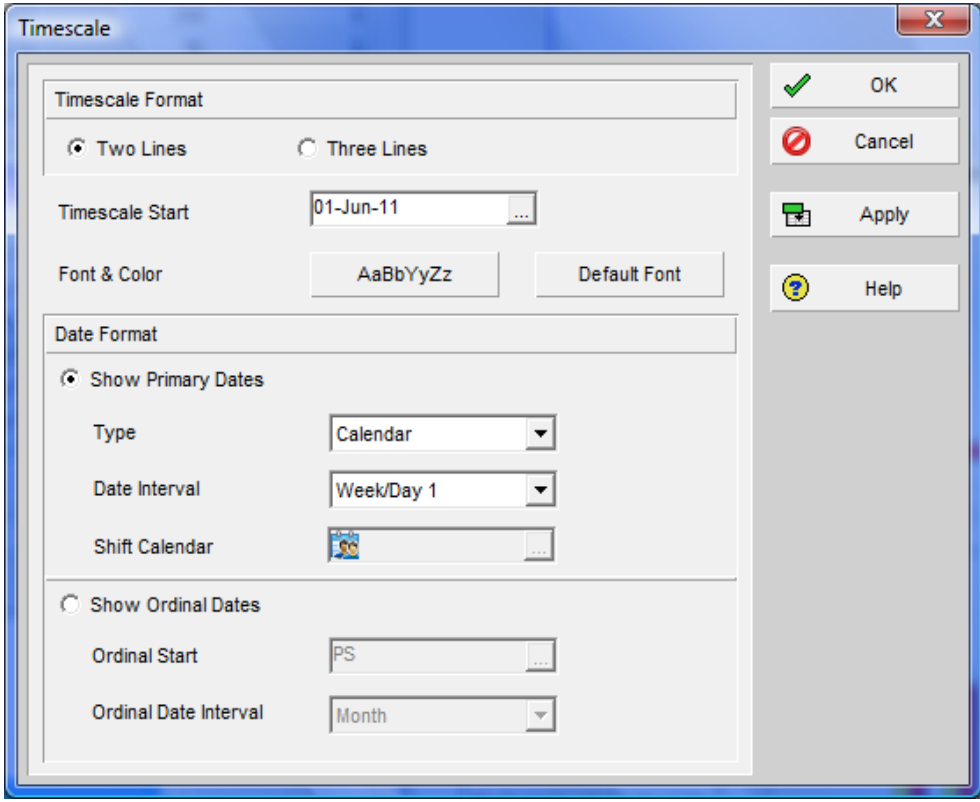
Formatting the Timescale

- Exercise
  - Steps
    - In the right pane Display Option bar, click Timescale
    - In the Timescale Start field, click Browse button to select the date
    - Click Custom date, and then select, 01-June-2011
    - In the Type field, verify Calendar
    - In the Date Interval drop-down list, select Week/Day 1
    - Click Ok



Formatting the Timescale

- You can also format the timescale by clicking and dragging
- Place your mouse on the minor date interval on the timescale. Click and drag to expand or contract the timescale.
- Place your mouse on the major date interval on the timescale. Click and drag to move the entire timescale

- Exercise
  - Steps
    - In the minor date interval, compress the timescale
    - In the major date interval, adjust the time frame to show the week of 1-June-2011

Lesson Review

- The Resource Usage Profile provides a graphical view of unit/cost distributions over the period of time. It displays the amount of effort needed from each resource/role on the project during each time period.
- Use the profile to determine how many hours each resource is scheduled to work; identify over-allocated resources; track expenditures per time period; and display a “banana-curve” to compare early and late dates.
- You can specify settings for resource analysis in the Resource Analysis tab in User Preferences.
- You can further customize the profile by using the two Display Option bars (left pane and right pane).

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Optimizing the Project Plan

Lesson 15

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Optimizing the Project Plan

- Objectives
  - Analyze schedule dates
  - Shorten a project schedule
  - Analyze resource availability
  - Remove resource over-allocation
  - Analyze project costs

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Analyzing the Project

- Once you have created the project plan, verify that it meets the project stakeholders' date, resource, and cost requirements. If any inconsistency exists between the project information in the project plan and the project requirements, you will be able to identify the source of the problem and define a solution
  - ***Analyze schedule dates*** - Evaluate the schedule to ensure that milestone dates and project dates are achieved
  - ***Analyze resource allocation*** - Evaluate the resources to ensure that the resources are not over-allocated
  - ***Analyze cost budget*** - Evaluate project costs

-

Analyzing the Schedule Dates

- The most important date in the schedule is the calculated project Finish Date. If the calculated Finish Date of the project is beyond the Must Finish By date, the project must be shortened. In addition, each deliverable in the project should be scheduled to finish by the dates imposed by the project stakeholders
- Steps for analysis
  - Compare the calculated Finish with the Must Finish By date
  - Back up your project plan
  - Focus on critical activities
  - Shorten the project

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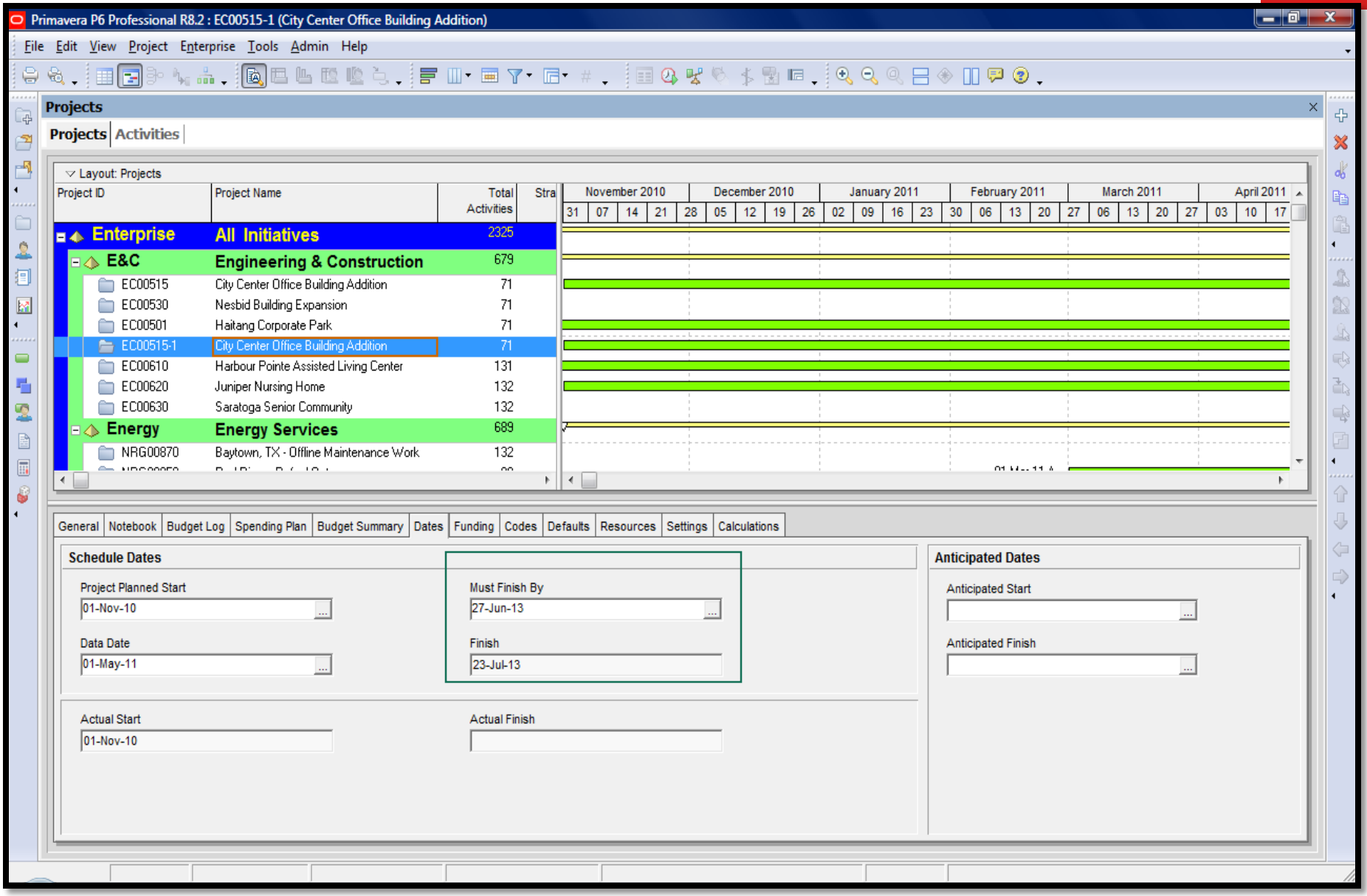
Comparing Finish Date with Must Finish By Date

- You can quickly determine whether the project will finish on time by viewing the Dates tab in the Projects Window.
- The project EC00515 must be finished by 28-Jun-13, however, the schedule indicates that the project will not finish until 23-Jul-13. (Note that the project actually must finish by the close of the business on 27-Jun-13 as the Must Finish By constraint is at 12:01 am on 28-Jun.)
- Exercise
  - Steps
    - Open a project, EC00515 City Center Office Building Addition
    - In the Directory bar, click Projects
    - Select a project EC00515
    - In the Project Details, click the Dates tab and compare the Must Finish By Date with the calculated Finish date

Finish Date & Must Finish By Date



Focusing on Critical Activities

- To shorten the project, focus on critical activities.
- These represent the longest continuous path of activities through a project that determines the project Finish Date.
- If you adjust a critical activity, the finish is likely affected.

- Exercise
  - Steps
    - Click the Settings tab (bottom)
    - In the Defined Critical Activities section, select Longest Path

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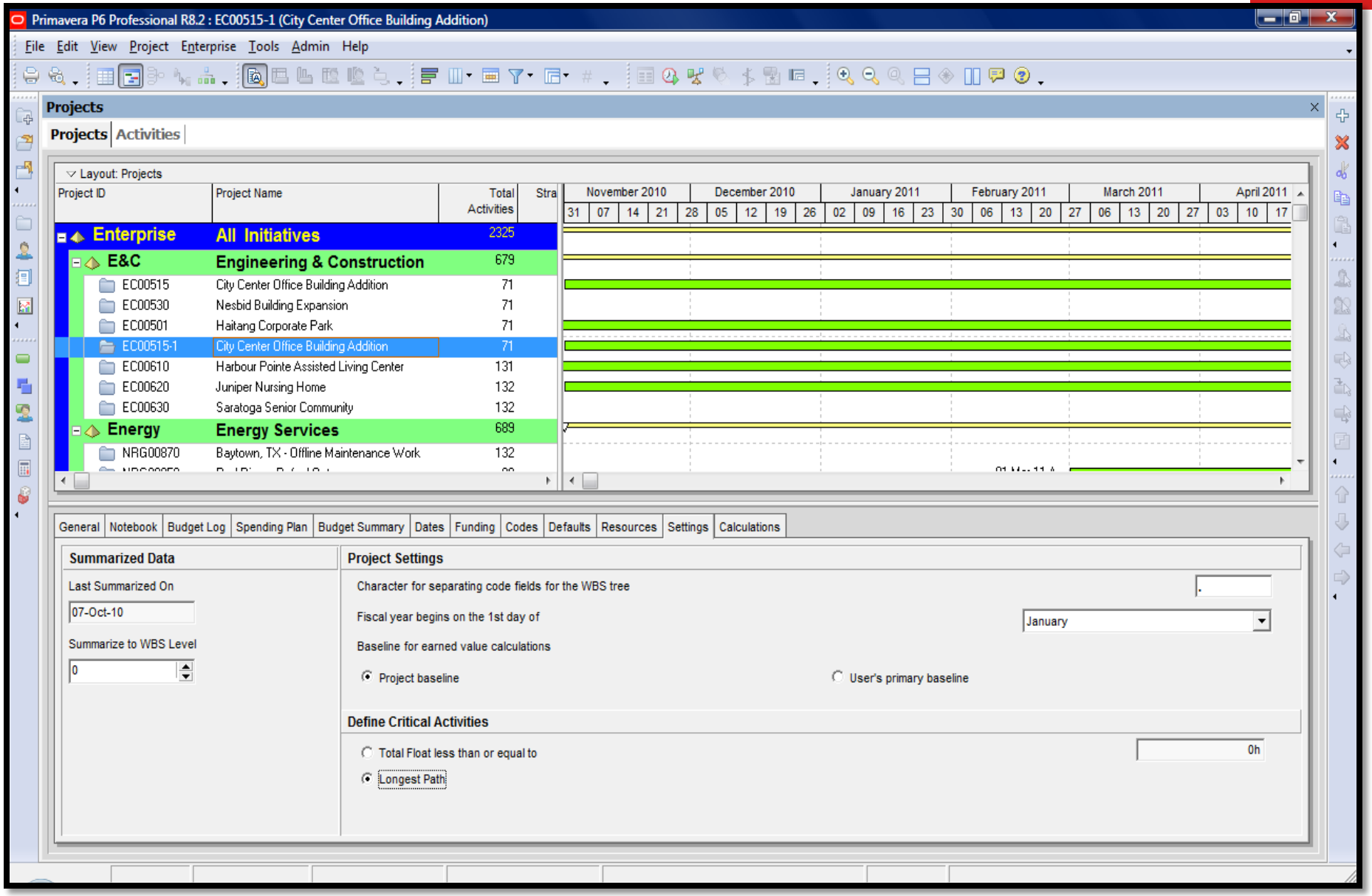
Focusing on Critical Activities



Focusing on Critical Activities

- Exercise
  - Steps
    - In the Directory bar, click Activities
    - In the Layout Option bar, click Layout, Open
    - Select a layout, Classic WBS Layout
    - In the Layout Option bar, click Filters
    - Select a filter, Critical, and then click Ok

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Shortening the Project *(Methods)*

- If the schedule analysis leads you to conclude that the Must Finish By date cannot be met, concentrate your efforts on shortening the schedule. Several methods can help you accomplish this goal:
  1. Refine duration estimates (Crashing)
     a. Break-down long activities
     b. Assign additional resources to reduce duration
  2. Use relationships to overlap activities (Fast-Tracking)
  3. Apply/ modify constraints
  4. Change calendar assignments
     a. Put critical activities on a longer workweek
     b. Add exceptions to non-work time

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Refining Duration Estimates

- Begin the analysis by reviewing the activities with the longest duration. In general, these activities offer the greatest flexibility in altering durations.

- Exercise
  - Steps
    - Select an activity, EC1790 – Install Floor and Carpeting
    - Click the Status tab (bottom)
    - In the Original Duration field, type <10>, and press Enter
    - Press F9, and then click Schedule
    - See Changes in Total Float column

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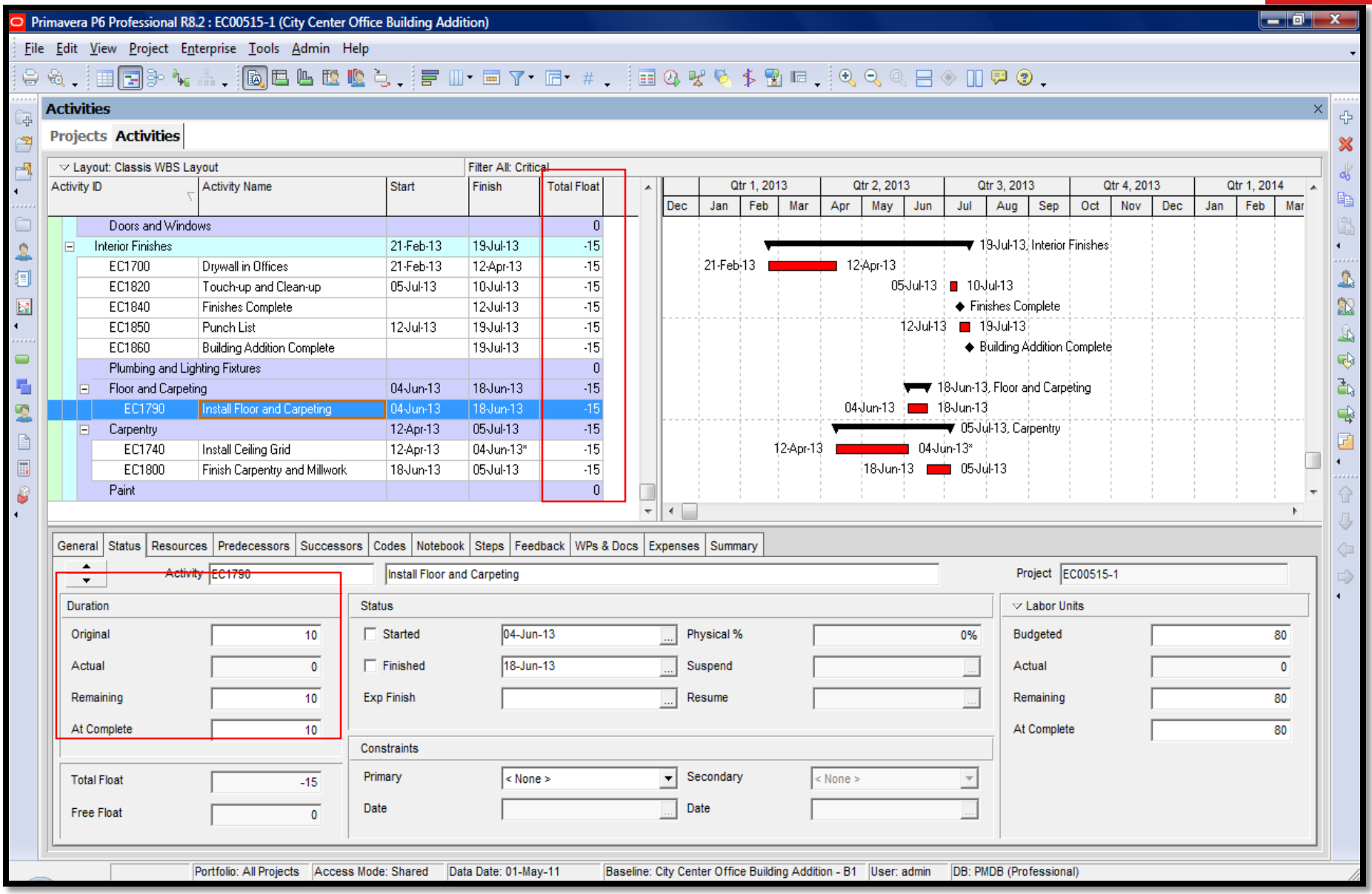
Refining Duration Estimates



Modifying Relationships

- If you need to further compress the schedule, review relationships between activities on the critical path.
- Currently there is a Finish-to-Start (FS) relationship between activities EC1740-Install Ceiling Grid and EC1790-Install Floor and Carpeting. You determine that these activities can be performed at the same time. Therefore, change the relationship to Start-to-Start (SS) with 5 days of lag.
- Exercise
  - Steps
    - Verify an activity, EC1740-Install Ceiling Grid is selected
    - Click the Relationships tab (bottom)
    - Double-click in the Relations for EC1790 (Successors Pane)
    - In the Lag field, type <5> and press Enter
    - Press F9 and then press Schedule
    - Now observe Total Float column

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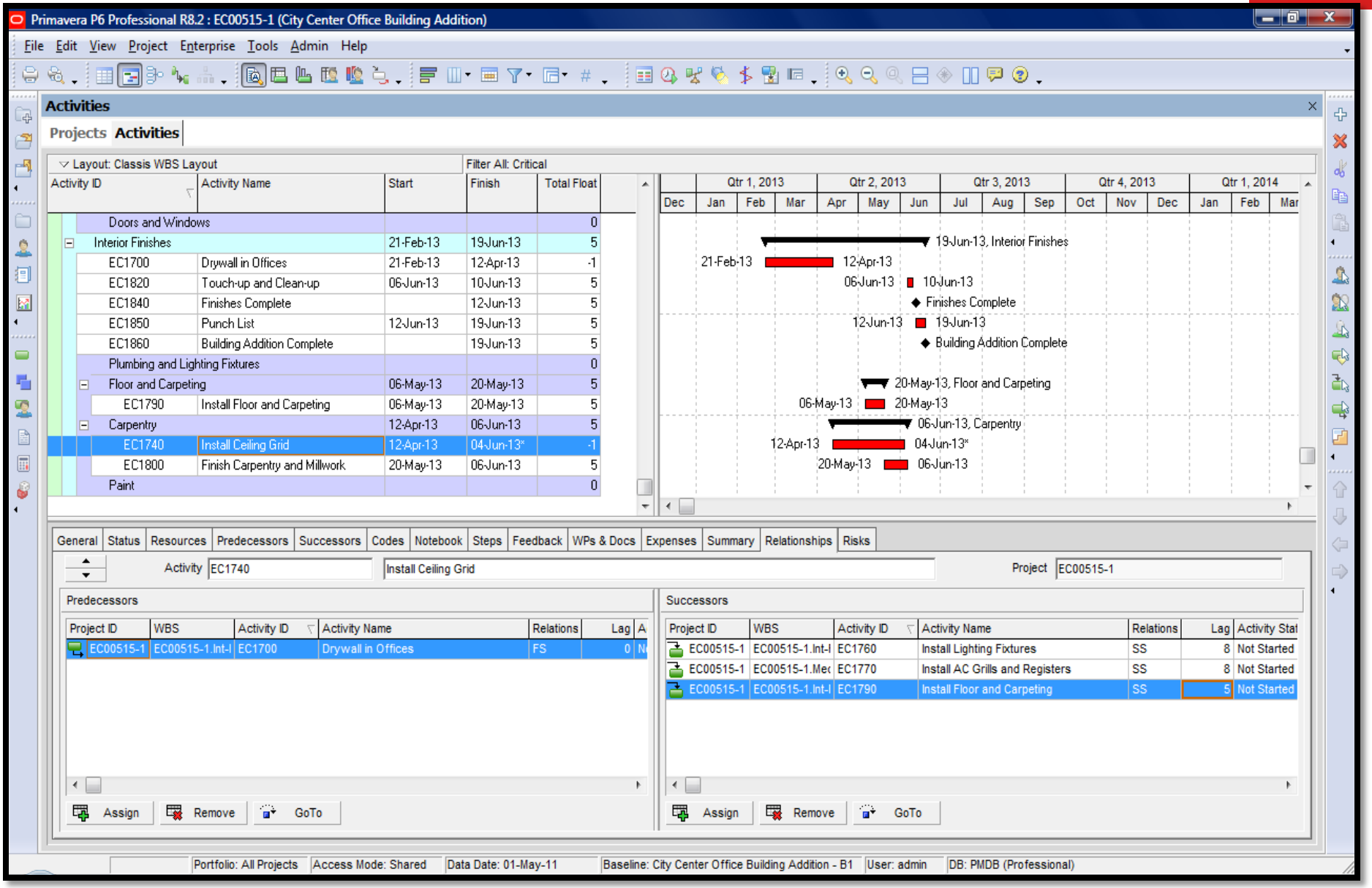
Modifying Relationships



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Modifying Constraints

- Constraints assigned earlier in the project lifecycle may needed to be modified based on the latest information from the project team. If you modify a constraint, be sure to also modify the Notebook topic that was created to document the constraint.
- A resource is available to work on the activity EC1740-Install Ceiling Grid. You can now remove the Finish On or Before constraint from the activity.
- Exercise
  - Steps
    - Select an Activity, EC1740-Install Ceiling Grid
    - Click the Status tab (bottom)
    - In the Primary drop-down list in the Constraint section, select a Constraint Type, None
    - Click the Notebook topic, Constraints and Assumptions, and click Delete
    - Press F9 and then press Schedule
    - Now observe Total Float column

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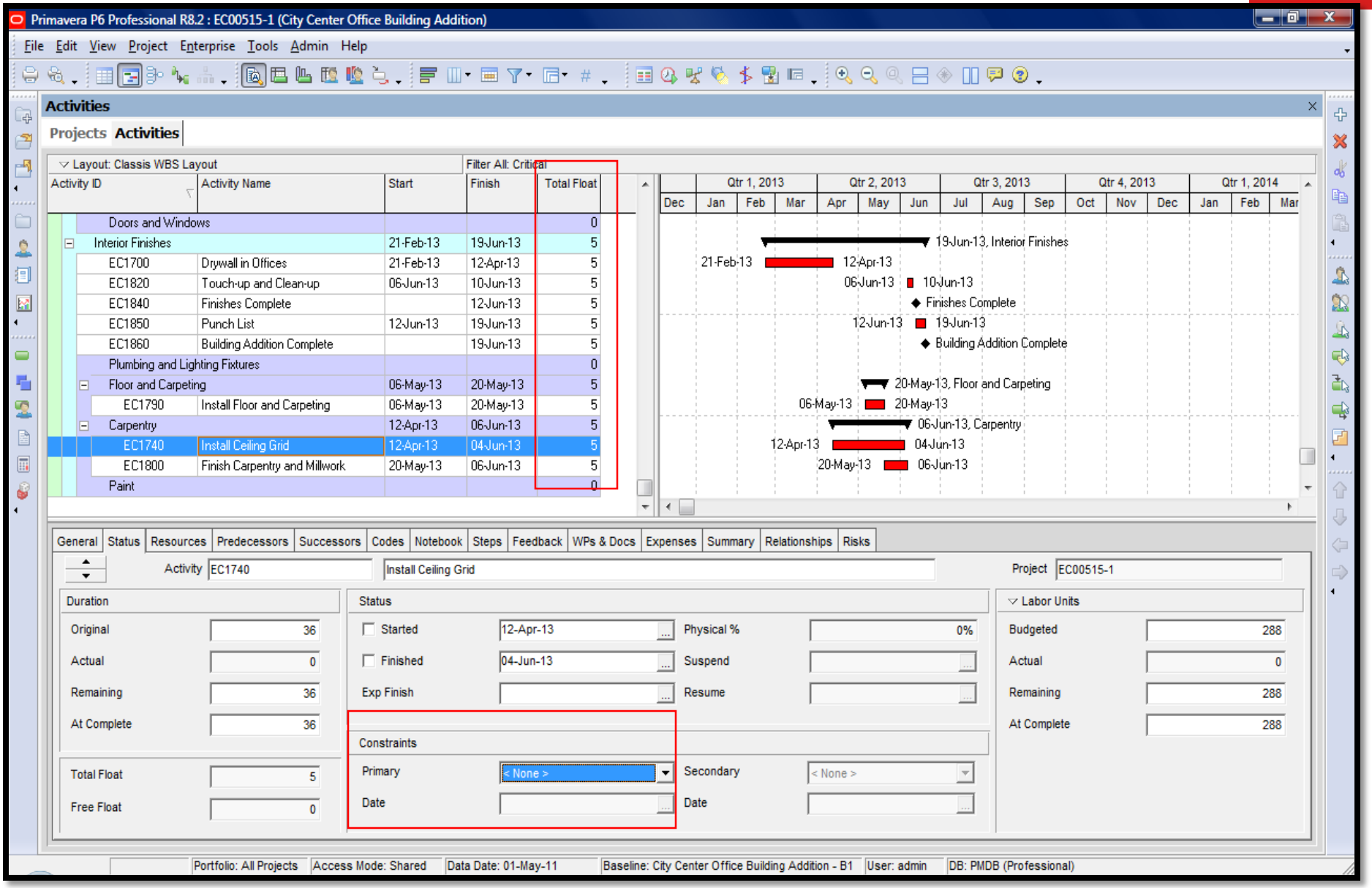
Modifying Constraints



Verifying Project Dates

- To see if the project will now finish on time, verify that no negative Total Float exists on any of the activities in the project.
- The Total Float for the project equals 5 days and the calculated Finish Date is 19-Jun-13. Therefore, the project is scheduled to finish before the Must Finish By date of 28-Jun-13.
- Exercise
  - Steps
    - In the Directory bar, click Projects
    - Select a project, EC00515
    - Click the Dates tab (bottom) and view Finish date and Must Finish By date
    - View Total Float column in Project Table

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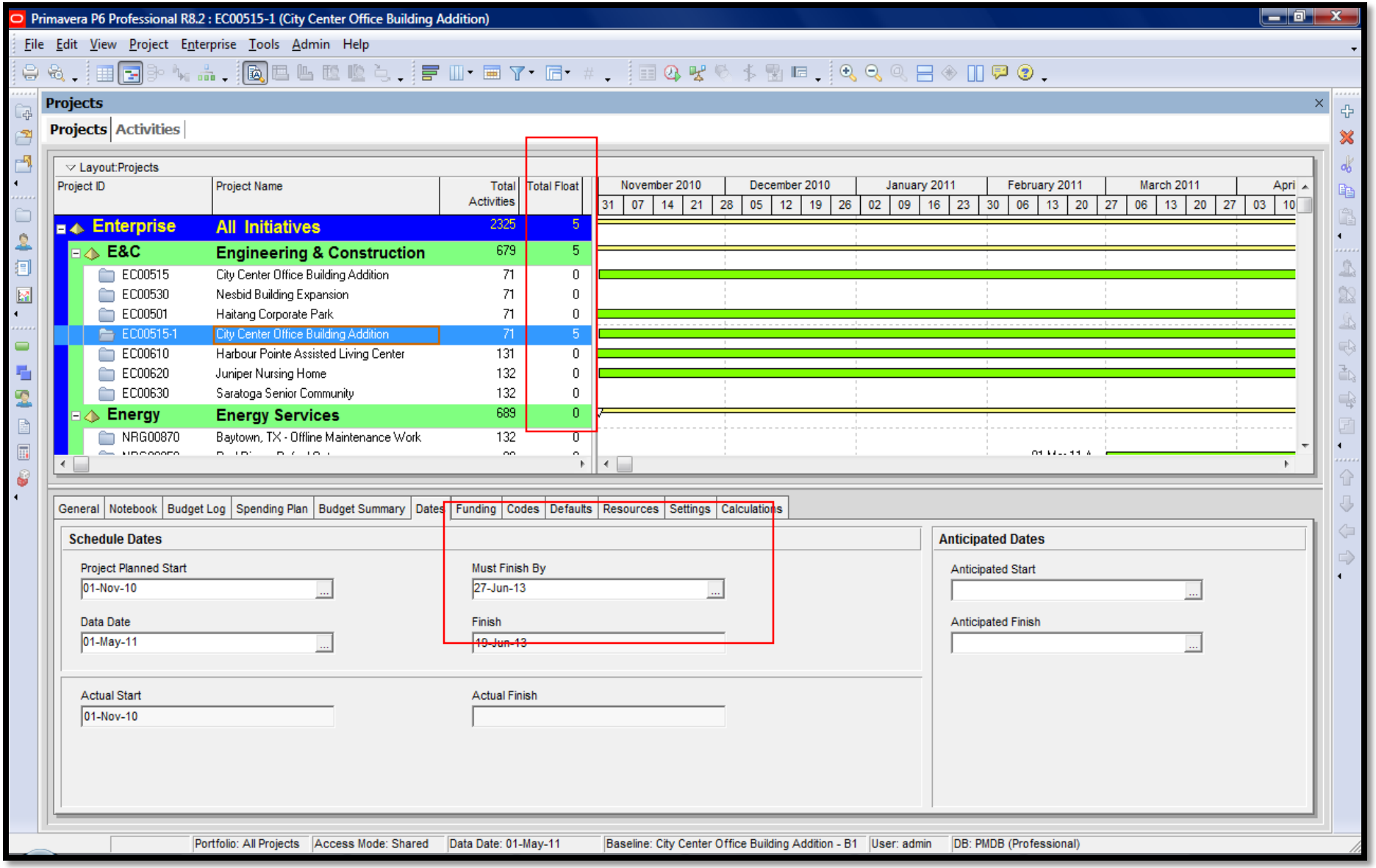
Verifying Project Dates



Analyzing Resource Allocation

- The project plan is now scheduled to be completed by the deadline. Before proceeding, verify that the resources are appropriately allocated.
- You can use the Resource Usage Profile to determine which resources are over-allocated/underutilized. You can the re-assign resources to help even the workload.
- Exercise
  - Steps
    - Open a project, EC00515-City Center Office Building Addition
    - In the Directory bar, click Activities
    - In the Layout Option bar, click Layout, Open
    - Select a layout, Resource Overallocation Profile
    - Select a Resource, Operator
    - View Over-allocation marked by Red

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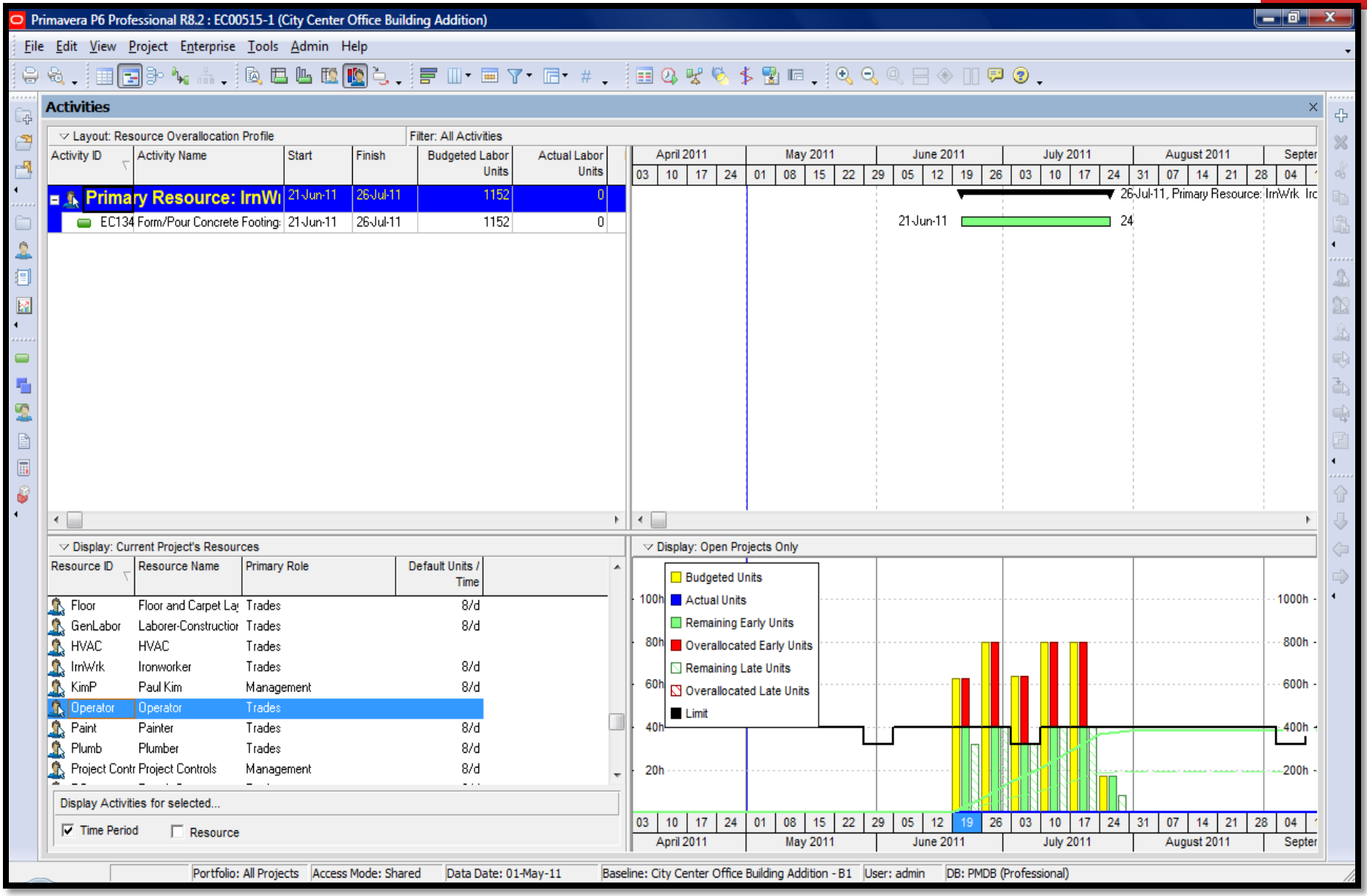
Analyzing Resource Allocation



Analyzing Resource Allocation

- The Resource Usage Profile allows you to run a filter to focus on the activities that are contributing to a resource's over-allocation.
- Using a filter in the Resource Usage Profile, identify the activities contributing in Operator's over-allocation in Jun-Jul 2011.
- Exercise
  - Steps
    - In the Display Activities for Selected section at the bottom, mark Time Period
    - In the histogram timescale, select a week, 19-Jun-11, and view activities causing over-allocation
    - In the histogram timescale, select a week 26-Jun-11, and view activities causing over-allocation

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Correcting Over-Allocation

- If over-allocation is identified, choose a method to remove over-allocation from the specific resource.
  - Replace the over-allocated resource with an available resource
  - Increase the resource's workweek
  - Increase the hours/day of the resource
  - Assign additional resources to the activity
- Exercise
  - Steps
    - Select a resource, Operator
    - In the Display Activities for Selected section at the bottom, clear Time Period
    - Verify that GenLabor – Labor Construction is available to work on the activity during the week of 26-Jun-11

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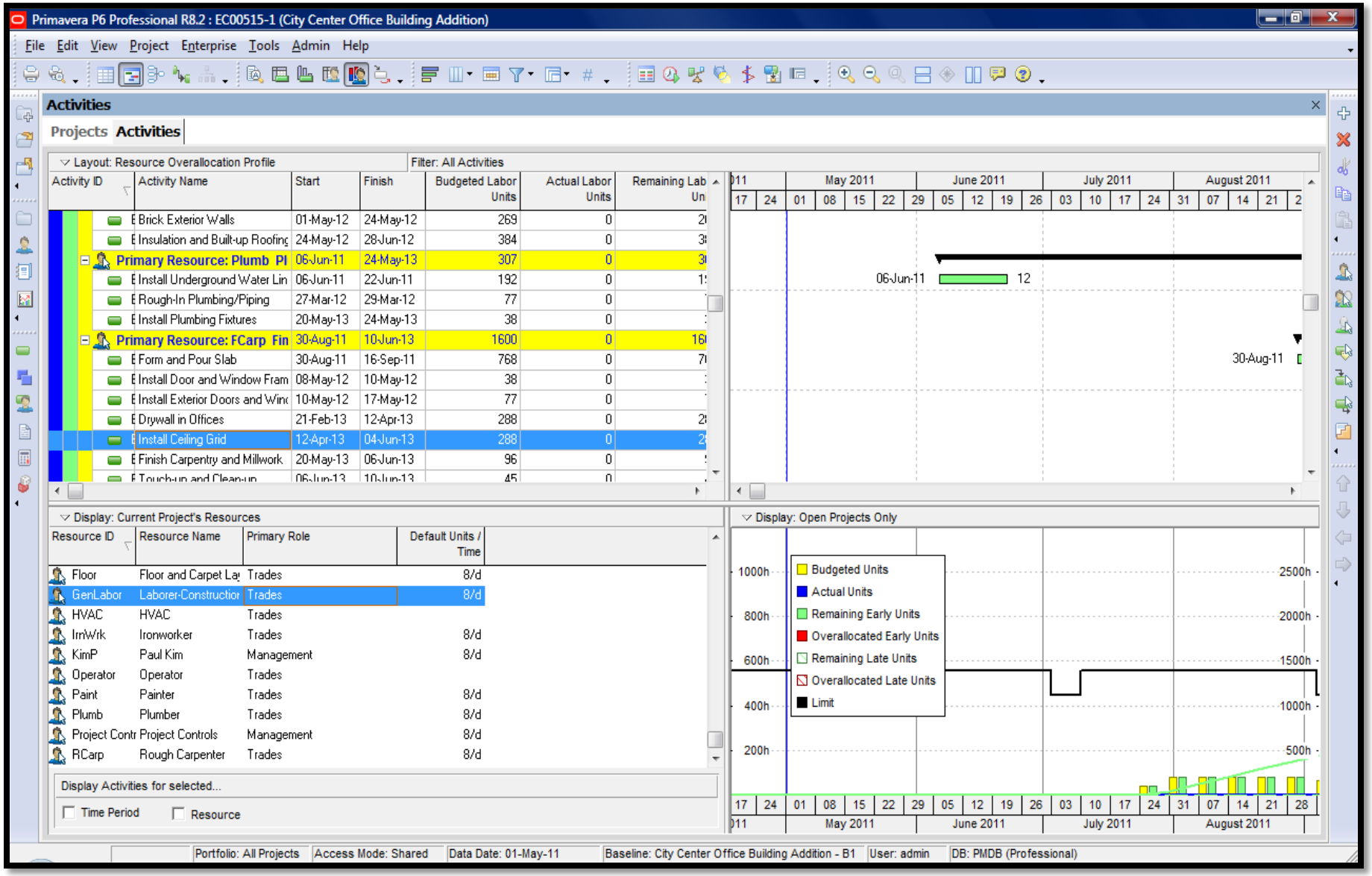
Correcting Over-Allocation



Correcting Over-Allocation

- If the selected activities have an associated role assignment, you can quickly change the resources in the multiple activities by first selecting the activities and then clicking Assign Resourcce button in the Command bar
- Exercise
  - Steps
    - Select a resource, Operator
    - In the Activity Table, select Activities EC1340-Form Pour Concrete Footings
    - In the Command bar, click Assign Resources button
    - Click Replace button
    - Select GenLabor and press Assign button.

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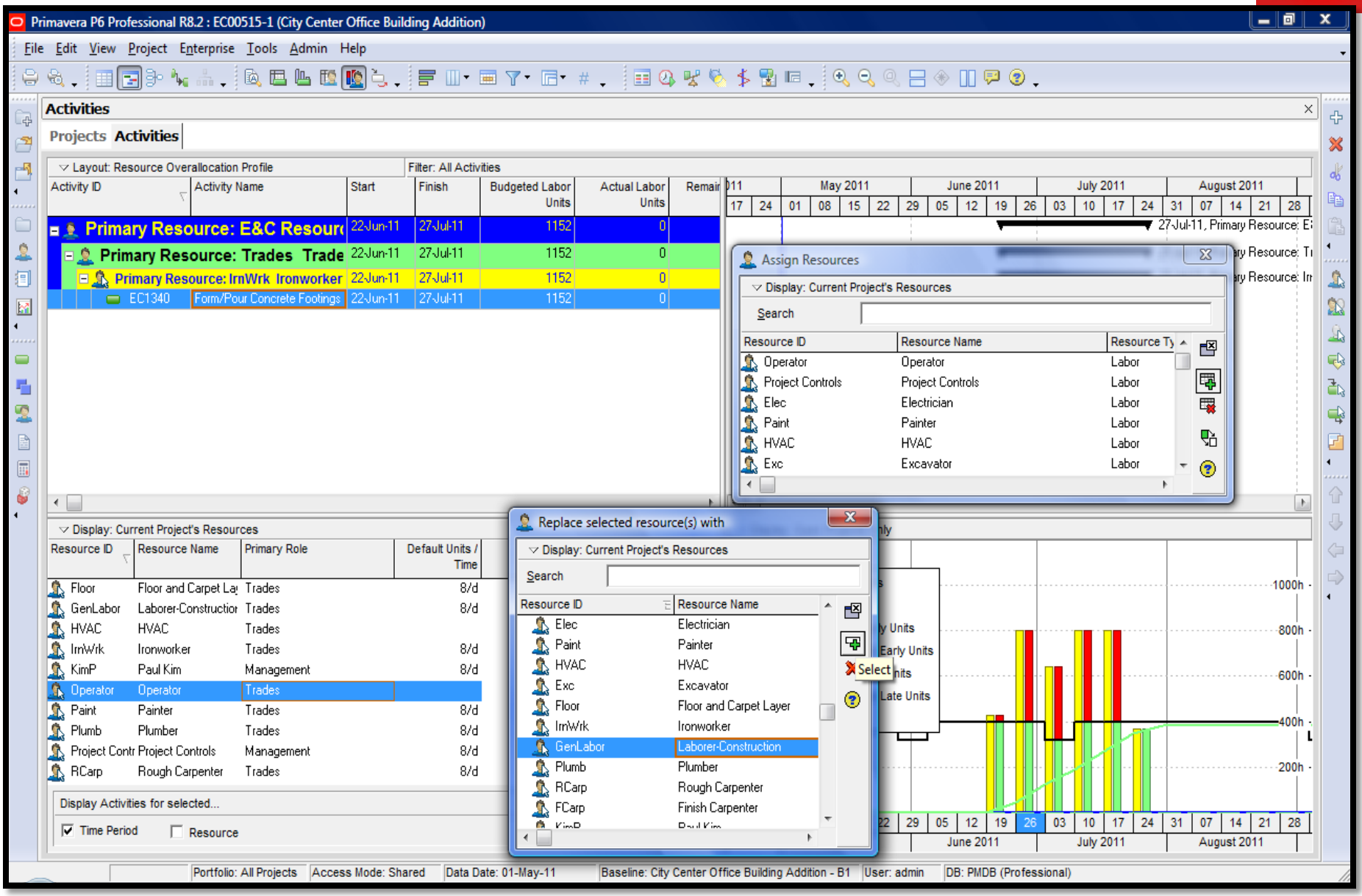
Correcting Over-Allocation



Reviewing Allocation

- Use the Resource Usage Profile to check allocation for Pete Lopez, who was replaced from the activities with Katy Dunn.

- Exercise
  - Steps
    - In the File menu, click Refresh Data or Press F5
    - Now observe Resource Usage Profile

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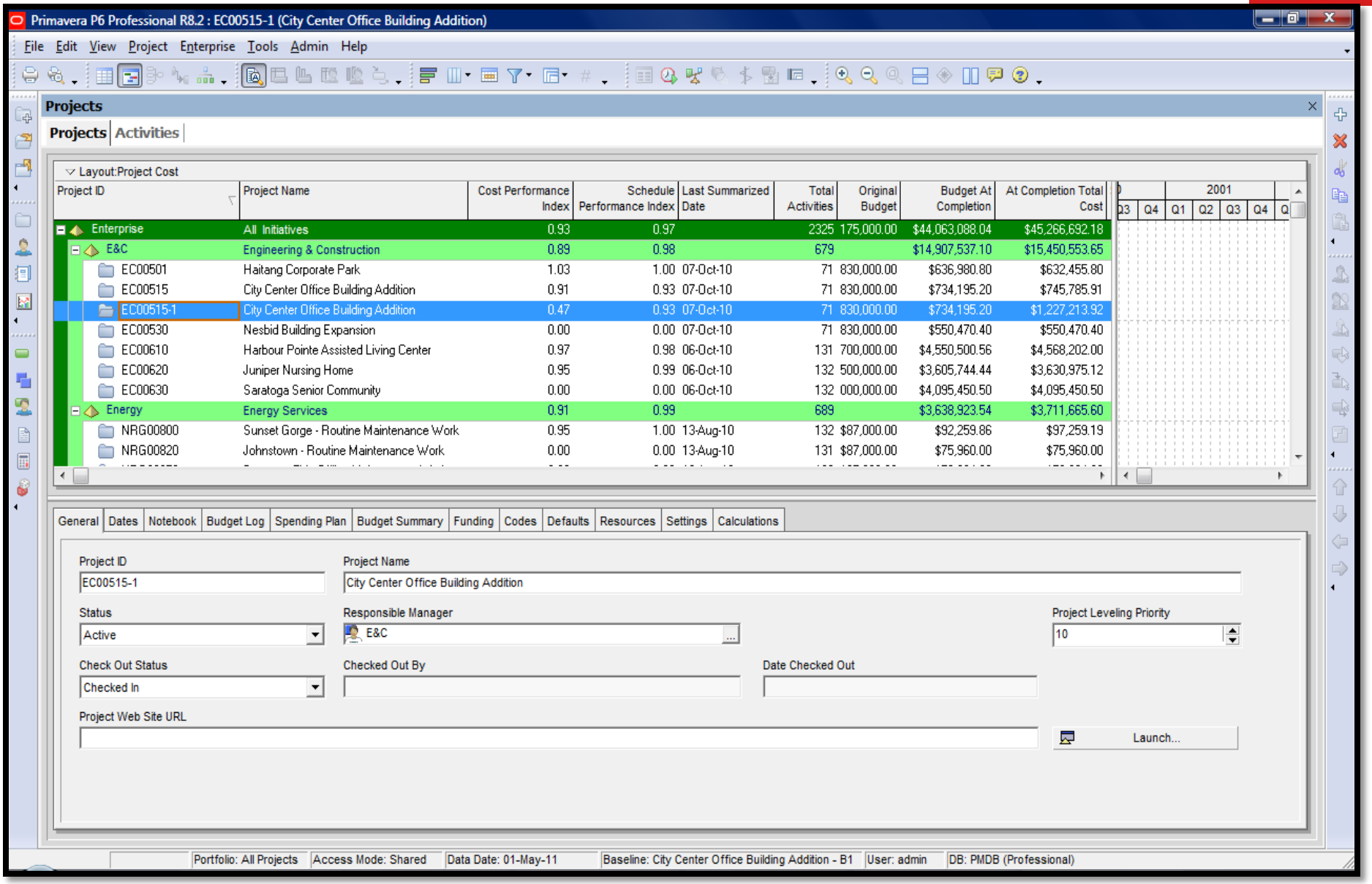
Analyzing Budget

- There are many options for analyzing budget. By displaying cost columns in the Activity Table, you can analyze the budget cost of the entire project as well as each individual activity.
- $830,000 has been allocated for the project EC00515. You will display a layout that shows budgeted cost information so you can determine whether the project is within the budget or not.
- Exercise
  - Steps
    - Open project, EC00515 - City Center Office Building Addition
    - In Project Table, Add column Original Budget
    - In Activities Window, Open Layout Project Cost
    - Add column Budget At Completion and observe budget (CPI)

Analyzing Budget



Lesson Review

- Optimizing the project plan is the last step in planning your project. Ensure that the project plan meets its date, and cost requirements.
- If the calculated Finish date of the project is beyond the Must Finish By date, the project must be shortened.
- Compare the dates in the Dates tab in Project Details
- You can use various methods to shorten the project, such as refining durations, modifying relationships, applying constraints, and focusing on critical activities.
- Use the Resource Usage Profile to ensure resources are not over-allocated.
- Evaluate costs to ensure that the project can be completed within budget.

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Baselining the Project Plan

Lesson 16

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Baselining the Project Plan

- Objectives
  - Create a baseline plan
  - Display baseline bars on the Gantt Chart
  - Modify the bars on the Gantt Chart

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Baseline

- A ***baseline*** is a copy of a project that you can compare to the current project to evaluate progress. Create a baseline plan before updating a schedule for the first time.
- Baseline provides a target against which you can track a project's cost, schedule, and resource performance.
- Baseline functionality in Primavera enables you to:
  - Save an unlimited no. of baselines per project
  - Designate one project baseline and up to three user baselines at a time for comparison to the current project
  - Assign a baseline type to categorize a baseline. Examples include initial planning, what-if, or mid-project baselines
  - Baseline types can help you benchmark performance across multiple projects

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Creating a Baseline

- You can create a baseline either by:
  - Copying the currently opened project, or
  - Converting another project into a baseline
- When you create a baseline, you must select the project to which it is associated. Baselines can be assigned only to opened projects. All opened projects are displayed in the ***Maintain Baselines dialog box***
- Exercise
  - Steps
    - Select a project, EC00515-City Center Office Building Addition
    - Confirm you are in Activities Window
    - In the Layout Option bar, click Layout, Open
    - Select a layout, Classic Schedule Layout
    - In the Project menu, click Maintain Baselines
    - Verify that the project to which you are associating the baseline, City Center Office Building Addition-B1, is selected

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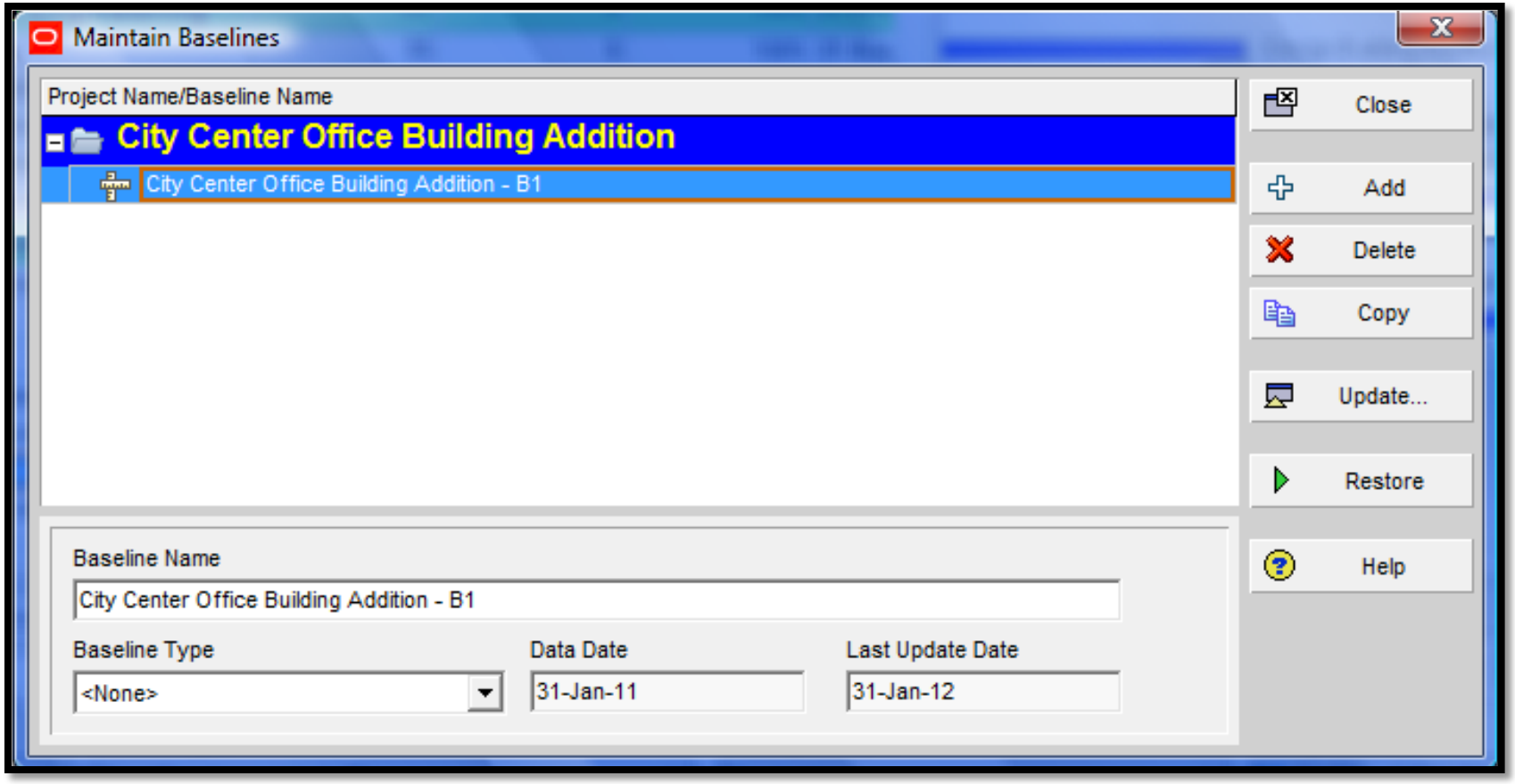
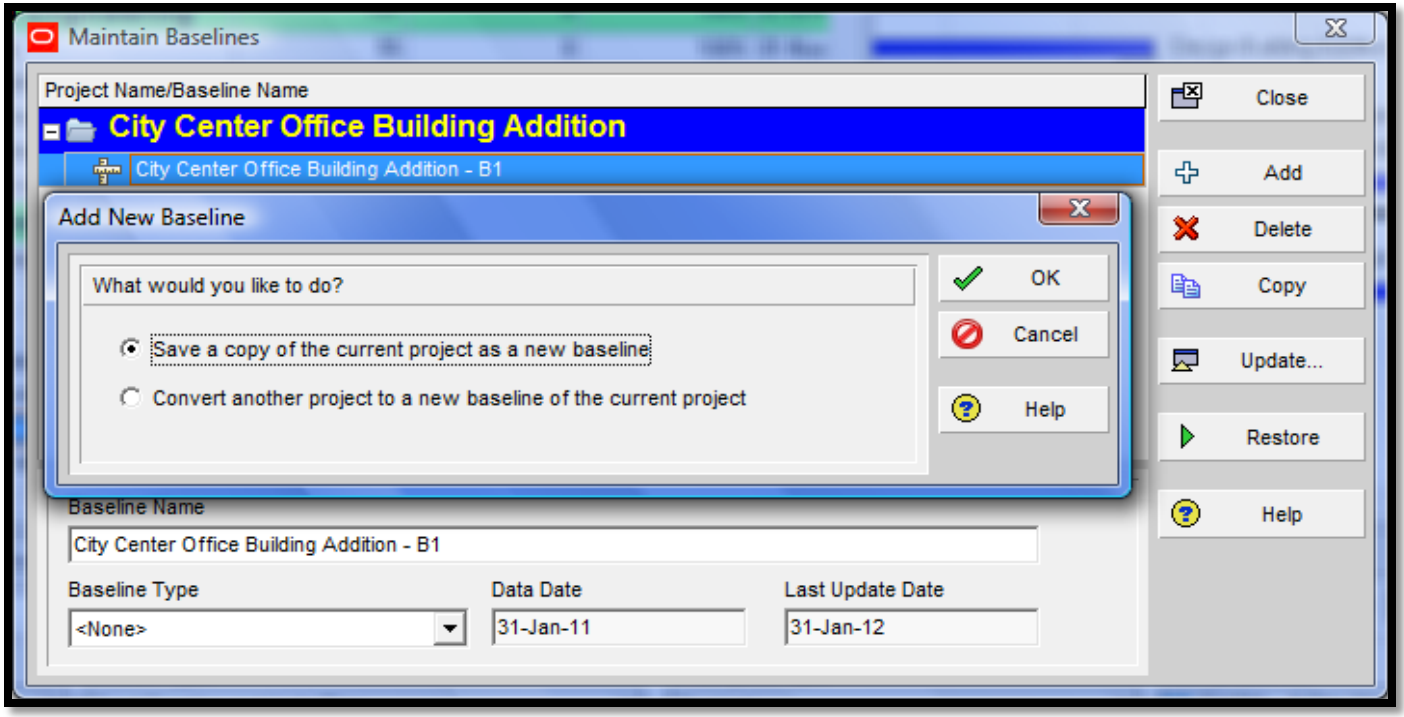
Creating a Baseline



Creating a Baseline

- Exercise
  - Steps
    - Click Add
    - Verify that Save a copy of the current project as a new baseline is selected
    - Click Ok



Categorizing the Baseline

- Assign a ***Baseline Type*** to categorize the baseline based on how you intend to use it. For example, the Initial Plan baseline type can be used for your initial project plan. Another baseline type, Mid Project Status, can be used after the project is underway. Baseline types are also useful in organizing multiple baselines in the project.
- Exercise
  - Steps
    - Select a baseline, City Center Office Building Addition-B2
    - In the Baseline Name field, type <City Center Office Building Addition– Initial Plan>
    - In the Baseline Type drop-down list, select Initial Planning Baseline
    - Click Close

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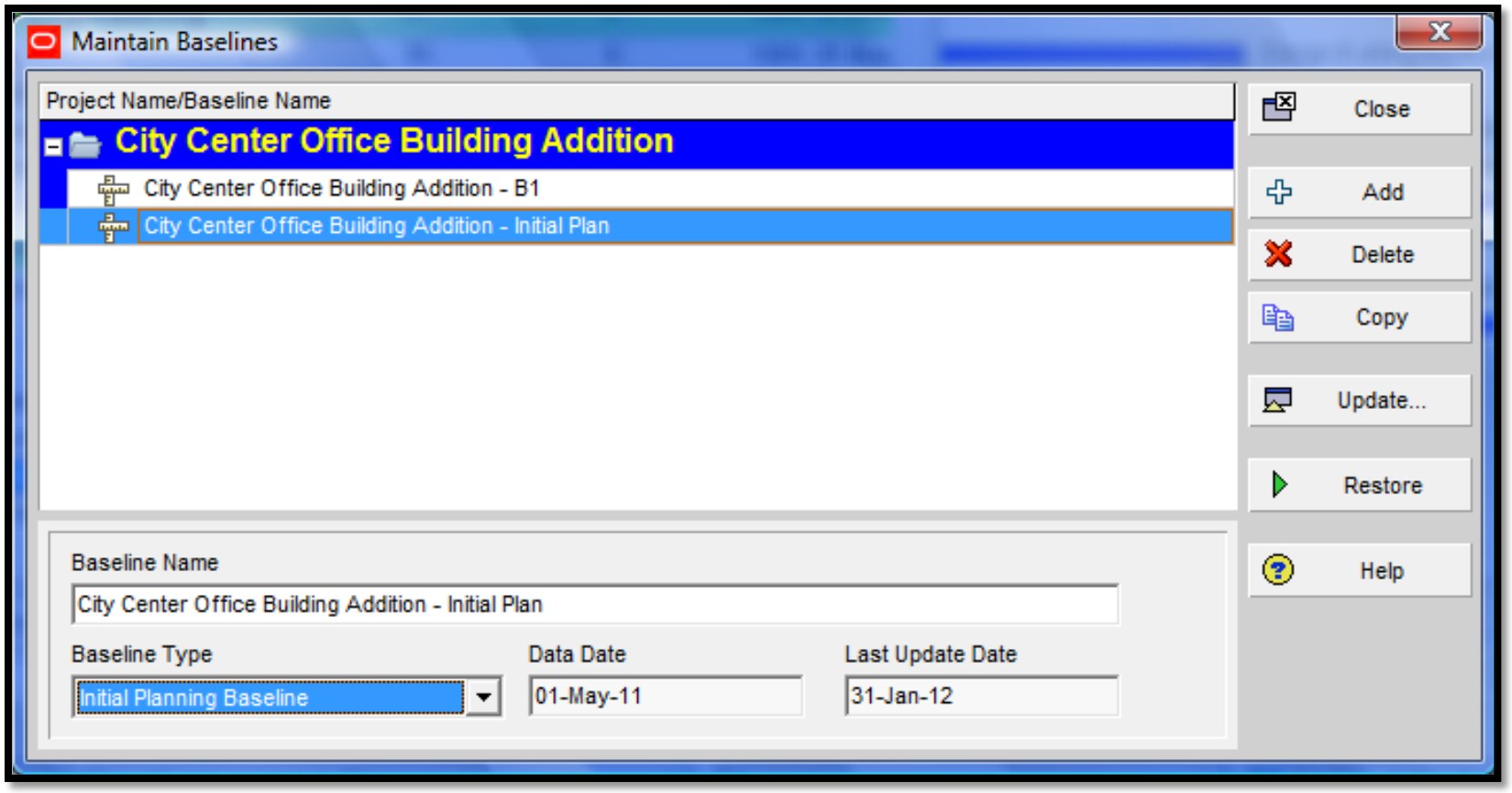
Categorizing the Baseline



Assigning a Baseline

- Use the ***Assign Baselines dialog box*** to choose a project baseline and/or user baseline for the project. If no baseline is designated as Active, the current project plan is used as the baseline.
- Project Baseline selected by the Project Manager for the project
  - Used for schedule, resource, and cost comparison
  - Controlled by the security privilege, Maintain Project Baselines
- User Baseline assignments are user-specific
  - Used for schedule comparison only
  - Each user can choose a different baseline for comparison to the current project

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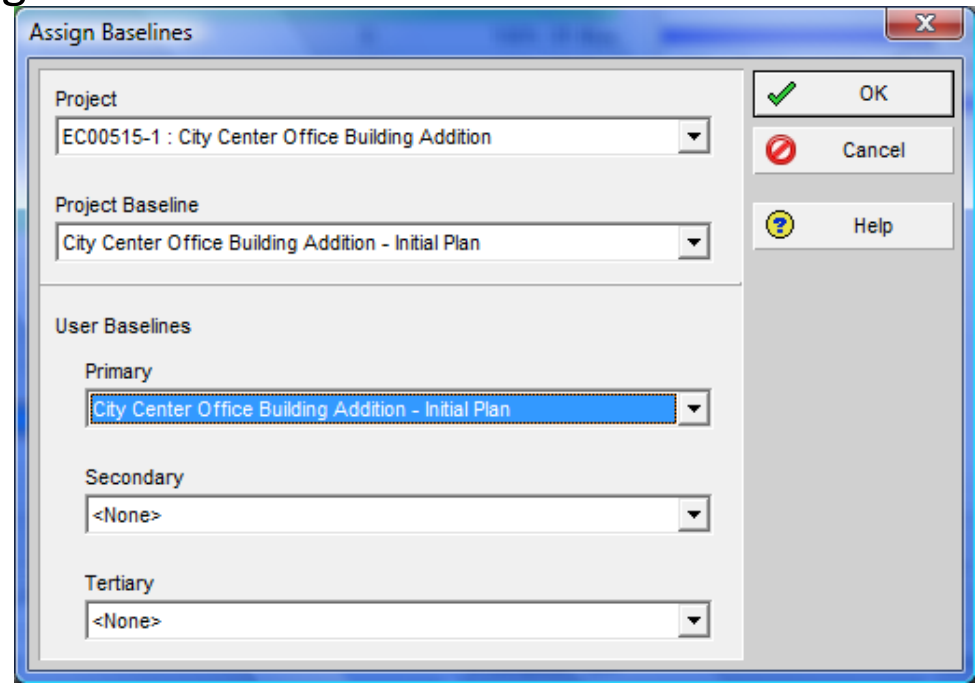
Assigning a Baseline

- Exercise
  - Steps
    - In the Project menu, click Assign Baselines
    - In the Project Baseline drop-down list, select City Center Office Building Addition – Initial Plan
    - In the Primary drop-down list in User Baselines section, select City Center Office Building Addition-Initial Plan
    - Click Ok



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Viewing Baseline Bars

- The ***Bars dialog box*** allows you to modify the type, size, color, row position, and shape of the bars displayed in the Gantt Chart
  - ***Timescale*** – Bar is drawn on the timescale selected, e.g. Actual Bar drawn from Actual Start date to Actual Finish date
  - ***Filter*** – Bar is drawn for all activities that match the criteria listed in the filter displayed

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Bar Style Tab

- The ***Bar Style tab*** in Bars dialog box enables you to specify the shape, color, and pattern of the bars and endpoints
  - ***Shape*** – Shape of the selected bar's start endpoint, the bar itself, and the finish endpoint
  - ***Color*** – Choose the selected bar's start endpoint color, the color of the bar itself, and the color of the finish endpoint
  - ***Pattern*** – The fill pattern of the selected bar
  - ***Row*** – Displays the position of the bar on the Gantt Chart

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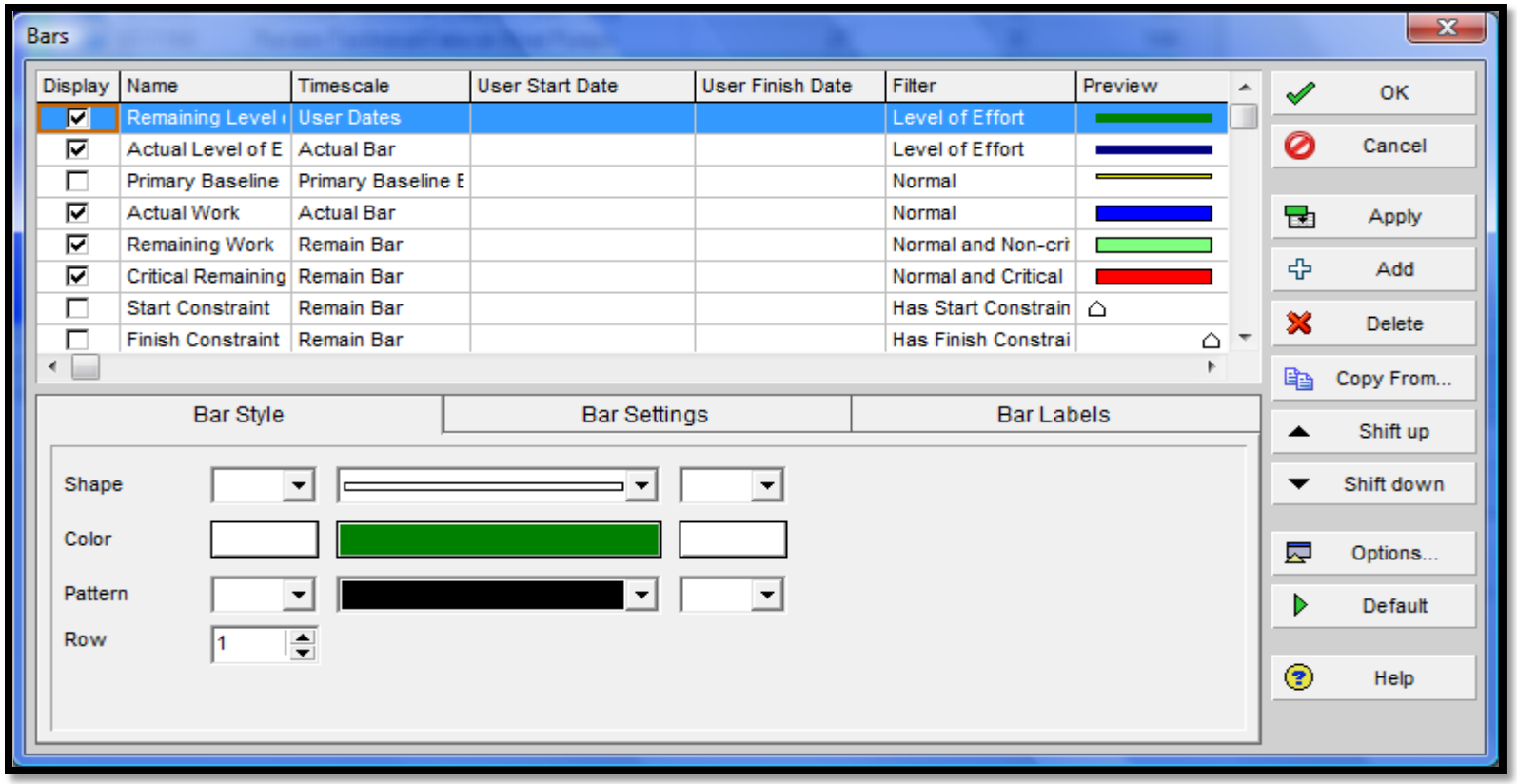
Bar Style Tab

- Exercise
  - Steps
    - In the Layout Option bar, click Bars
    - Or Right-click the Gantt Chart area, click Bars



Displaying Baseline Bar

- By displaying baseline bars in the Gantt Chart, you can visually compare the baseline plan's schedule dates to the current project plan's schedule dates
- In addition to bars displayed by default, you can create additional bars based on date fields and filters
- Select a value in the Row field to determine placement of a bar in the Gantt Chart
- Exercise
  - Steps
    - In the Display column, mark a check box Primary baseline
    - In the Row field in the Bar Style tab, verify 2
    - In the Display column, mark a checkbox, Baseline Milestone
    - In the Row field, verify 2
    - Click Ok to close the Bars dialog box

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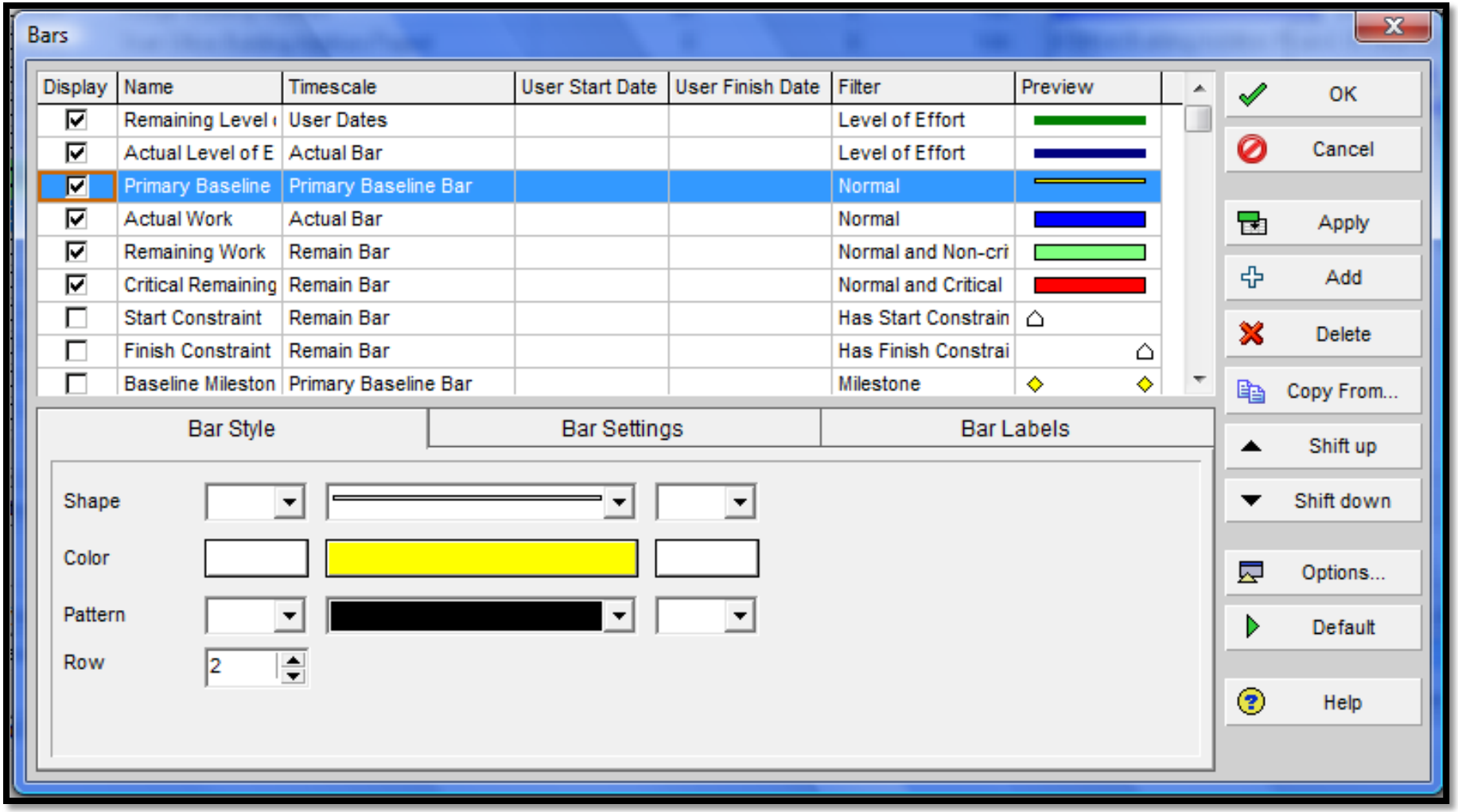
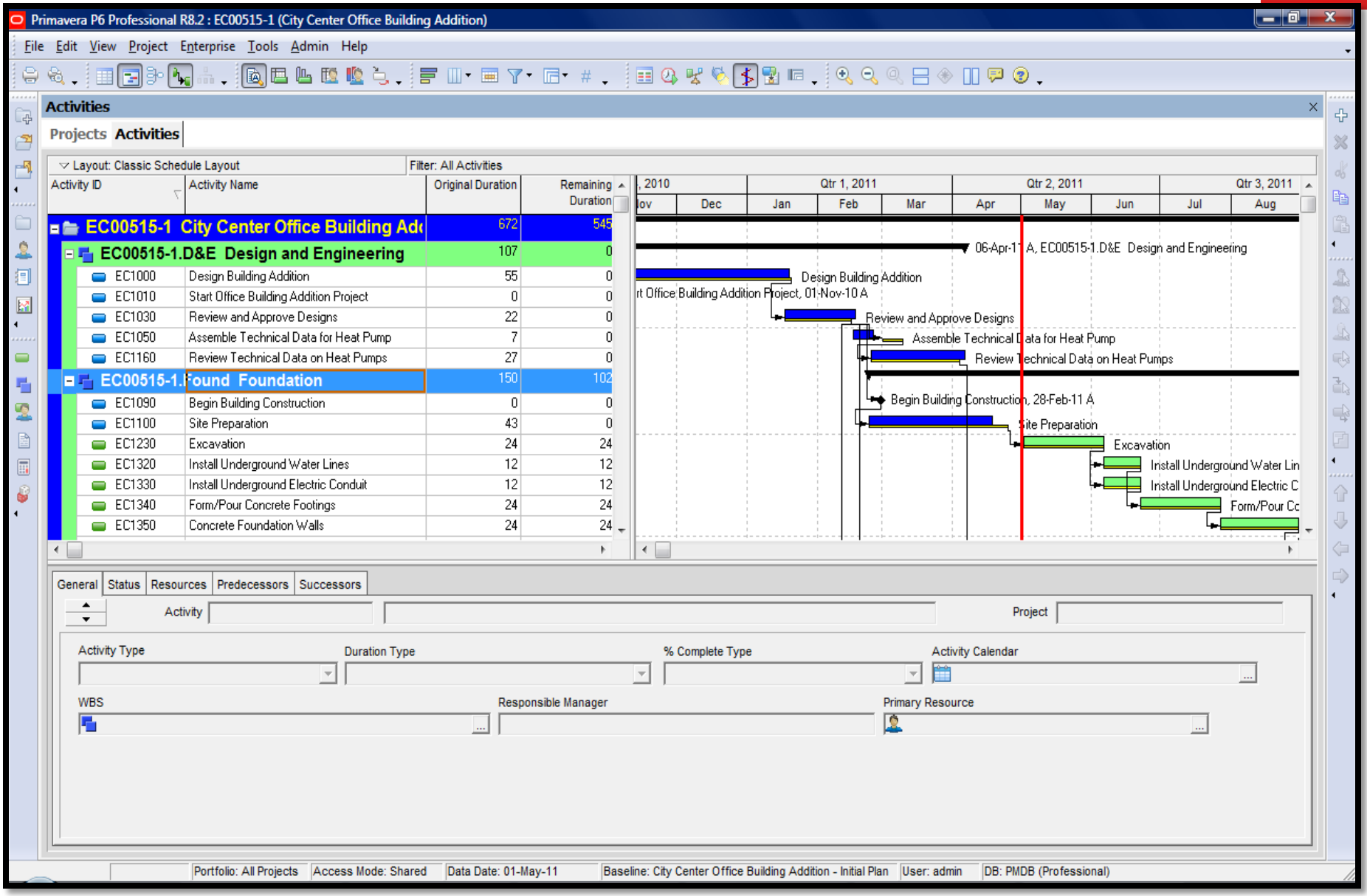
Displaying Baseline Bar



Displaying Baseline Bar



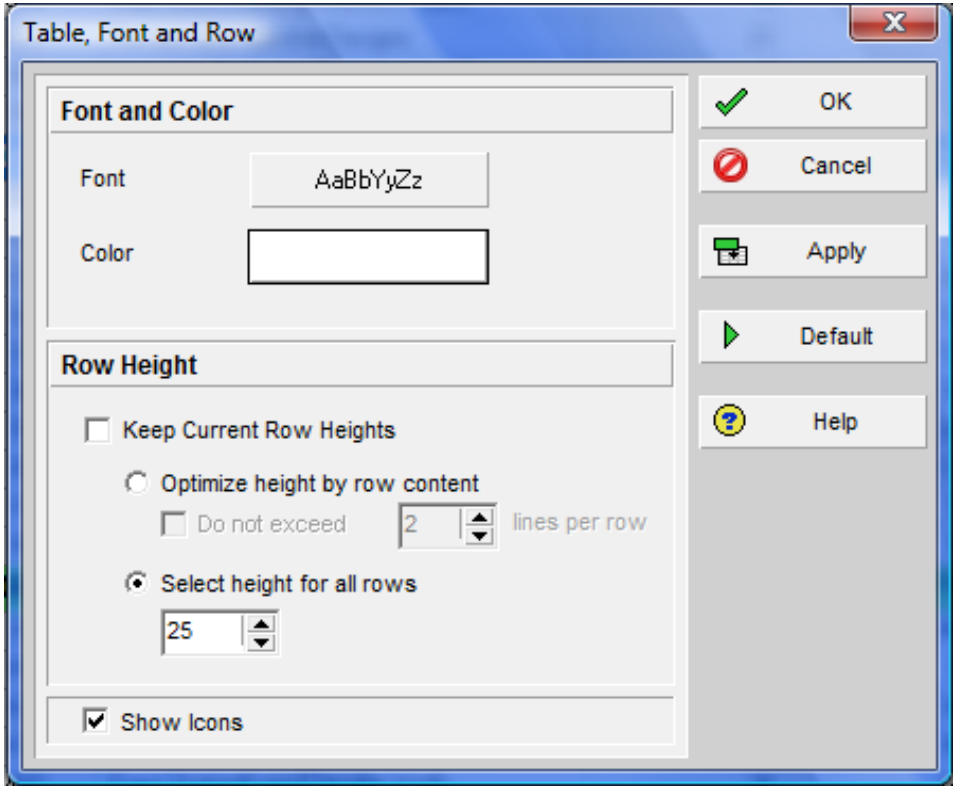
Customizing the Activity Table

- You can further customize the layout by choosing display options for the Activity Table.

- These include the font of the text and the height of the rows, which can be specified in the ***Table, Font, and Row dialog box***

Customizing the Activity Table

- Exercise
  - Steps
    - In the Layout Option bar, click Show on bottom, No Bottom Layout
    - In the Layout Option bar, click Table, Font and Row
    - In the Row Height section, clear a checkbox, Keep Current Row Height
    - Select an option, Select height for all rows
    - Use arrows to increase row height to 25
    - Click Ok



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Bar Labels Tab

- ***Labels*** can be placed on any of the bars listed in the dialog box. By adding dates to the bars, you can quickly determine the Start and Finish dates of activities in the Gantt Chart

- Exercise
  - Steps
    - In the Layout Option bar, click Bars
    - Select a bar, Current Bar Labels
    - Click the Bar Labels tab
    - Click Add
    - In the Position column drop-down list, select Right
    - In the Label column drop-down list, select Activity % Complete
    - Click Ok to close the Bars dialog box

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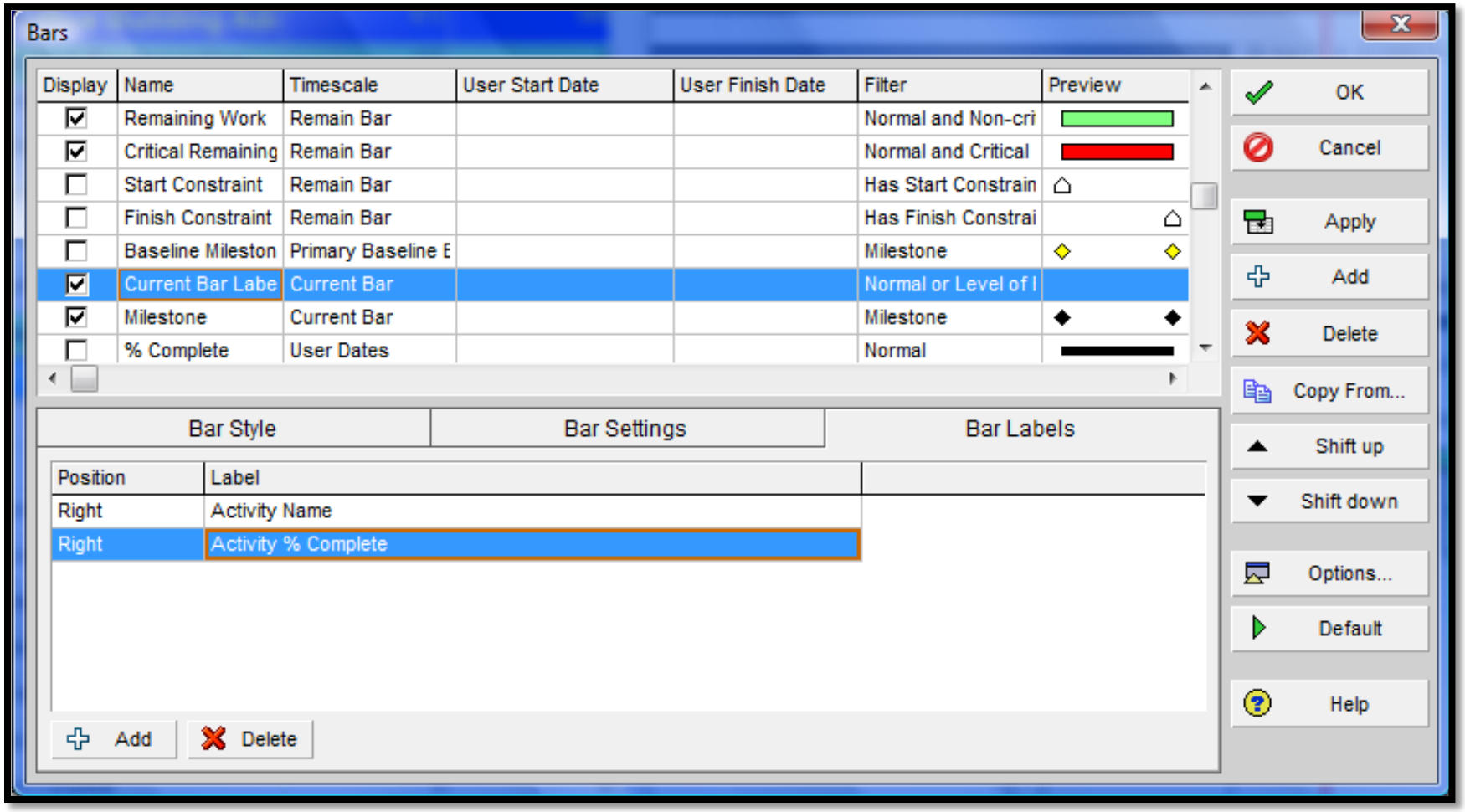
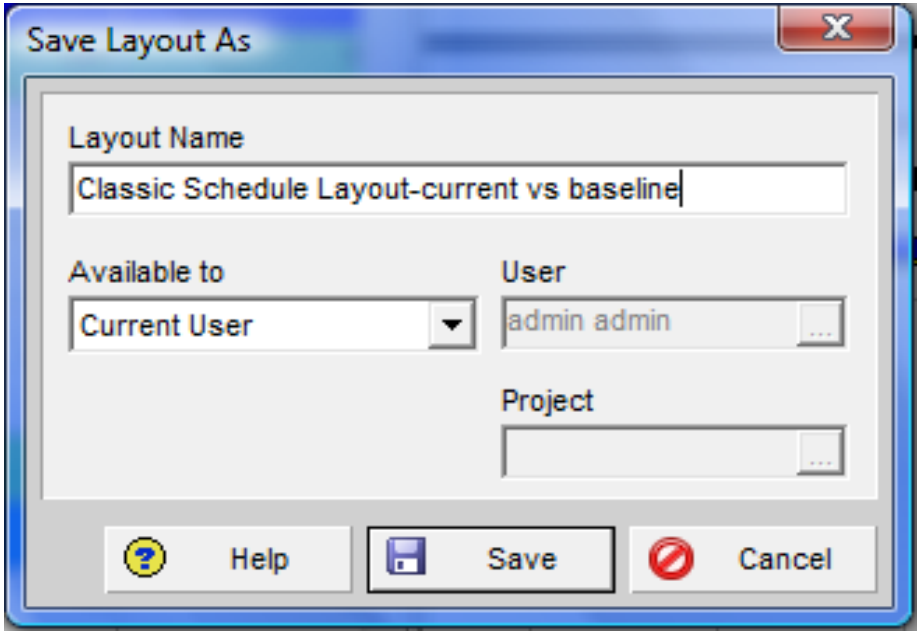
Bar Labels Tab

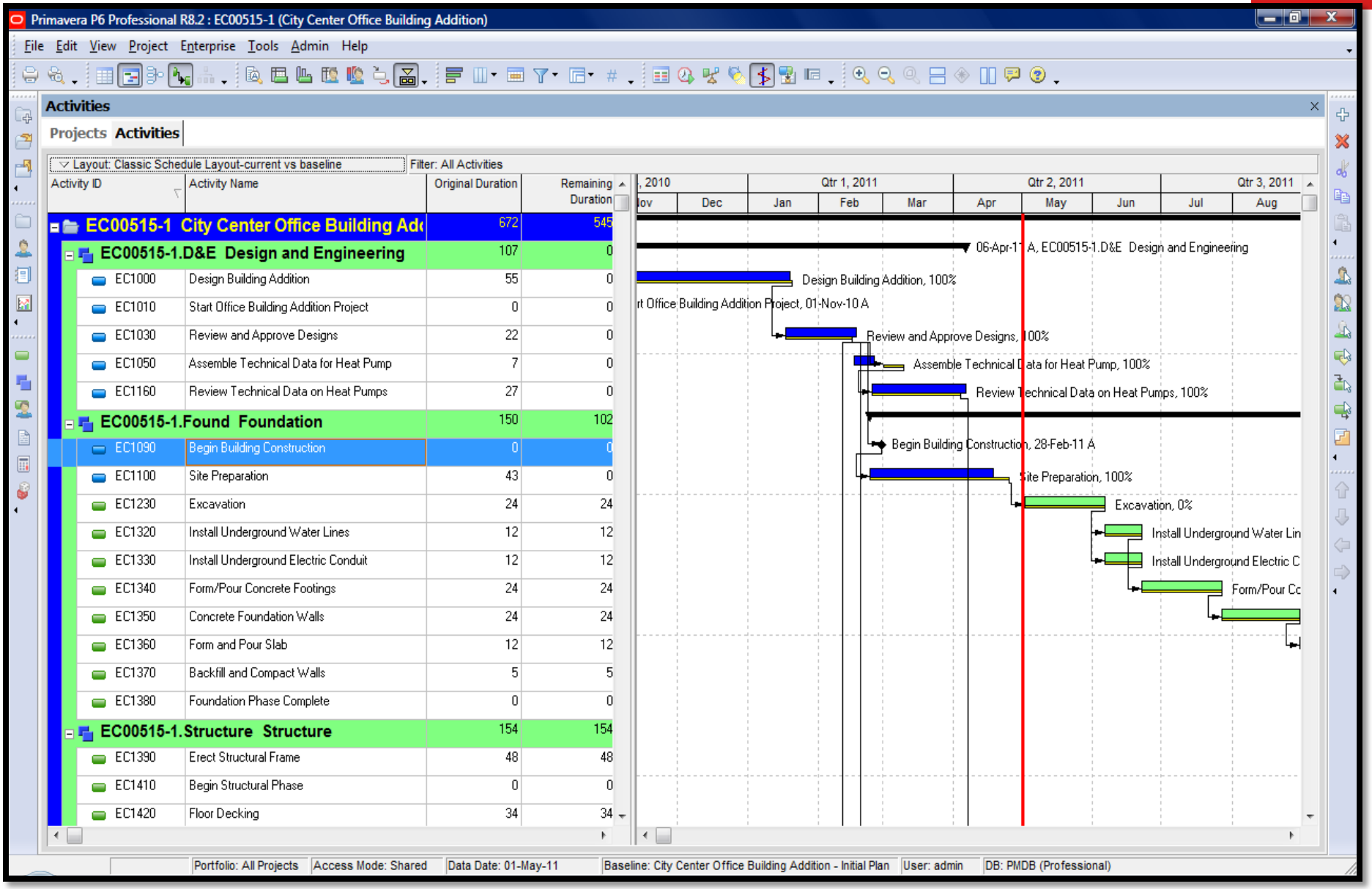


Saving the Layout

- If you are pleased with the layout, save it with a new name
- Exercise
  - Steps
    - In the Layout Option bar, click Layout, Save As
    - Type a layout name <Classic Schedule Layout - Current vs Baseline>
    - Click Save



Saving the Layout



Lesson Review

- A baseline is a copy of a project that you can compare to the current project to evaluate progress. Create a baseline plan before updating a schedule for the first time
- You can create a baseline either by copying the currently opened project or converting another project into a baseline
- Assign a baseline type to categorize the baseline based on how you intend to use it
- A project baseline is the baseline selected by the project manager for the project and is controlled by a security privilege. A user baseline can be designated by each user and is used for schedule comparison only

Project Execution & Control

Lesson 17

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Project Execution & Control

- Objectives
  - Describe several methods for updating the project schedule
  - Use Progress Spotlight
  - Status activities
  - Reschedule the project

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Updating a Project

- Once a project has started, you need to update actual schedule information and resource usage at regular intervals. Your company will establish a standard update procedure, including how data is collected and how often it is updated

How Often

- You may need to update daily, weekly, or monthly, depending on the length of your project and how frequently you want to adjust your forecasts

How Data is Collected

- Project Managers manually enter the actual date, resource, and cost information
  - Record actual dates and progress, actual resource usage and cost, and expense cost
- Approve and apply time
  - Team members use timesheets to update activities
  - Project managers review and approve timesheets
  - Project managers apply timesheets to the project
- Auto compute actuals
  - Progress of activities is automatically calculated according to the project plan

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The Data Date

- When updating a project, actuals are recorded for each activity relative to the data date.
- The data date is the date upto which actual performance data is reported and the date from which future work is scheduled.
- By default, the data date is set to the beginning of the day (project) considering project is not started yet.

Updating Process

- Create a baseline plan
- Identify the new data date with the Progress Spotlight
- Enter activity progress
- Report resource use and costs to date
- Use Suspend and Resume dates as necessary
- Apply actuals to the project
- Perform target analysis
  - Compare the current plan to the target plan to analyze variances
- Calculate the schedule
  - Be sure to verify the new data date
- Monitor project progress with reports
  - Determine whether project objectives are being met
    - Will the project finish on time?
    - Is it within budget?
    - Are project resources being used effectively?

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Updating Process

- Create a baseline plan
- Use Activity Details tabs or the Activity Table
- Use Progress Spotlight to identify activities to be updated
- Use filters and grouping to create a status layout
  - Use rolling dates for a time period look-ahead
  - Select only activities to be updated
  - Organize in a useful sequence via activity codes, resources, and dates

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Defining a Status Period

- Define the status period before you begin to update activities. In general, the status period begins at the current data date and ends at a point in future. The length of the status period depends on the frequency of your updates. You could, e.g. create a status period that extends one week from the current data date. The end of the status period will become the new data date – the date upto which actual performance is measured
- There are two options to define the status period in the Gantt Chart
  - Activity Progress Spotlight
  - Drag the Data Date
- Note that even as you establish a new status period, the new data date must still be manually changed in the Schedule dialog box

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Progress Spotlight

- ***Progress Spotlight*** creates a visible status period between the current data date and the next status date. It also provides a highlighted list of activities that should have progress during the update period.
- Exercise
  - Steps
    - Open a project, EC00515-City Center Office Building Addition
    - Confirm you are in Activities Window
    - In the Layout Option bar, click Layout, Open
    - Select a layout, Baseline vs. Current
    - Click icon in the Activity Toolbar to activate Progress Spotlight
    - Click this icon again to deactivate Progress Spotlight

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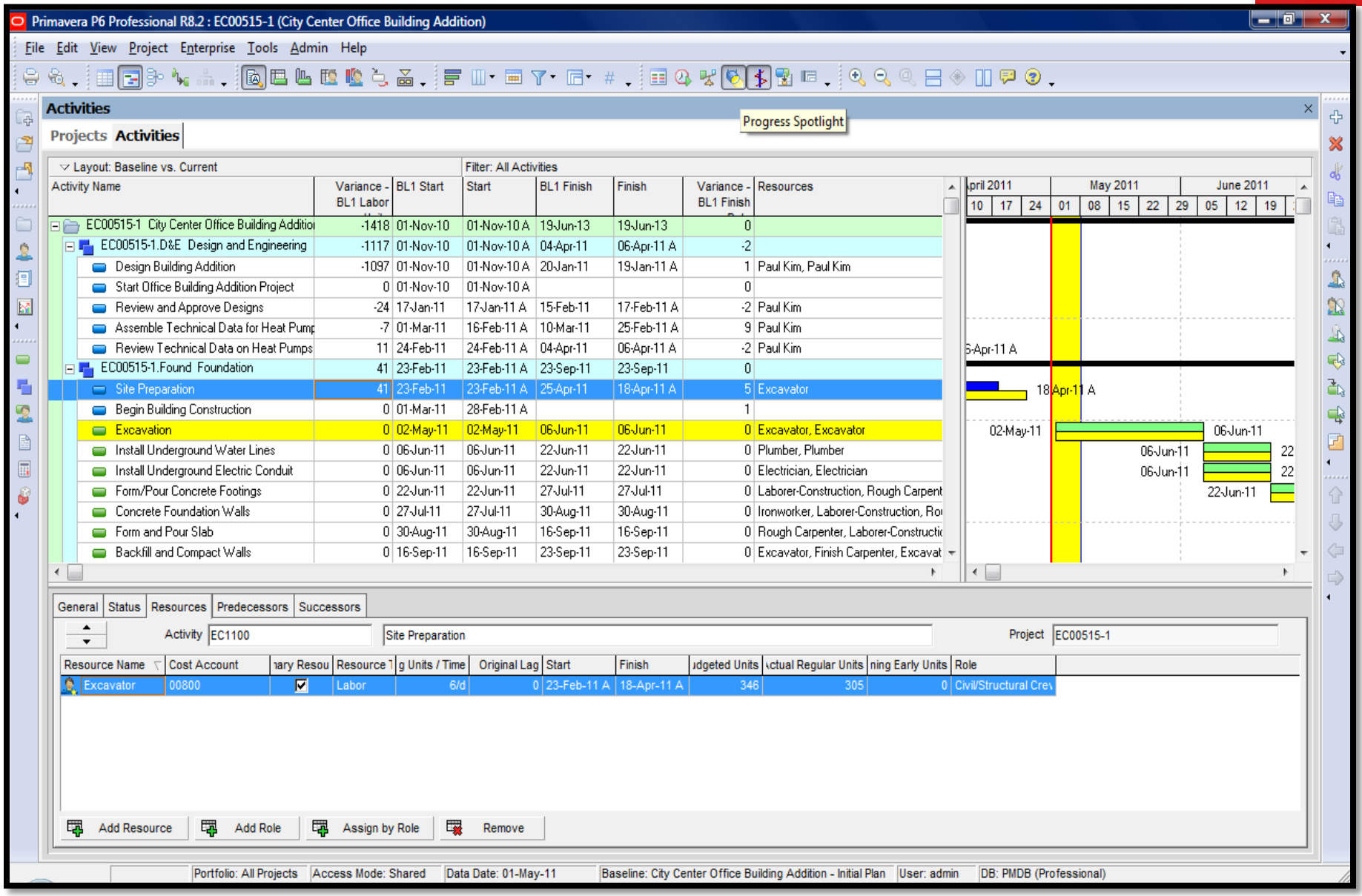
Progress Spotlight



Dragging the Data Date

- Highlight the activities to be updated by dragging the status line to the desired date

- Exercise
  - Steps
    - Use your mouse cursor to click and drag the data date line to the morning of 15-May-11

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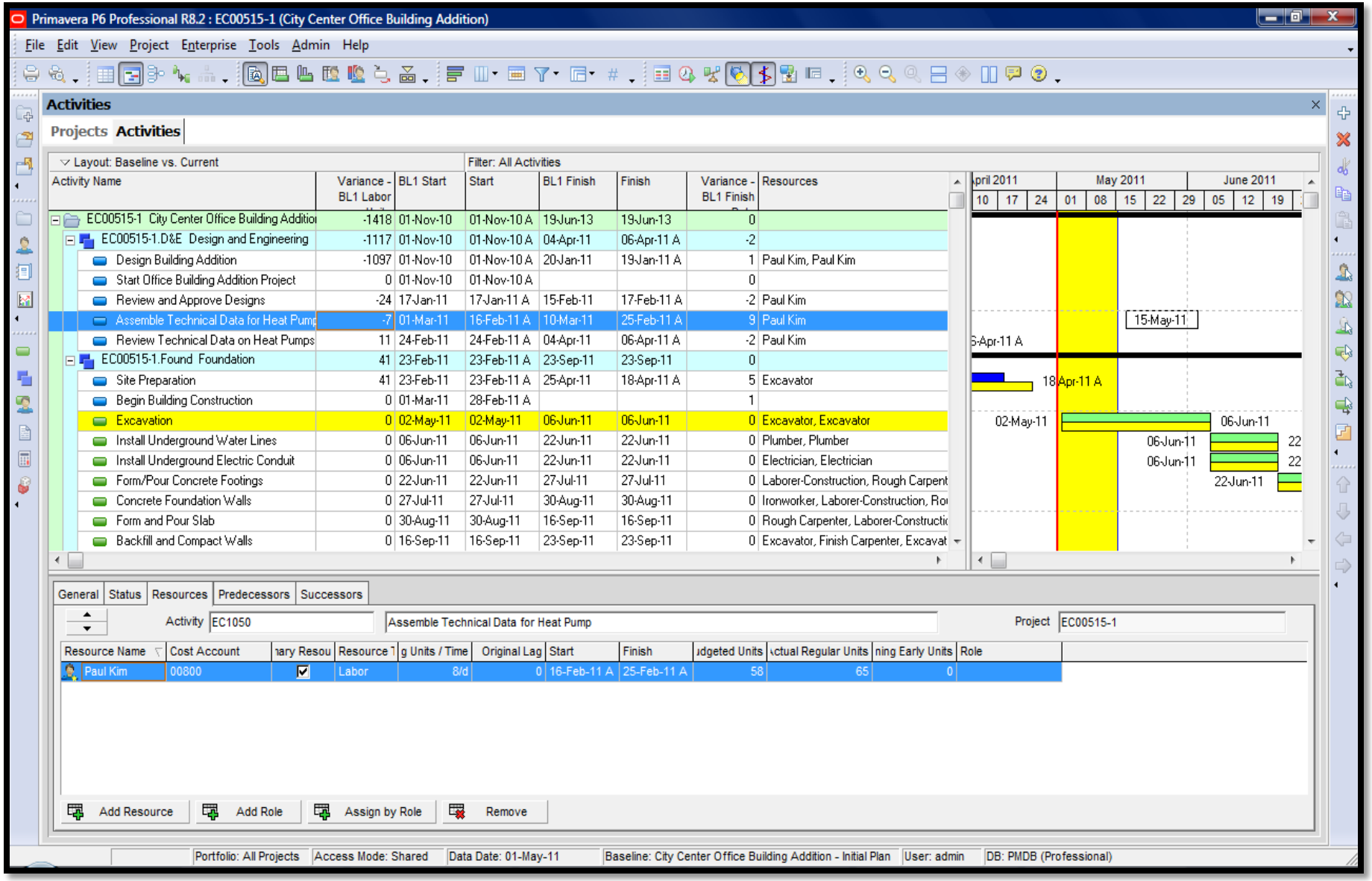
Dragging the Data Date



Entering Actuals

- Once a project is underway, you must enter actual schedule data, resource usage, and expense costs at regular intervals. You may need to update daily, weekly, or monthly, depending on the length of your project and how frequently you want to adjust your forecasts
- Actual data is different than planned data – actual data is the real-time and cost associated with an activity gives actual expenditure
- Enter schedule, resource, and cost data in the following order
  - Completed Activities
    - Actual Start and Actual Finish dates
    - Actual Regular Units/Costs
    - Actual Cost for Expenses
  - Activities in Progress
    - Actual Start date
    - Percent Complete and/or Remaining Duration
    - Actual Regular Units/Costs and Remaining Units/ Costs
    - Actual and Remaining Costs for Expenses

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Updating Milestone Status

- To update a start milestone, mark the Started checkbox and enter the Actual Start date.
- You do not need to enter data in the Finish field because the Activity Type is Start Milestone, which has zero duration.

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Updating Activities Status to Completion

- Three steps must be performed to update the status of the activity to completion
  - Enter Actual Start and Actual Finish dates
  - Enter Actual Regular Units for resources
  - Enter Actual Cost for expenses

- Exercise
  - Select an activity, EC1260-Award Contract for Brick
  - Click the Status tab (bottom)
  - Mark the Finished checkbox
  - Verify the Actual Finish date, 05-May-11

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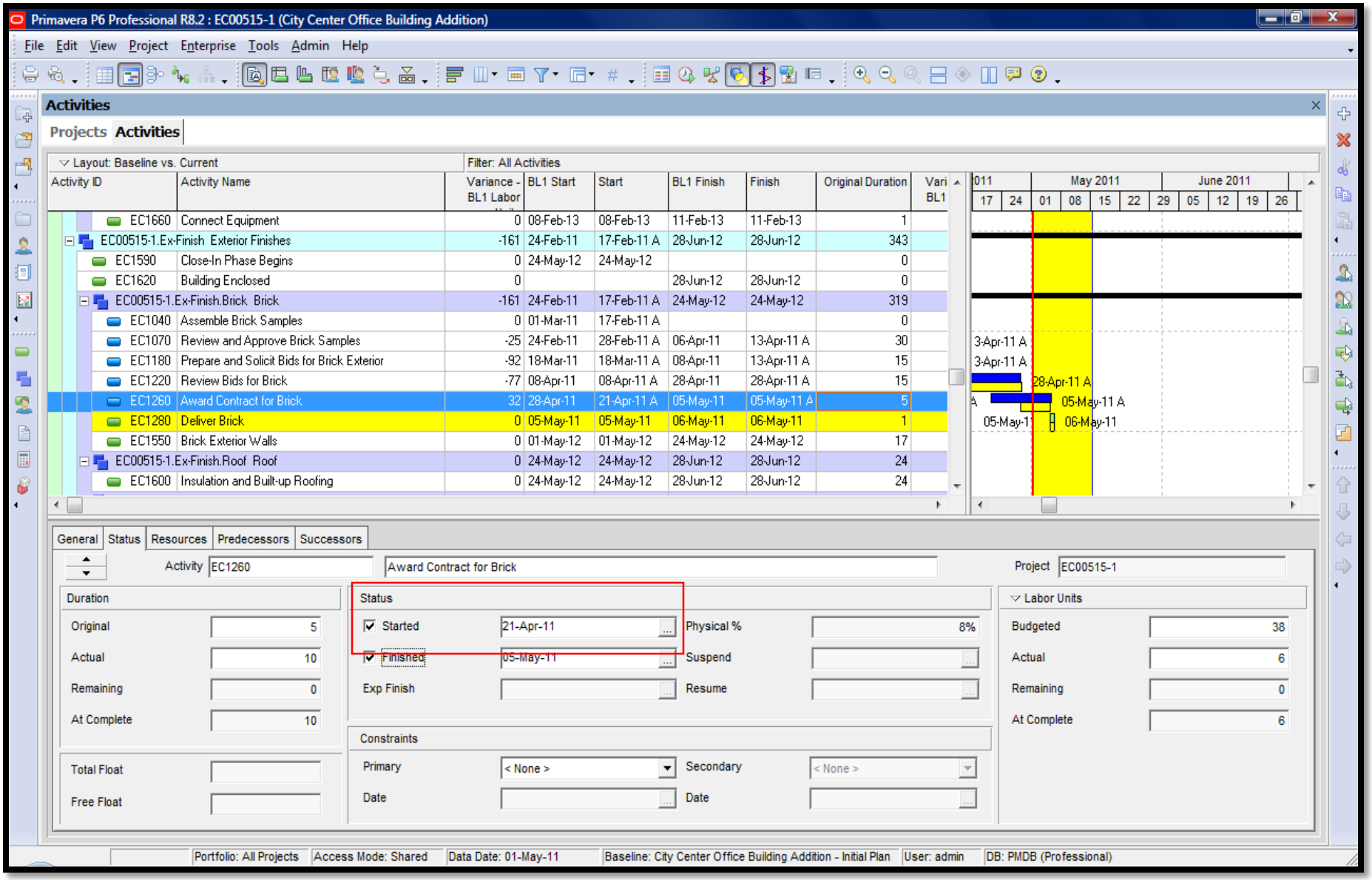
Updating Activities Status to Completion



Updating Activities Status to Completion

- Below you will check the Actual Regular Units for the activity.
- Note that in this example, data in the Actual Regular Units field is automatically completed because Recalculate Actual Units and Cost when duration % complete changes is selected in the Calculations tab in the Projects Window for the project.

- Exercise
  - Steps
    - Click the Resources tab (bottom)
    - In the Actual Regular Units column, verify the no. of hours, 19

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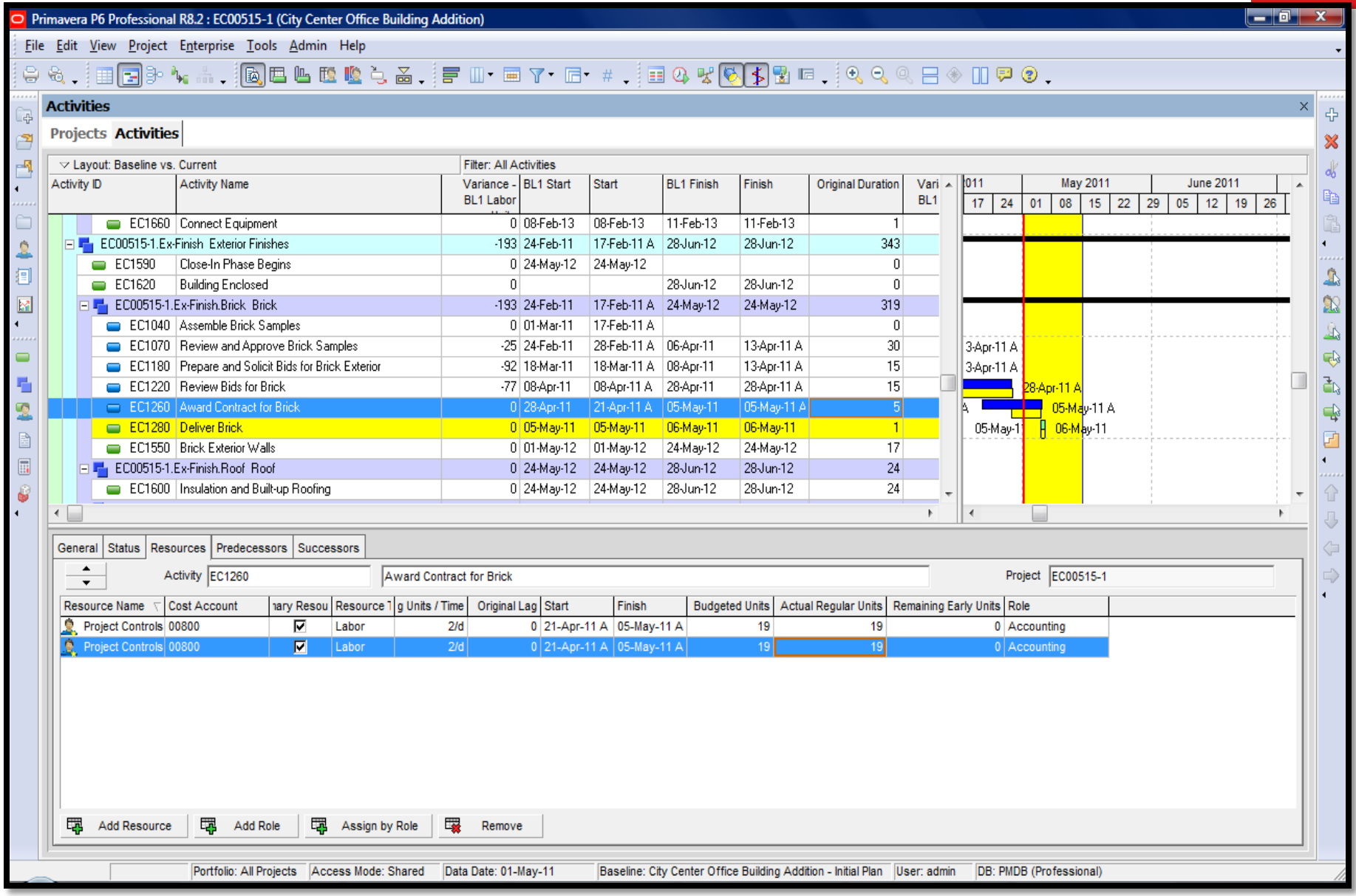
Updating Activities Status to Completion



Updating Activities Status in Progress

- Five Steps must be performed to update an activity in progress
  - Enter Actual Start date
  - Enter Percent Complete and/or Remaining Duration
  - Enter Actual Regular Units and Remaining Units for resources
  - Enter Actual Cost and Remaining Cost for expenses
- Exercise
  - Steps
    - Select an activity, EC1230-Excavation
    - Click the Status tab (bottom)
    - Mark the Started checkbox, and verify date 02-May-11
    - In the Physical %field, type <35>
    - Press Enter

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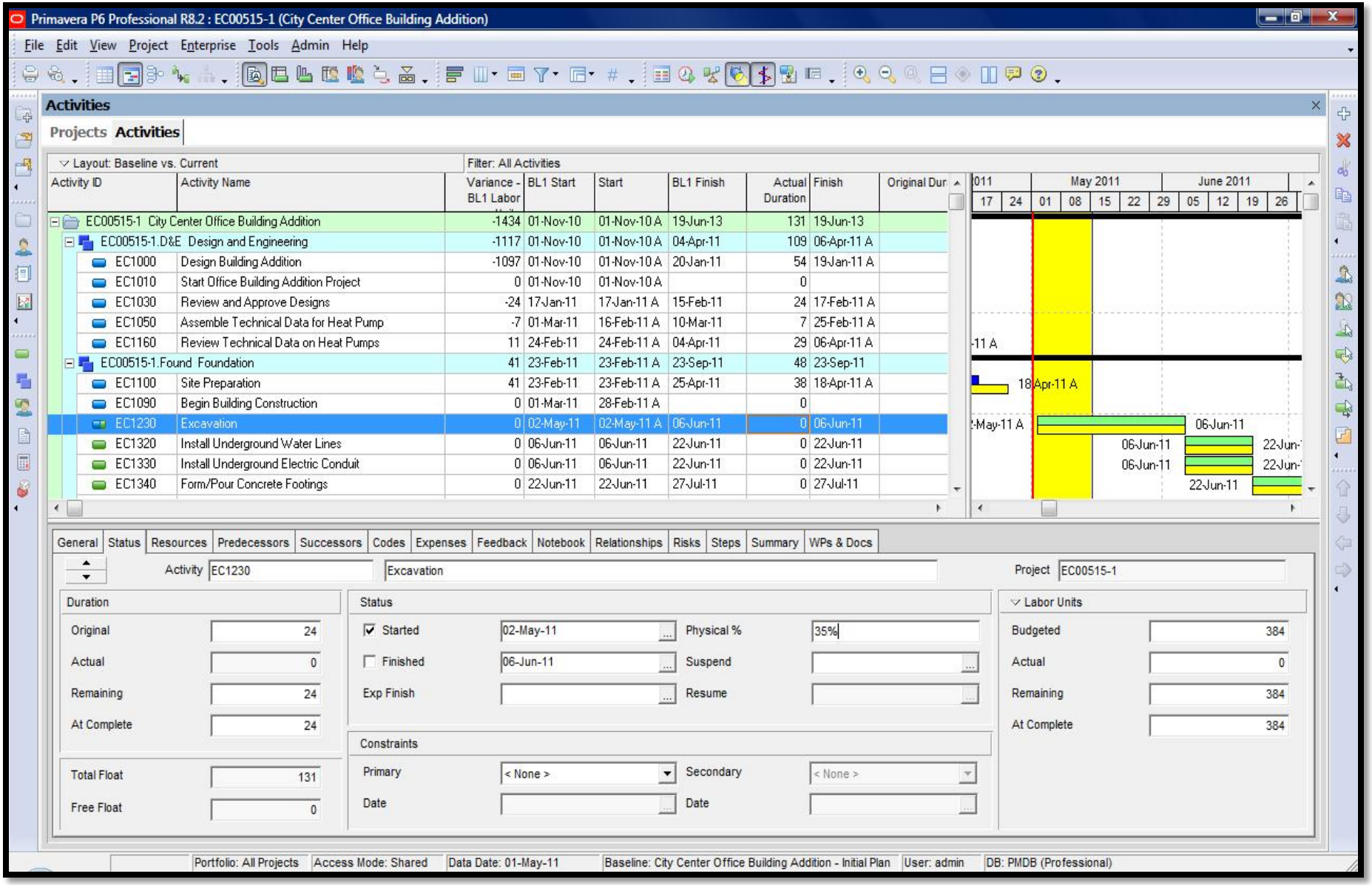
Updating Activities Status in Progress



Updating Activities Status in Progress

- Actual Regular Units are the no. of units that resource(s) actually worked on the activity.
- Remaining Units represents the amount of work (units) that is required to complete the activity
- The formula for calculating Remaining Units is:
  - Remaining Units = Remaining Duration x Remaining Units/Time

- Exercise
  - Steps
    - Click the Resources tab (bottom)
    - In the Actual Regular Units column, verify that Excavator has worked 72 hours
    - In the Remaining Units column, verify 122 hours

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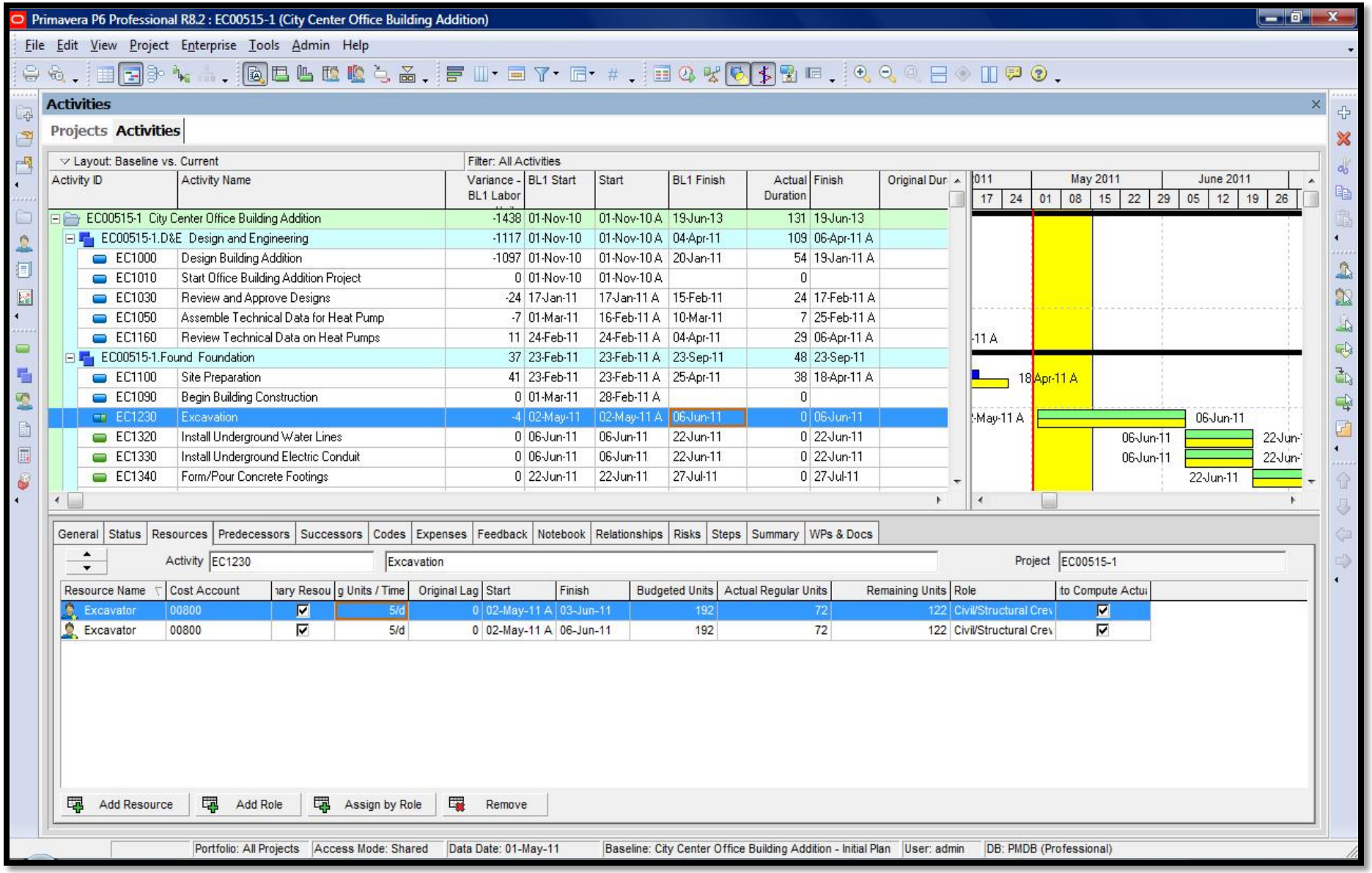
Updating Activities Status in Progress



Suspending an Activity

- When an activity starts but is unexpectedly delayed or stopped for a period time, you may suspend it
- A suspended activity must have an Actual Start
- Use the Status tab to enter Suspend and Resume dates
  - *Suspend date* – The last day that work was conducted on the activity
  - *Resume date* – The first day that work will continue on the activity
- The actual duration excludes suspension time
- Use the Notebook tab to document the reason for the suspension
- Exercise
  - Steps
    - Select an Activity, EC1240-Review Bids for Heat Pump
    - Click the Status tab (bottom)
    - Mark the Started checkbox
    - Select the Actual Start Date, 04-May-11
    - In the Physical % field, verify <50>
    - Click Browse button in Suspend field, select a date 09-May-11
    - Click Browse button in Resume field, select a date 11-May-11

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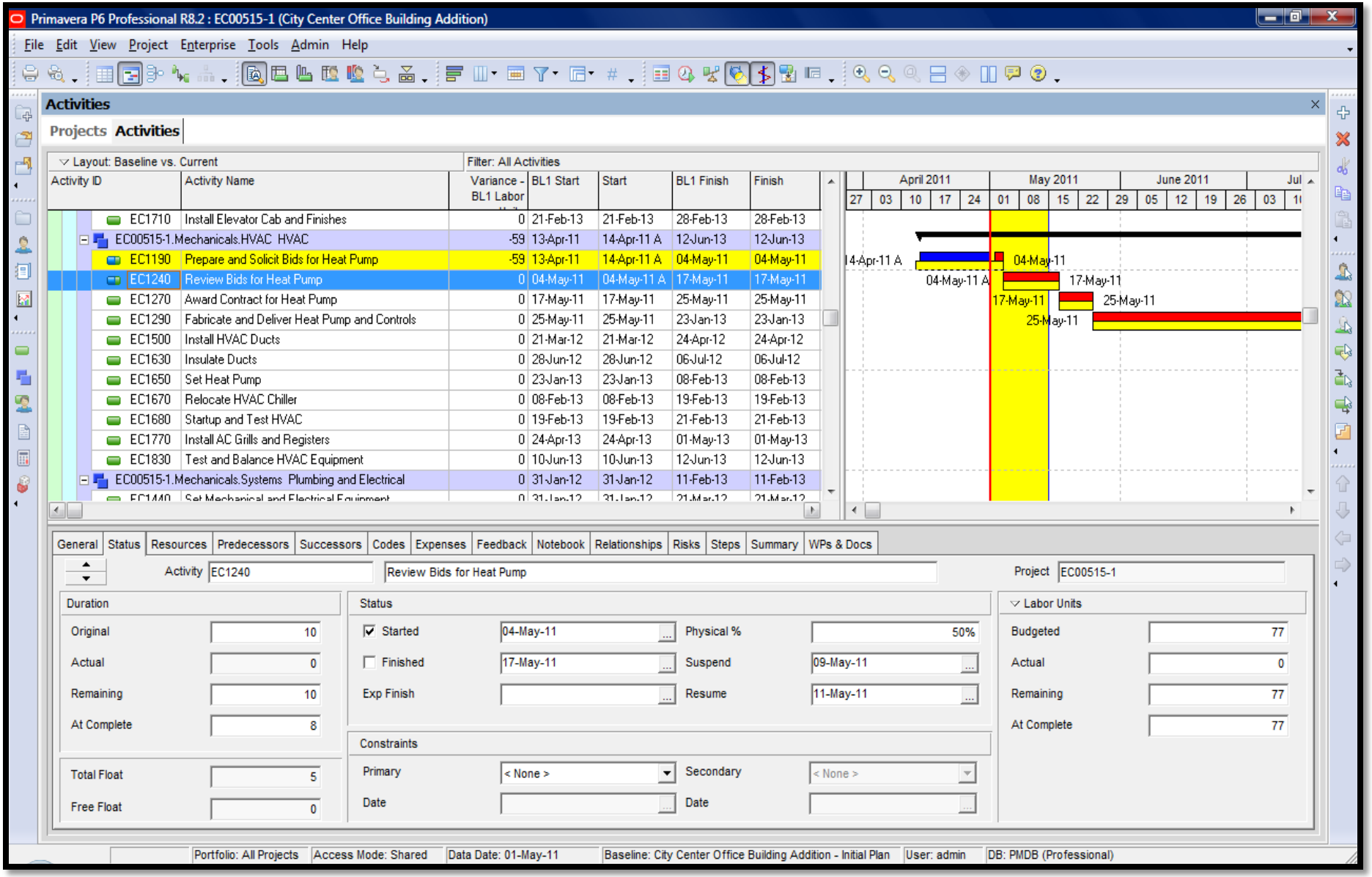
Suspending an Activity



Suspending an Activity

- Exercise
  - Steps
    - Right-click in the Activity Details, and then click Customize Activity Details…
    - Add the Notebook tab to the Activity Details
    - Click the Notebook tab
    - Click Add, and then select a Notebook topic, Delay Impacts
    - Type a description <Review suspended due to non-availability of resource person>

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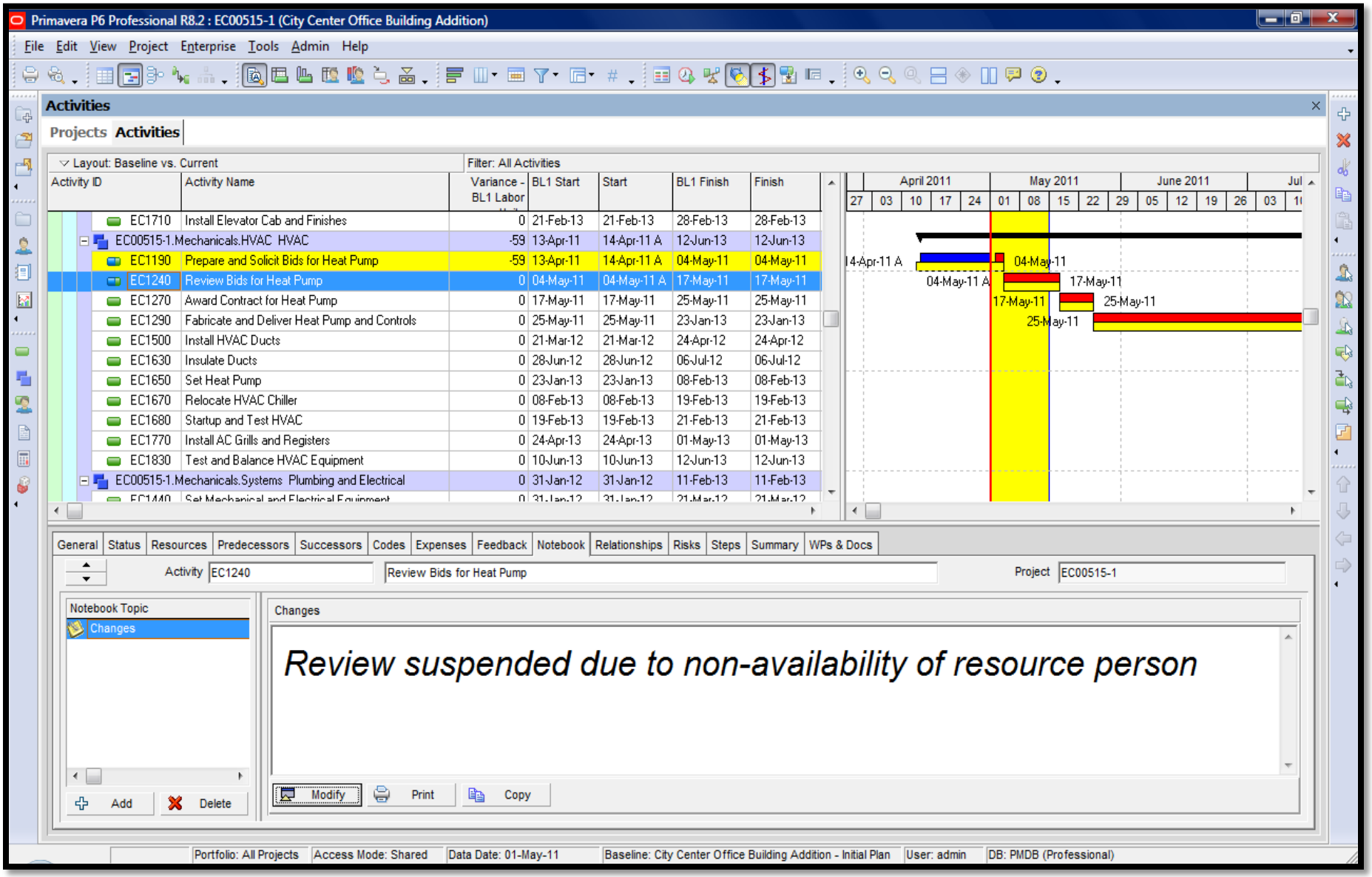
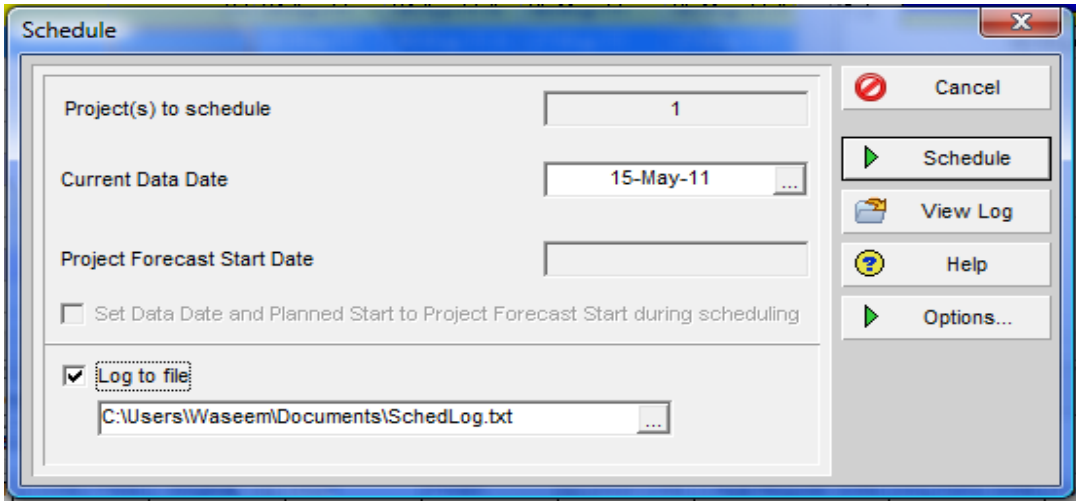
Suspending an Activity



Rescheduling the Project

- Now that actuals have been entered, it is time to reschedule the project based on the new data date. Any activities that did not finish on time will delay their successor activities.
- Exercise
  - Steps
    - In the Tools menu, click Schedule
    - In the Current Data Date field, select 15-May-11
    - Click Schedule button



Viewing the Results of Rescheduling

- After the project has been rescheduled,
  - Analyze the activities on the critical path
  - Review the project's performance to date
  - Develop strategies for getting the project back on track
  - Gain agreement within your project team
  - Implement the revised project plan

- Exercise
  - Click Spotlight icon to deactivate the Progress Spotlight
  - Hide the bottom layout

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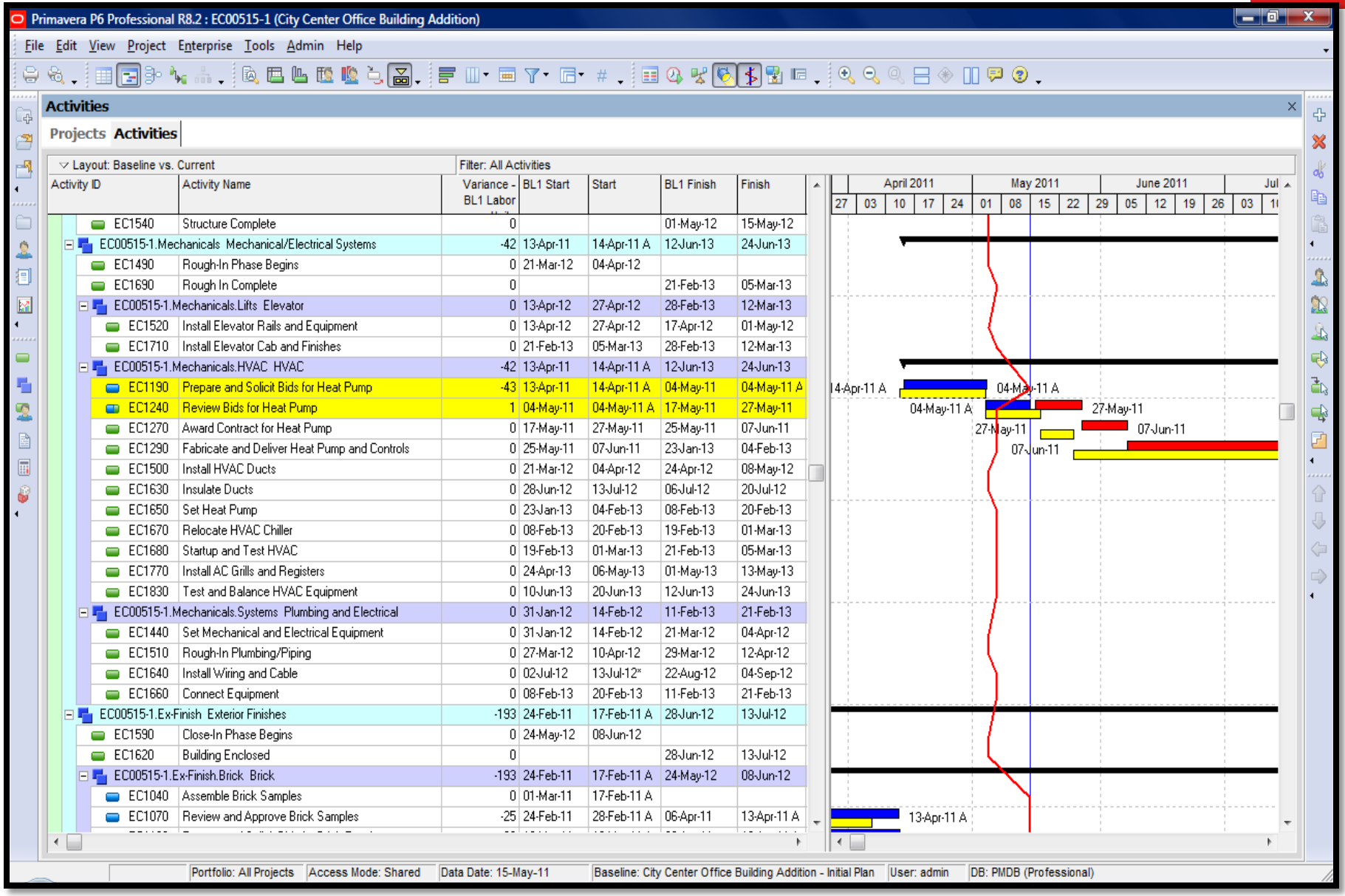
Viewing the Results of Rescheduling



Controlling the Project

- After scheduling a project, analyze schedule dates, resource allocation, and the cost budget

Analyzing Schedule Dates

- Analyze the schedule to determine if milestone dates and project dates are being met
  - Compare the calculated Finish date to the Must Finish By date to see if you will complete the project on time
  - If the project is behind schedule, analyze the critical activities
  - Adjust the project to meet your project Finish date

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Analyzing Resource Allocation

- After adjusting the project, determine if resources are being used effectively

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Analyzing the Cost Budget

- After adjusting the project, view At Completion Total Cost to determine if you are within your budget

Compressing the Schedule

- If the calculated Finish date id later than the Must Finish By date, you can use several methods to shorten the project (already discussed)
  - Use relationships to overlap activities
  - Add resources to reduce durations
  - Break-down long activities
  - Change calendar assignments
    - Put critical activities on a longer workweek
    - Add exceptions to non-worktime

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Compressing the Schedule

- You can use the following set of questions to help you decide how to most appropriately adjust the schedule
  - Can the Finish date of the project slip
    - The project may need to be delayed if no other options are available
    - If the delay is approved, adjust the affected milestones
    - If the delay is not approved, find another way to meet the project milestones and Finish date of the project
  - Can scope of the activity/project decrease?
    - In some cases, in order to meet the project milestones and finish date, you can decrease the total amount of work that will be accomplished, i.e. decrease the scope of the project
    - If the scope change is approved, decrease the scope by reducing the total hours work on activities. This will change the duration of the activities. Break down long activities
    - If the scope change is not approved, find another way to meet the project milestones and Finish date of the project

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Compressing the Schedule

- Were the budgeted hours over-or-under estimated
  - You may have over-estimated the no. of hours to complete activities; the scope of work can be accomplished in fewer hours
  - You can decrease the total hours work on activities, which decreases the duration of the activities
- Can an additional resource be assigned
  - You can assign another resource to the activity to finish it on time
  - This may be possible if another resource with the necessary skills is available
  - If a resource is available, you can assign it to make up the hours
- Can the resource work overtime
  - The resource may need to work overtime to complete an activity on time
  - If this is possible, you can decrease the duration of the activity, then enter the original remaining hours
  - The hours the resource works each day will increase

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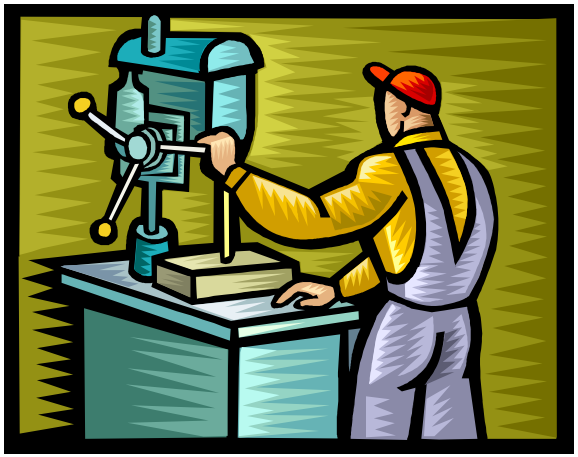
WORKSHOP
Project Execution & Control



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Lesson Review

- Once a project has started, use one of three options to update actual schedule
  - Manually enter the actual dates and resource/cost information
  - Approve and apply timesheets
  - Auto compute actuals
- When updating a project, actuals are recorded for each activity relative to the data date. The data date is the date upto which actual performance data is reported, from which future work is scheduled
- To status complete activities, update Actual Start and Actual Finish dates, Actual Regular Units/Cost for Resources & Expenses
- To status activities in progress, update Actual Start date, Percent Complete and/or Remaining duration, Actual Regular Units/Costs, Remaining Units/Costs, and Actual and Remaining Costs for expenses
- After actuals are entered, reschedule the project based on the new data date, activities that do not finish on time will delay successor activities
- After scheduling, analyze schedule dates, resource allocation, and cost budget. If the calculated Finish date is later than the Must Finish By date, try to shorten the project duration using optimization methods

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Reporting Performance

Lesson 18

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Reporting Performance

- Objectives
  - Describe reporting methods
  - Run a schedule report
  - Create a resource report with the Report Wizard
  - Create a report using the current layout

  - Reporting Resource Profiles (Cost & Units Based)
  - Reporting Activity Usage Profiles (Cost & Units Based)
  - Getting S-Curve with Resource Loading
  - Displaying S-Curve with Earned Value Cost & Units

  - Experiencing Primavera Visualizer for customized Gantt Charts & TSLDs

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Methods for Performance Reporting

- There are many methods to distribute schedule, resource, and cost performance information to the project team, including:
  - Printed layouts
  - Printed reports from the Report Wizard
  - Printed reports from the Report Writer
  - Project Website
  - Timesheets
  - Primavera Web Applications

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Reports Window

- The ***Reports Window*** displays reports for schedule, resource and cost

- Exercise
  - Open project, City Center Office Building Addition
  - In the Directory bar, click Reports

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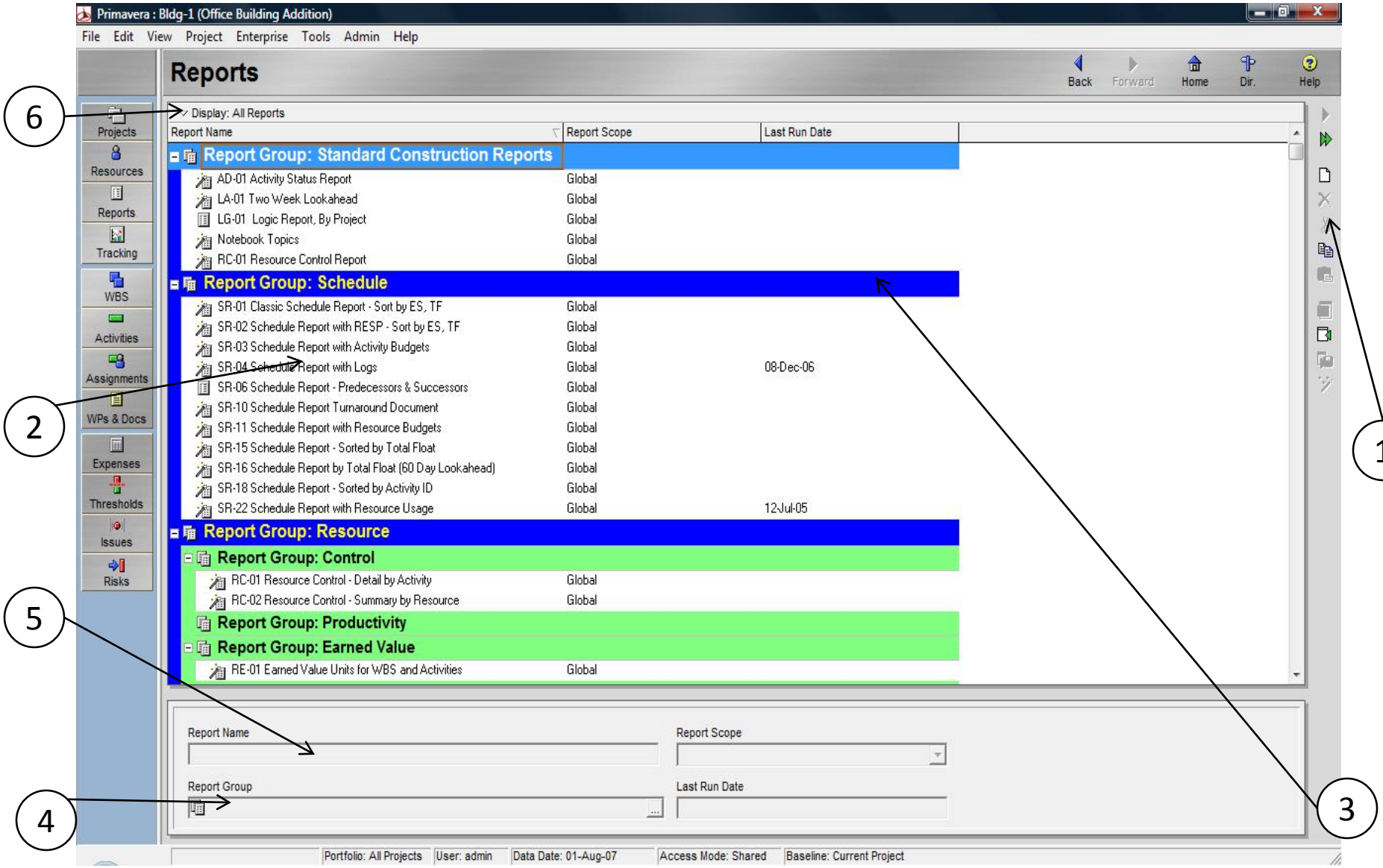
Reports Window



Reports Window

Item	Functionality
1. Command Bar	Displays options for adding, editing, or running reports
2. Reports List	Displays the list of reports available to this project
3. Report Scope	Reports can be global or project-specific. Global reports link to Portfolio Analysis
4. Report Group	Every report can belong to one report group
5. Report Name	Displays the user-defined name of the report
6. Display Option bar	Click to sort and filter the reports, define fonts/colors

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Running an Existing Report

- You can report schedule performance using a pre-defined schedule report
- Exercise
  - Steps
    - Locate a Report Group title band, Schedule
    - Select a report, SR-18 Schedule Report – Sorted by Activity ID
    - In the Command bar, click Run Report

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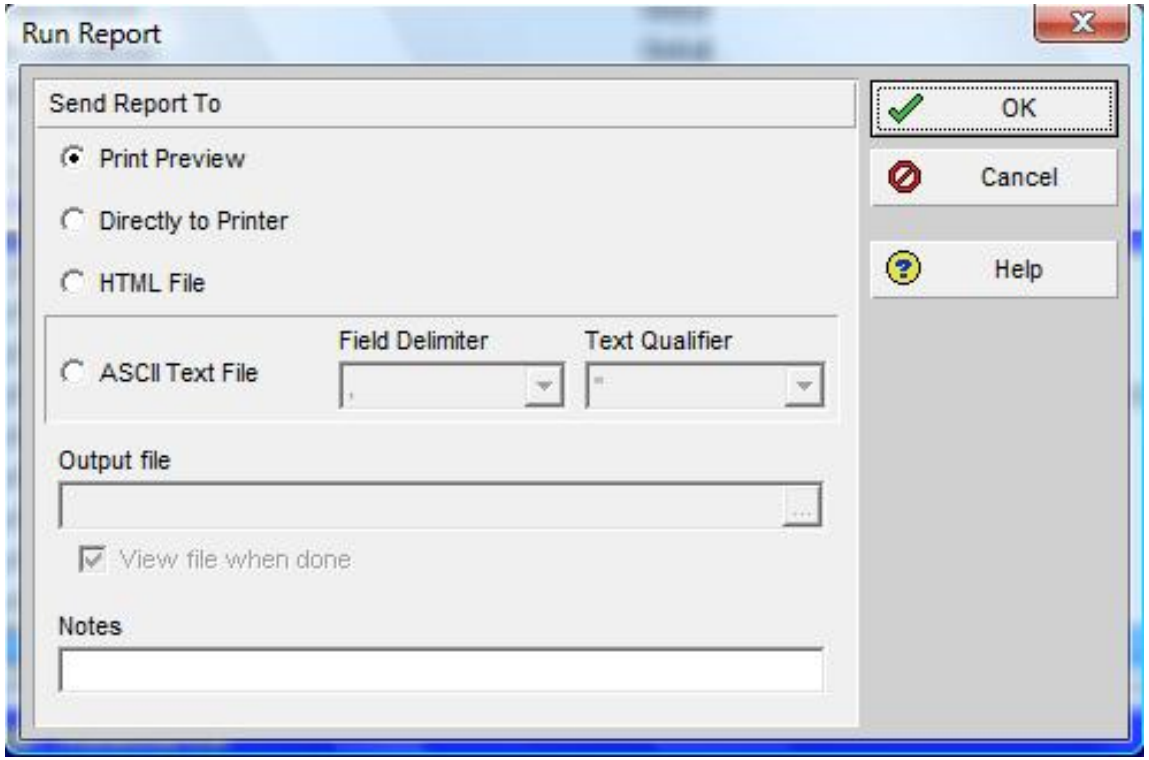
Run Report Dialog Box

- Exercise
  - Steps
    - In the Run Report dialog box, verify that Print Preview is selected
    - Click Ok



Run Report Dialog Box

- Use the ***Run Report*** dialog box to compile and print the selected report
  - ***Print Preview*** – Preview the report
  - ***Directly to Printer*** – Compile and print the report
  - ***HTML File*** – Compile and save the report as an HTML file
  - ***ASCII Text File*** – Choose to compile and save the report as a delimited text file (.txt)
    - ***Field Delimiter*** – Select the character used to separate categories of information that you save in delimited text format (i.e. comma, tab, space)
    - ***Text Qualifier*** – Select the character used to separate categories of data that you save in delimited text format if the data contains the field delimiter you specify, such as quote marks (“)
  - ***Output File*** – If you choose HTML File or ASCII Text File, click to specify the file name and location where you want to save the report
  - ***View file when done*** – Mark this checkbox to automatically open the report in your default Web Browser for an HTML file or default text viewer for an ASCII text file
  - ***Notes*** – Use to add a comment to the report. Comment appears directly under the report title

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Print Preview

- ***Print Preview*** allows you to make modifications to the layout before printing
  - Page Setup
  - Print Setup
  - Print
  - Publish
  - Left/Right/Up/Down
  - Last/First Page
  - Zoom In/ Out
  - Help
  - Close

Run Report Dialog Box

- Printing reports is an effective way to communicate project information with resources and other project managers
- The report below displays Original Duration, Remaining Duration, Percent Complete, Activity Name, Early Start, Early Finish, Late Start, Late Finish, and Total Float of all activities in the project

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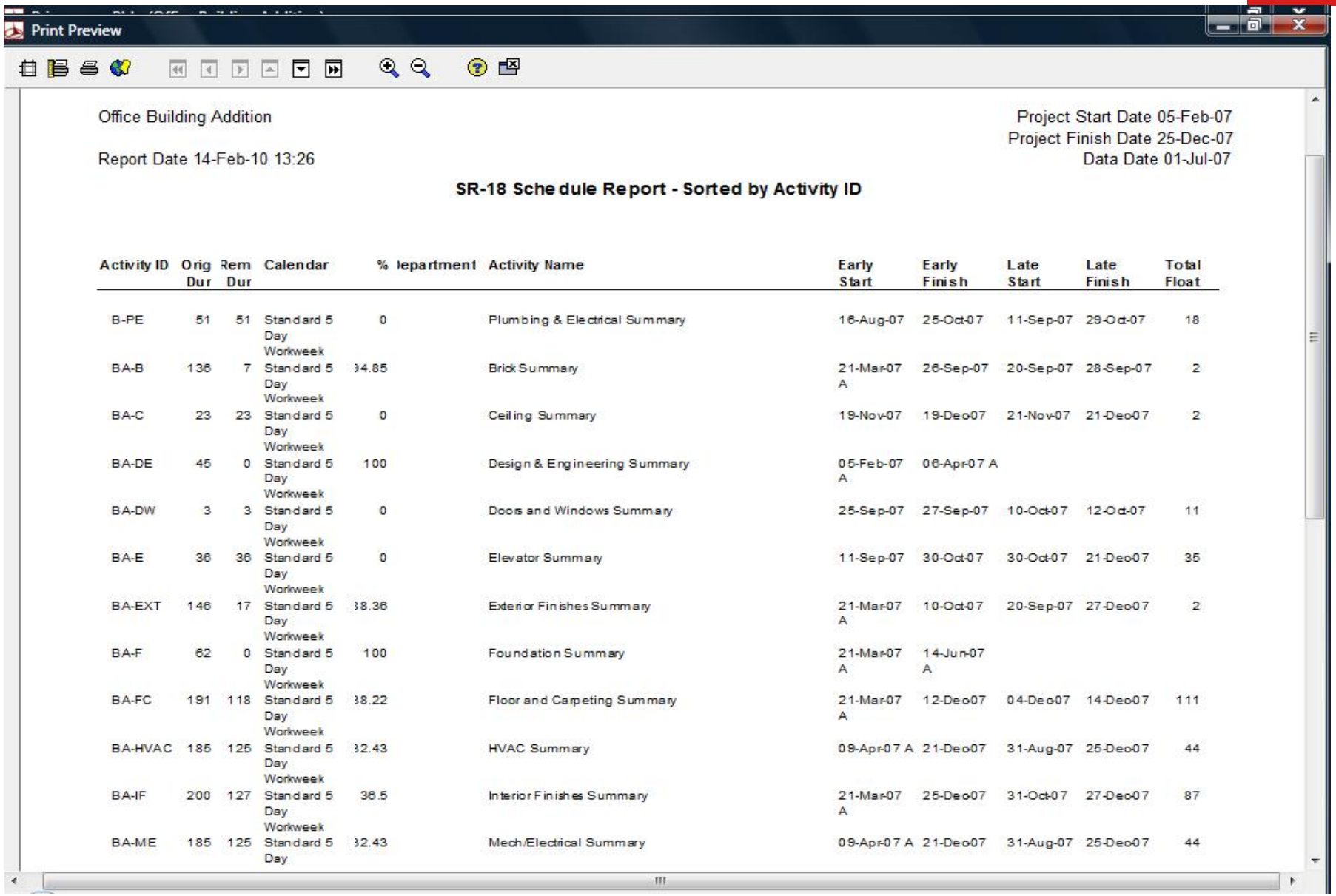
Run Report



Activity ID	Orig Dur	Rem Dur	Calendar	%	lepartment	Activity Name	Early Start	Early Finish	Late Start	Late Finish	Total Float
B-PE	51	51	Standard 5 Day Workweek	0		Plumbing & Electrical Summary	16-Aug-07	25-Oct-07	11-Sep-07	29-Oct-07	18
BA-B	136	7	Standard 5 Day Workweek	94.85		Brick Summary	21-Mar-07 A	26-Sep-07	20-Sep-07	28-Sep-07	2
BA-C	23	23	Standard 5 Day Workweek	0		Ceiling Summary	19-Nov-07	19-Dec-07	21-Nov-07	21-Dec-07	2
BA-DE	45	0	Standard 5 Day Workweek	100		Design & Engineering Summary	05-Feb-07 A	06-Apr-07 A			
BA-DW	3	3	Standard 5 Day Workweek	0		Doors and Windows Summary	25-Sep-07	27-Sep-07	10-Oct-07	12-Oct-07	11
BA-E	36	36	Standard 5 Day Workweek	0		Elevator Summary	11-Sep-07	30-Oct-07	30-Oct-07	21-Dec-07	35
BA-EXT	146	17	Standard 5 Day Workweek	88.36		Exterior Finishes Summary	21-Mar-07 A	10-Oct-07	20-Sep-07	27-Dec-07	2
BA-F	62	0	Standard 5 Day Workweek	100		Foundation Summary	21-Mar-07 A	14-Jun-07 A			
BA-FC	191	118	Standard 5 Day Workweek	38.22		Floor and Carpeting Summary	21-Mar-07 A	12-Dec-07	04-Dec-07	14-Dec-07	111
BA-HVAC	185	125	Standard 5 Day Workweek	32.43		HVAC Summary	09-Apr-07 A	21-Dec-07	31-Aug-07	25-Dec-07	44
BA-IF	200	127	Standard 5 Day Workweek	36.5		Interior Finishes Summary	21-Mar-07 A	25-Dec-07	31-Oct-07	27-Dec-07	87
BA-ME	185	125	Standard 5 Day	32.43		Mech/Electrical Summary	09-Apr-07 A	21-Dec-07	31-Aug-07	25-Dec-07	44

Report Wizard

- The ***Report Wizard*** enables you to easily create a wide variety of adhoc reports.
- The reports can be modified as they are built, or they can be reopened later to be modified
- To create a wizard report
  - Select a base table and pertinent data fields
  - Organize the data via grouping, sorting, and filtering options

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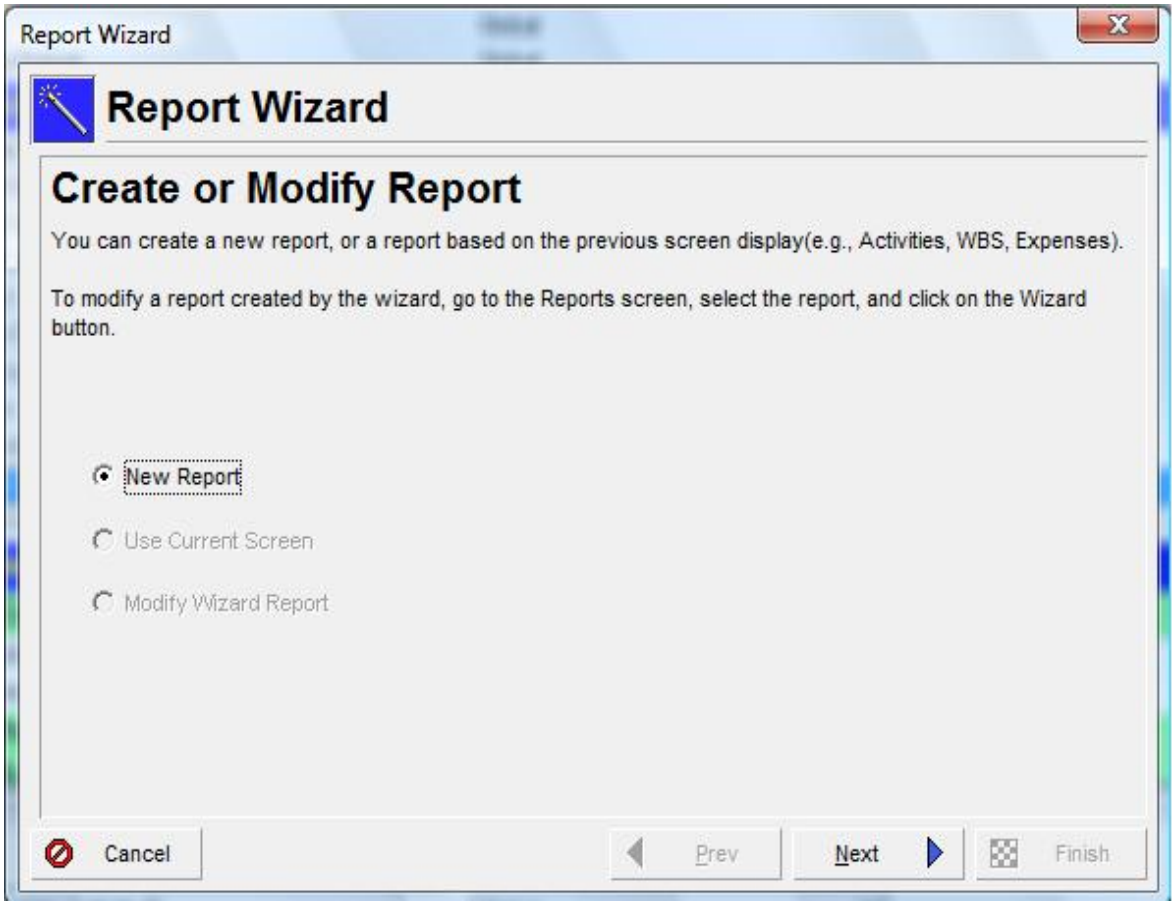
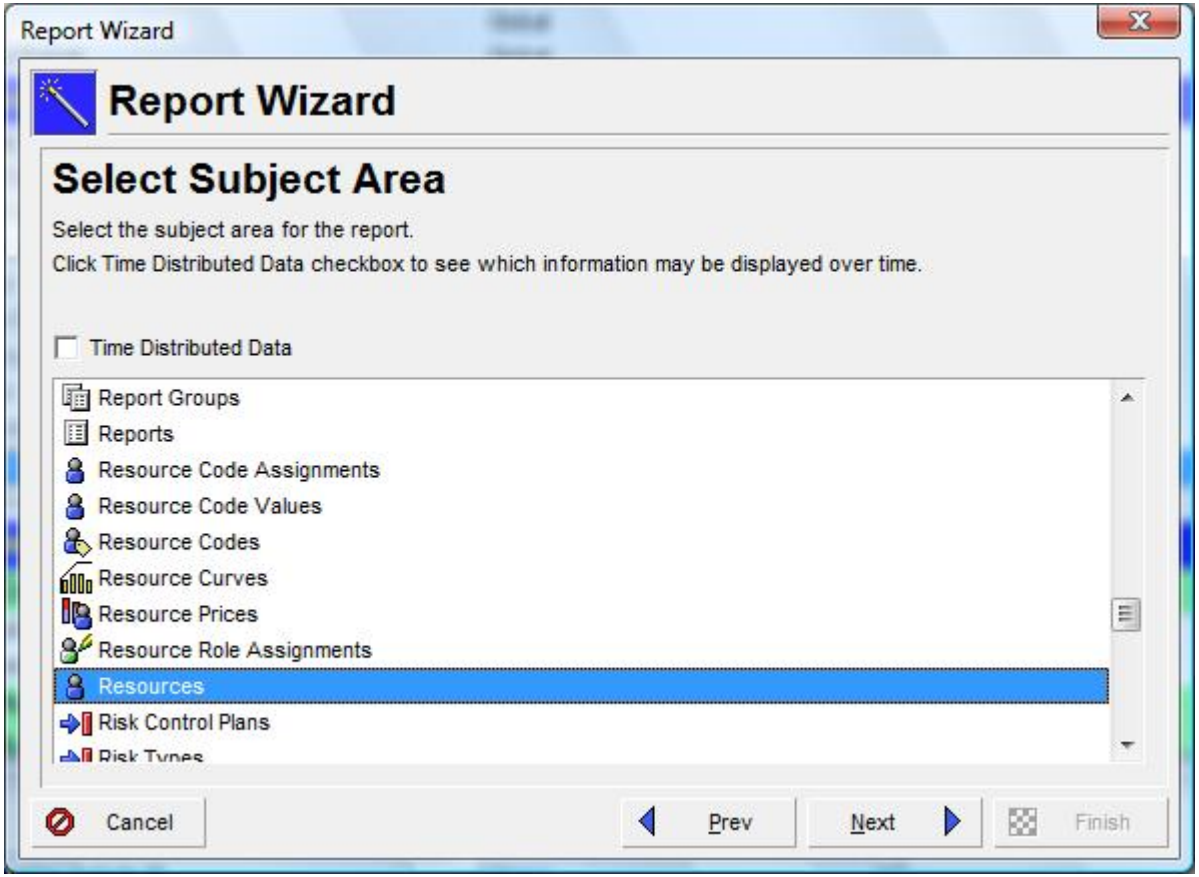
Create or Modify Report

- You will use the wizard to create a report that shows the resource assignments on the project and related Notebook topics
- Exercise
  - Steps
    - In the Command bar, Click Add
    - Verify the option, New Report
    - Click Next



Select Subject Area

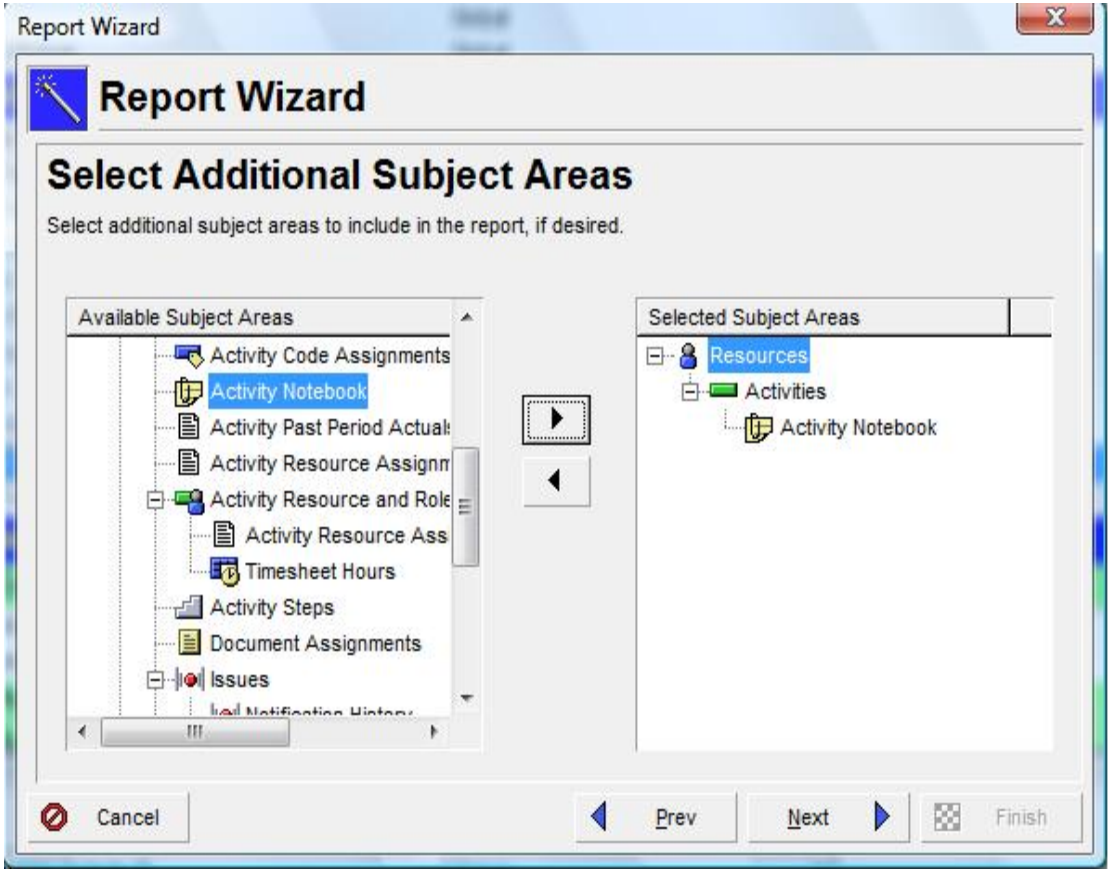
- Exercise
  - Steps
    - Select a Subject Area, Resources
    - Click Next



Select Additional Subject Area

- Exercise
  - Steps
    - Select a subject area, Activity Notebook
    - Click Arrow button

    to include in selection
    - Click Next



Configure Selected Subject Area

- Select the columns you would like to use in the report
- Exercise
  - Steps
    - Select Resources
    - Click Columns
    - Use left arrow to remove all the columns from the selected option section except Resource ID and Resource Name
    - Click Ok

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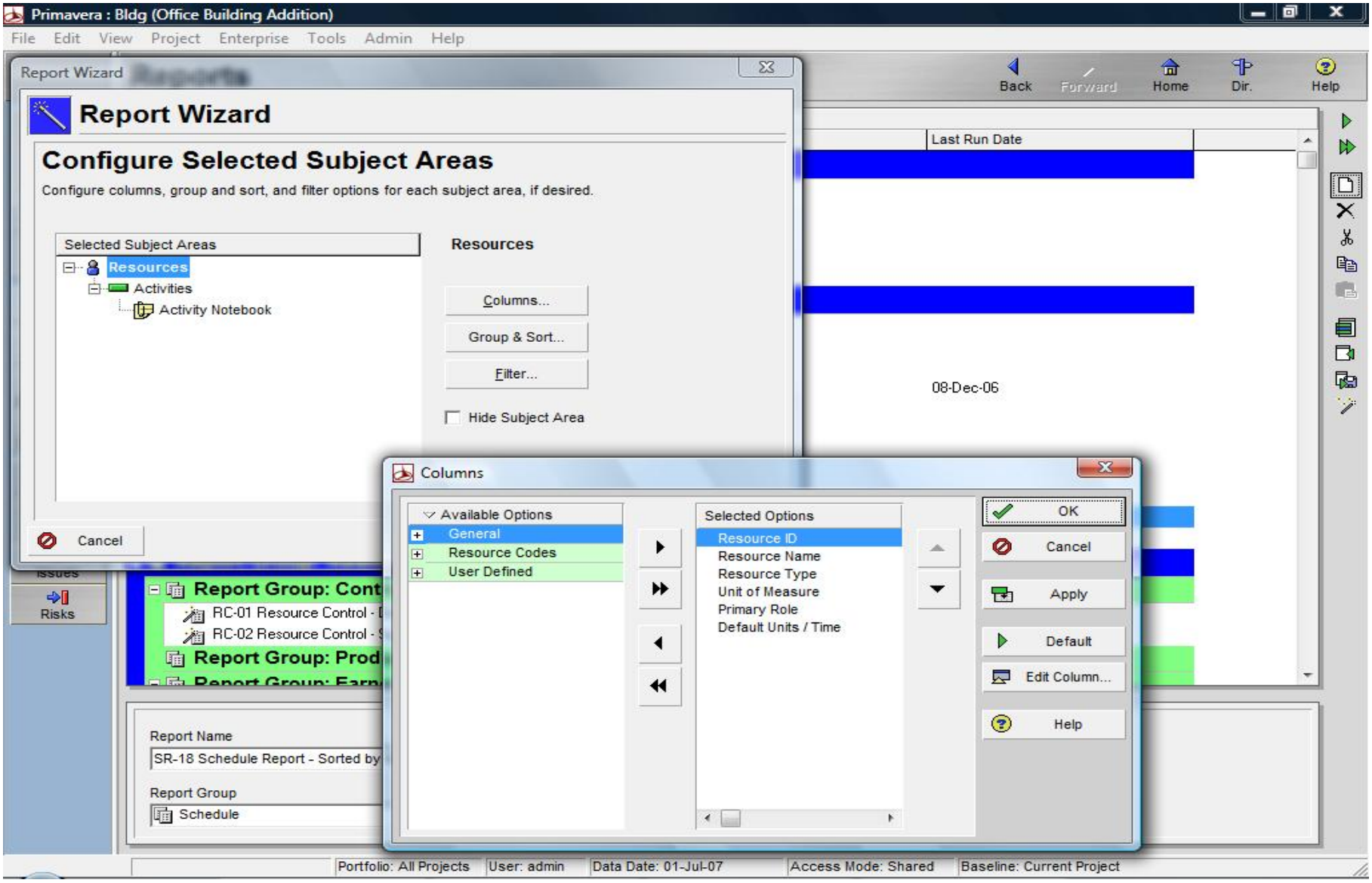
Configure Selected Subject Area



Adding Filter to the Report

- Select a filter you would like to use in the report
- Exercise
  - Steps
    - Click Filter
    - Click Add
    - Double-click on any of the following and Select All
    - In the second row, click the Parameter cell and select a data item, Assign to Current Project
    - Double-click in the Is Cell to select a filter criteria, Equal
    - Double-click in the Value cell to select Yes
    - Click Ok
    - Click Next

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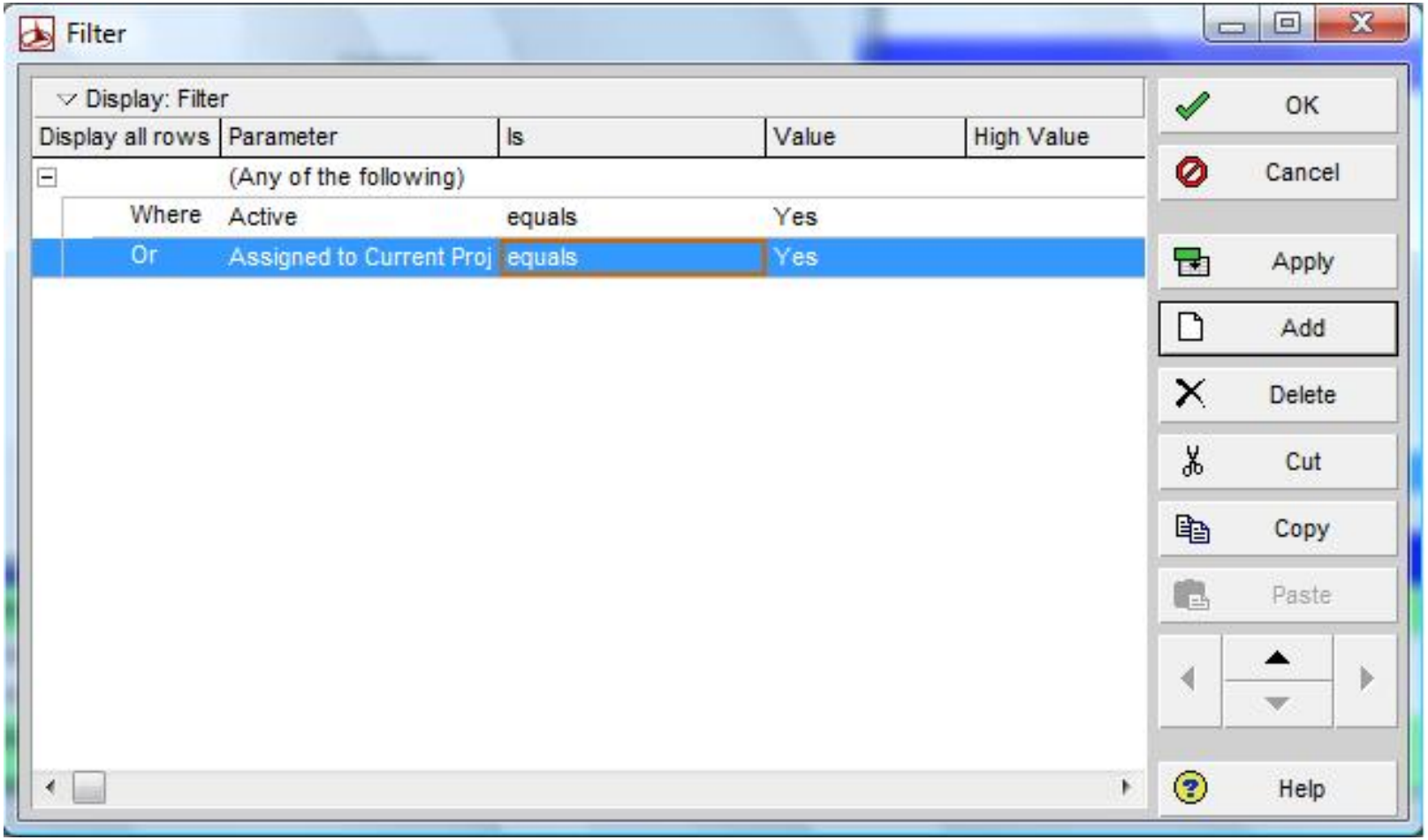
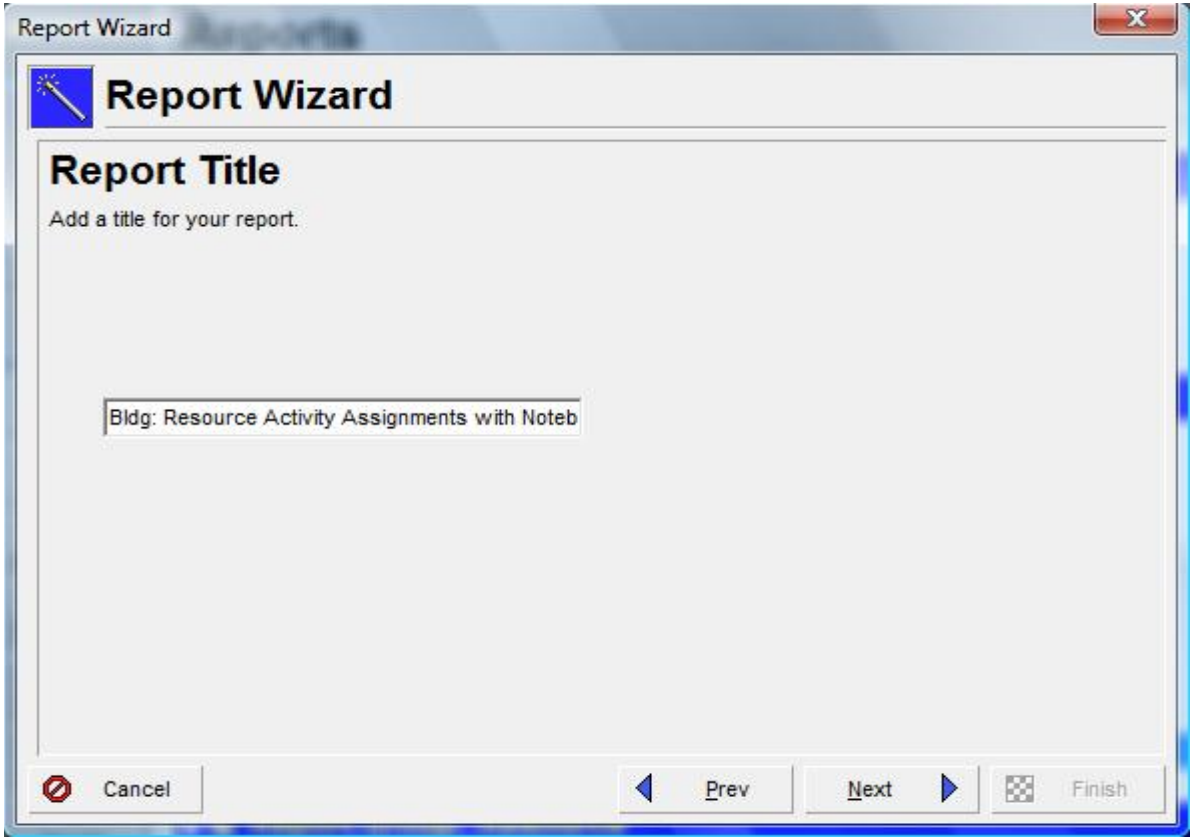
Adding Filter to the Report



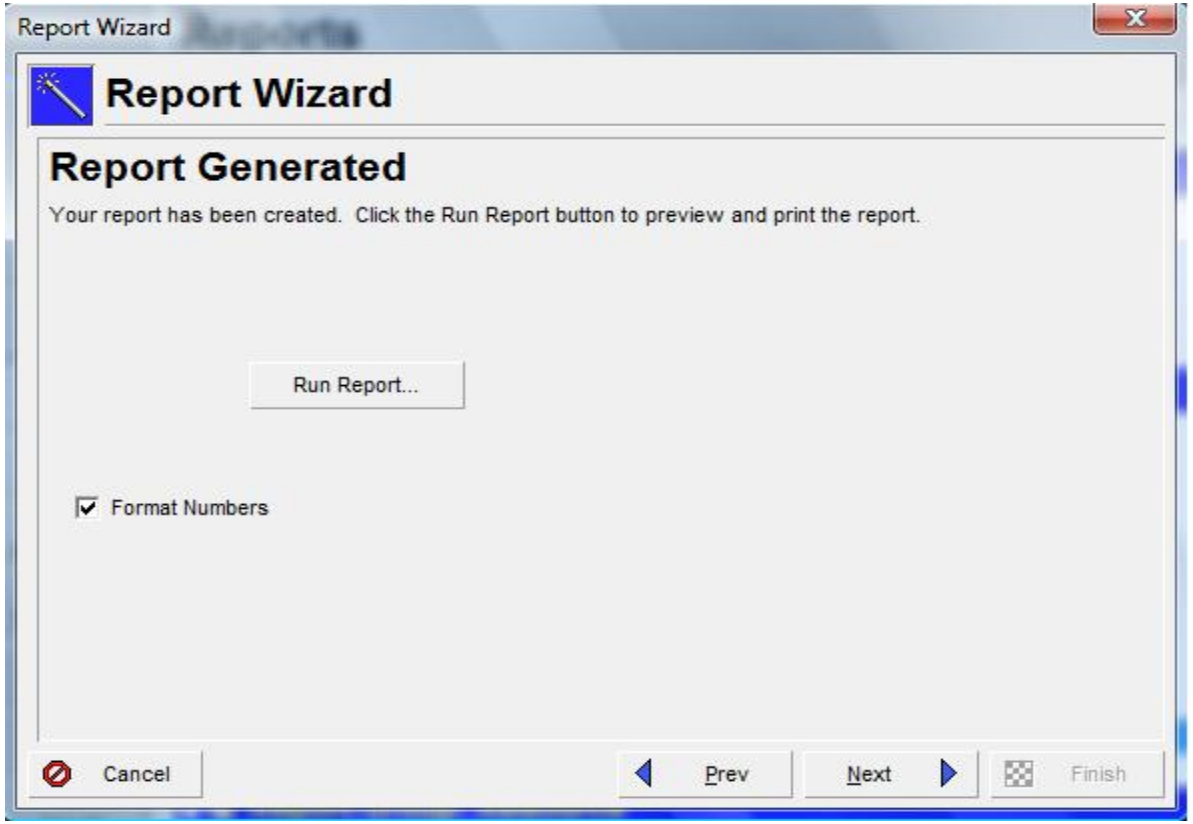
Adding a Report Title

- Exercise
  - Steps
    - Type a descriptive report title <Bldg: Resource Activity Assignment with Notebook>
    - Click Next



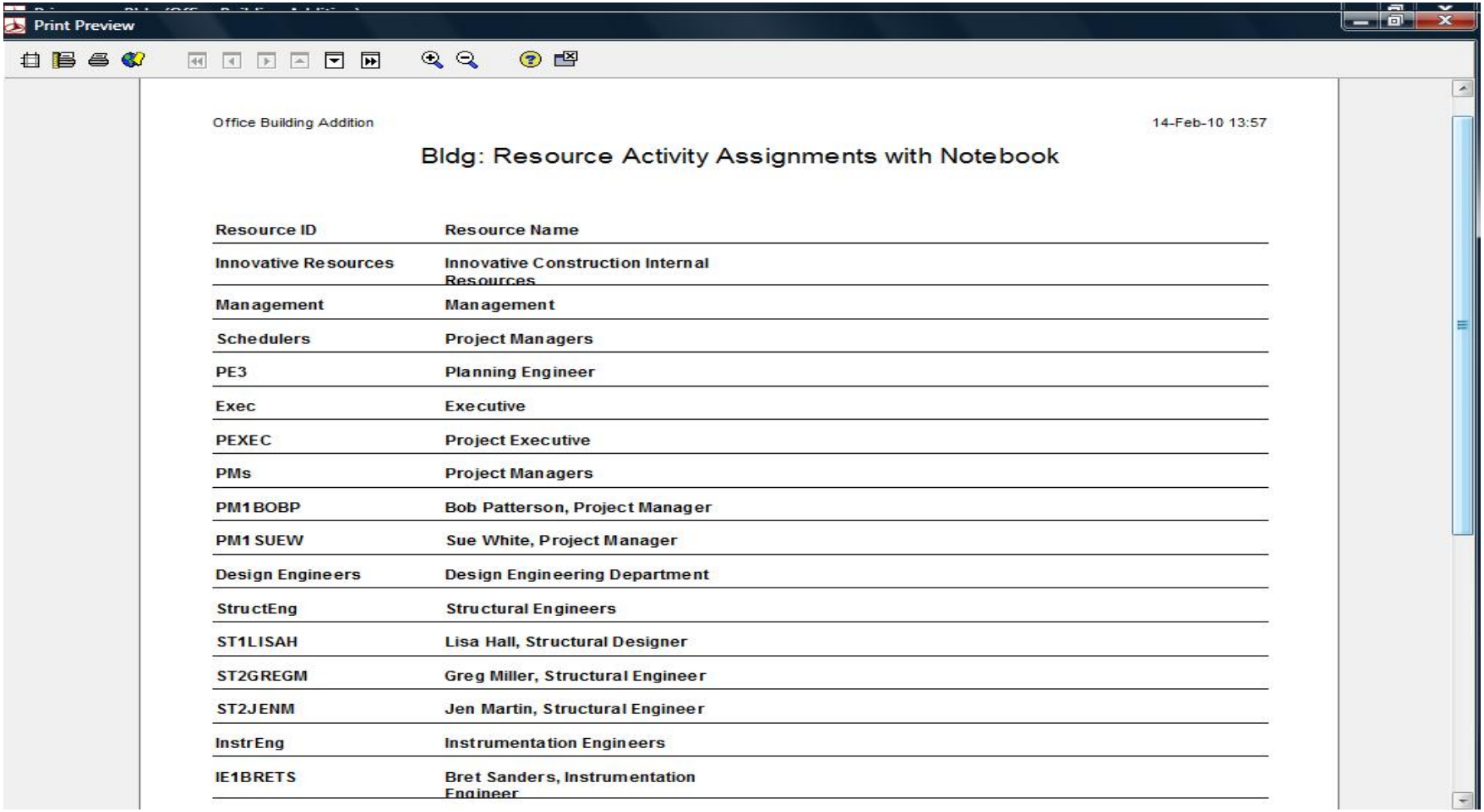
Generating the Report

- Exercise
  - Steps
    - Click the Run Report button
    - Verify that Print Preview is selected
    - Click Ok



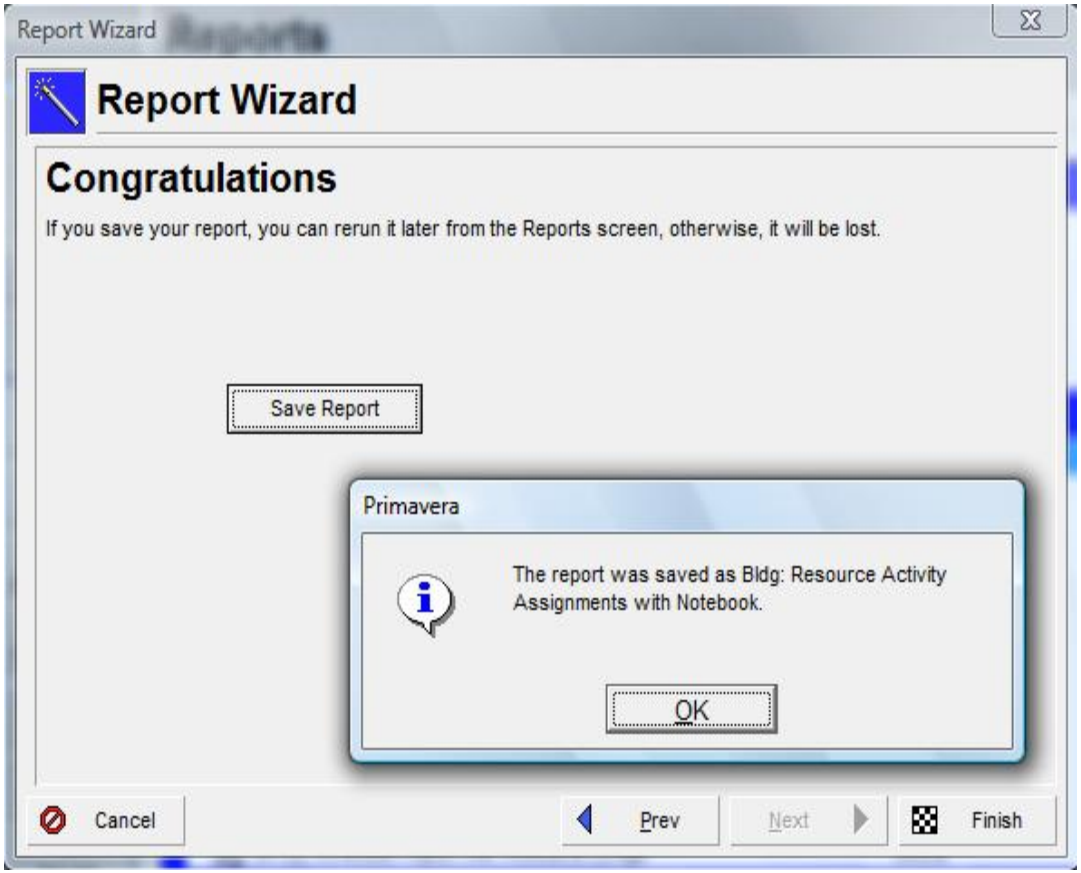
Print Preview

- You can preview the report before printing. To print, click the Print icon



Saving a Report

- After reviewing your report, you can save it and assign it to specific report group
- Exercise
  - Steps
    - Click Next
    - Click Save Report
    - When prompted
      Click Ok
    - Click Finish

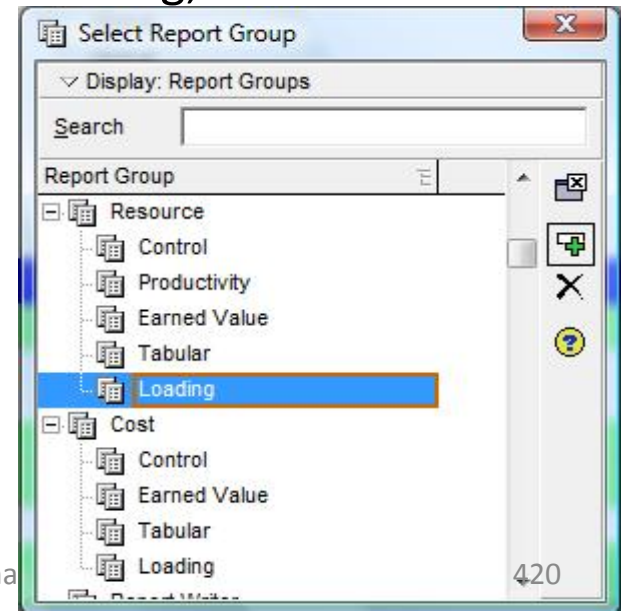


Assigning a Report to a Report Group

- To easily locate a report, you can assign it a report group.
- Exercise
  - Steps
    - Select the new report, Bldg: Resource Activity Assignment with Notebook
    - In the Report Group field, click Browse button
    - Select a report group (bottom), Resource-Loading, and then click Assign button
    - Press F5 to refresh the data
    - In the Report Scope drop-down

    list in the Report Details,

    click Current Project



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Creating a Report Using *Current Layout*

- The Report Wizard can also be used to create reports based on the layout that is currently displayed. Reports can be modified as they are built through the wizard
- Exercise
  - Steps
    - In the Directory bar, click Activities
    - In the Layout Option bar, click Layout, Open
    - Select a Layout, Resources-Budgeted Total Units, click Open
    - In the Tools menu, click Report Wizard
    - In the Create or Modify Window, select use Current Screen
    - Click Next

Creating a Report Using *Current Layout*

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Creating a Report Using *Current Layout*

- Exercise
  - Steps
    - On the Report Title Screen, type a title
    - Click Next
    - Click Run Report
    - Verify Print Preview is selected
    - Click Ok
    - Click Close
    - Click Next
    - Click Save
    - Click Ok
    - Click Finish
- *This will show you the report with the **Columns** which are displayed on the Current ACTIVITY LAYOUT*

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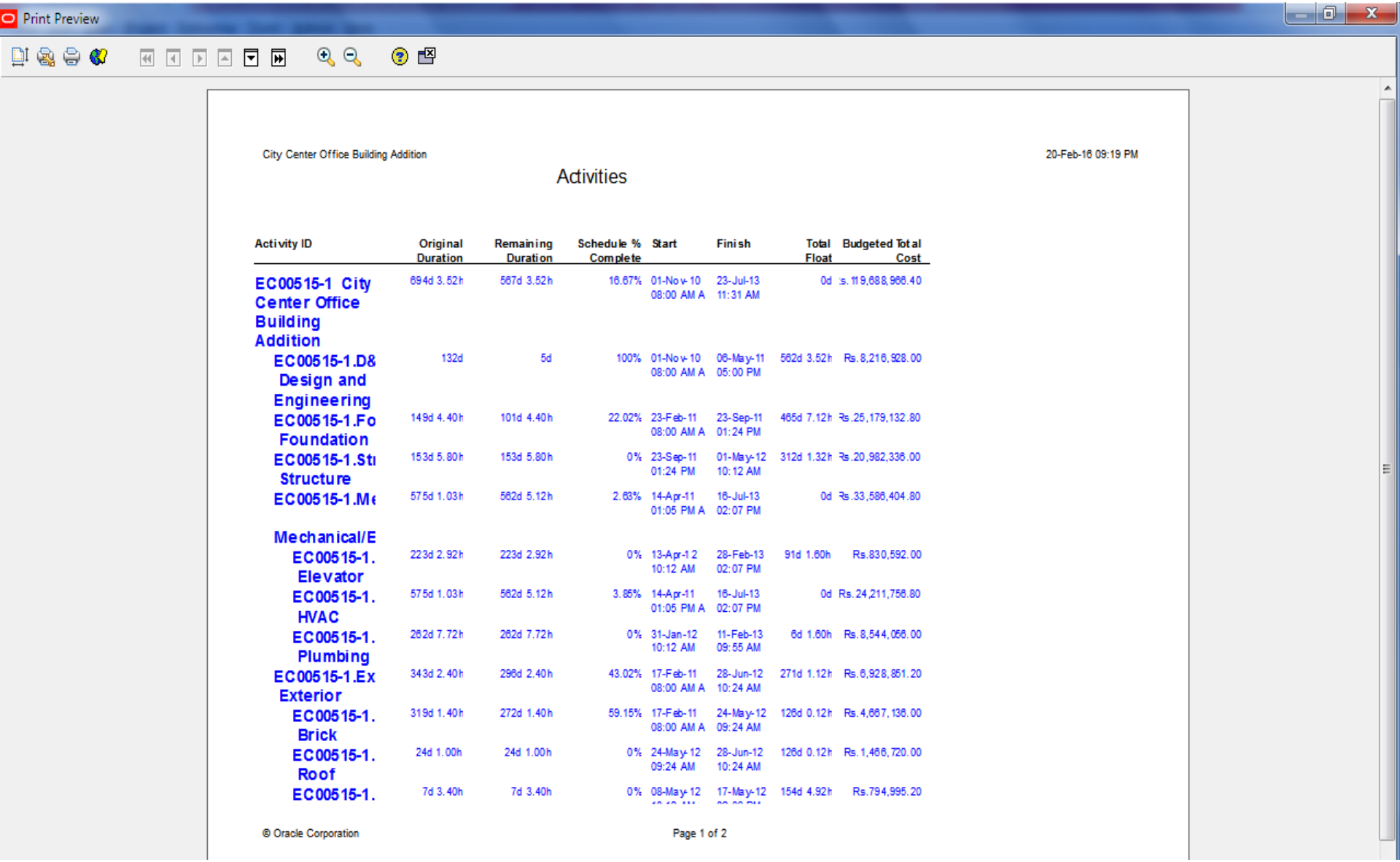
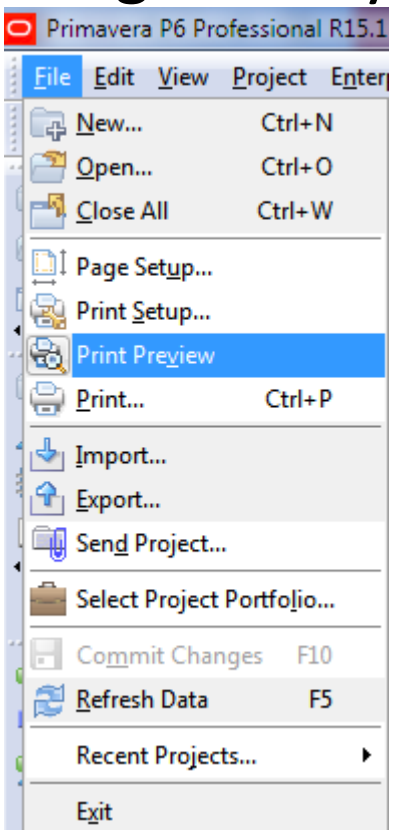
Creating a Report Using *Current Layout*



Creating a Report Using *Activity Layout*

- You can prepare Report of ***Activity Columns & Gantt Chart*** using Activities Window by customizing Activity Layouts.
- There are two options to this Report:
  - Using File Menu → ***Print Preview*** or ***Print***



  - Using Tool Bar → ***Print Preview*** or ***Print*** (button)

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Creating a Report Using *Activity Layout*

Print Preview

City Center Office Building Addition | Classic Schedule Layout - MSPM-3B | 20-Feb-16 12:57 PM

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	Budgeted Total Cost
EC00515-1	City Center Office Building Ad	694d 3.52h	567d 3.52h	18.67%	01-Nov-10	23-Jul-13	0d	s.119,688,966.40
EC00515-1.D&E	Design and Engineering	132d	5d	100%	01-Nov-10	06-May-11	562d	Rs.8,216,928.00
EC1000	Design Building Addition	55d 1.60h	0d	100%	01-Nov-10	19-Jan-11		Rs.5,458,176.00
EC1010	Start Office Building Addition Project	0d	0d	100%	01-Nov-10			Rs.0.00
EC1020	New Activity	5d	5d	0%	02-May-11	06-May-11	562d	Rs.0.00
EC1030	Review and Approve Designs	21d 4.80h	0d	100%	17-Jan-11	17-Feb-11		Rs.1,067,904.00
EC1050	Assemble Technical Data for Heat Pump	7d 1.60h	0d	100%	16-Feb-11	25-Feb-11		Rs.355,968.00
EC1110	New Activity	5d	5d	0%	02-May-11	06-May-11	562d	Rs.0.00
EC1160	Review Technical Data on Heat Pumps	27d	0d	100%	24-Feb-11	06-Apr-11		Rs.1,334,880.00
EC00515-1.Found	Foundation	149d 4.40h	101d 4.40h	22.02%	23-Feb-11	23-Sep-11	465d	Rs.25,179,132.8
EC1090	Begin Building Construction	0d	0d	100%	28-Feb-11			Rs.0.00
EC1100	Site Preparation	43d 1.60h	0d	100%	23-Feb-11	18-Apr-11		Rs.2,491,776.00
EC1230	Excavation	24d 1.00h	24d 1.00h	41.67%	02-May-11	06-Jun-11	126d	Rs.2,768,640.00
EC1320	Install Underground Water Lines	12d 1.00h	12d 1.00h	0%	06-Jun-11	22-Jun-11	126d	Rs.1,087,680.00
EC1330	Install Underground Electric Conduit	12d 1.00h	12d 1.00h	0%	06-Jun-11	22-Jun-11	126d	Rs.1,878,720.00
EC1340	Form/Pour Concrete Footings	24d 1.00h	24d 1.00h	0%	22-Jun-11	27-Jul-11	126d	Rs.6,410,720.00
EC1350	Concrete Foundation Walls	24d 1.00h	24d 1.00h	0%	27-Jul-11	30-Aug-11	126d	Rs.5,421,920.00
EC1360	Form and Pour Slab	12d 1.00h	12d 1.00h	0%	30-Aug-11	16-Sep-11	126d	Rs.4,035,952.00
EC1370	Backfill and Compact Walls	4d 7.40h	4d 7.40h	0%	16-Sep-11	23-Sep-11	126d	Rs.1,083,724.80
EC1380	Foundation Phase Complete	0d	0d	0%		23-Sep-11	465d	Rs.0.00
EC00515-1.Structure	Structure	153d 5.80h	153d 5.80h	0%	23-Sep-11	01-May-12	312d	Rs.20,982,336.0
EC1390	Erect Structural Frame	48d 1.00h	48d 1.00h	0%	23-Sep-11	01-Dec-11	126d	Rs.4,515,520.00
EC1410	Begin Structural Phase	0d	0d	0%	01-Dec-11		417d	Rs.0.00
EC1420	Floor Decking	33d 4.80h	33d 4.80h	0%	01-Dec-11	20-Jan-12	126d	Rs.4,683,616.00
EC1430	Concrete First Floor	36d	36d	0%	20-Jan-12	12-Mar-12	126d	Rs.3,119,664.00
EC1460	Erect Stairwell and Elevator Walls	24d	24d	0%	12-Mar-12	13-Apr-12	138d	Rs.692,160.00
EC1470	Concrete Basement Slab	24d	24d	0%	12-Mar-12	13-Apr-12	138d	Rs.4,851,712.00
EC1480	Concrete Second Floor	36d	36d	0%	12-Mar-12	01-May-12	126d	Rs.3,119,664.00
EC1540	Structure Complete	0d	0d	0%		01-May-12	126d	Rs.0.00
EC00515-1.Mechanicals	Mechanical/Electrica	575d 1.03h	562d 5.12h	2.83%	14-Apr-11	16-Jul-13	0d	Rs.33,586,404.8
EC1490	Rough-In Phase Begins	0d	0d	0%	21-Mar-12		233d	Rs.0.00
EC1690	Rough In Complete	0d	0d	0%		21-Feb-13	0d	Rs.0.00

Actual Level of Effort | Remaining Work | Actual Work | Critical Remai...

Page 1 of 12

TASK filter: All Activities

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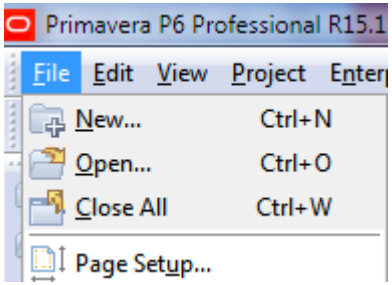
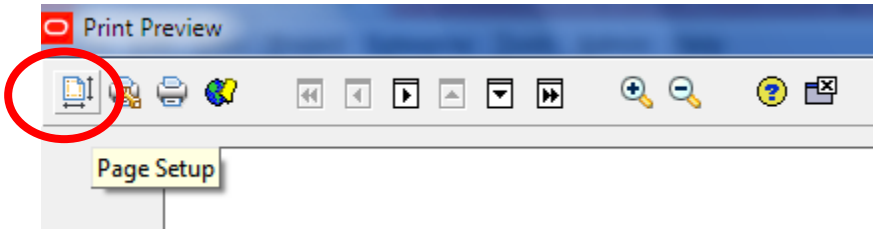
Creating a Report Using *Activity Layout*

- You can take Customize the Print Preview using: ***Page Setup*** Option
  - File Menu → Page Setup

    OR

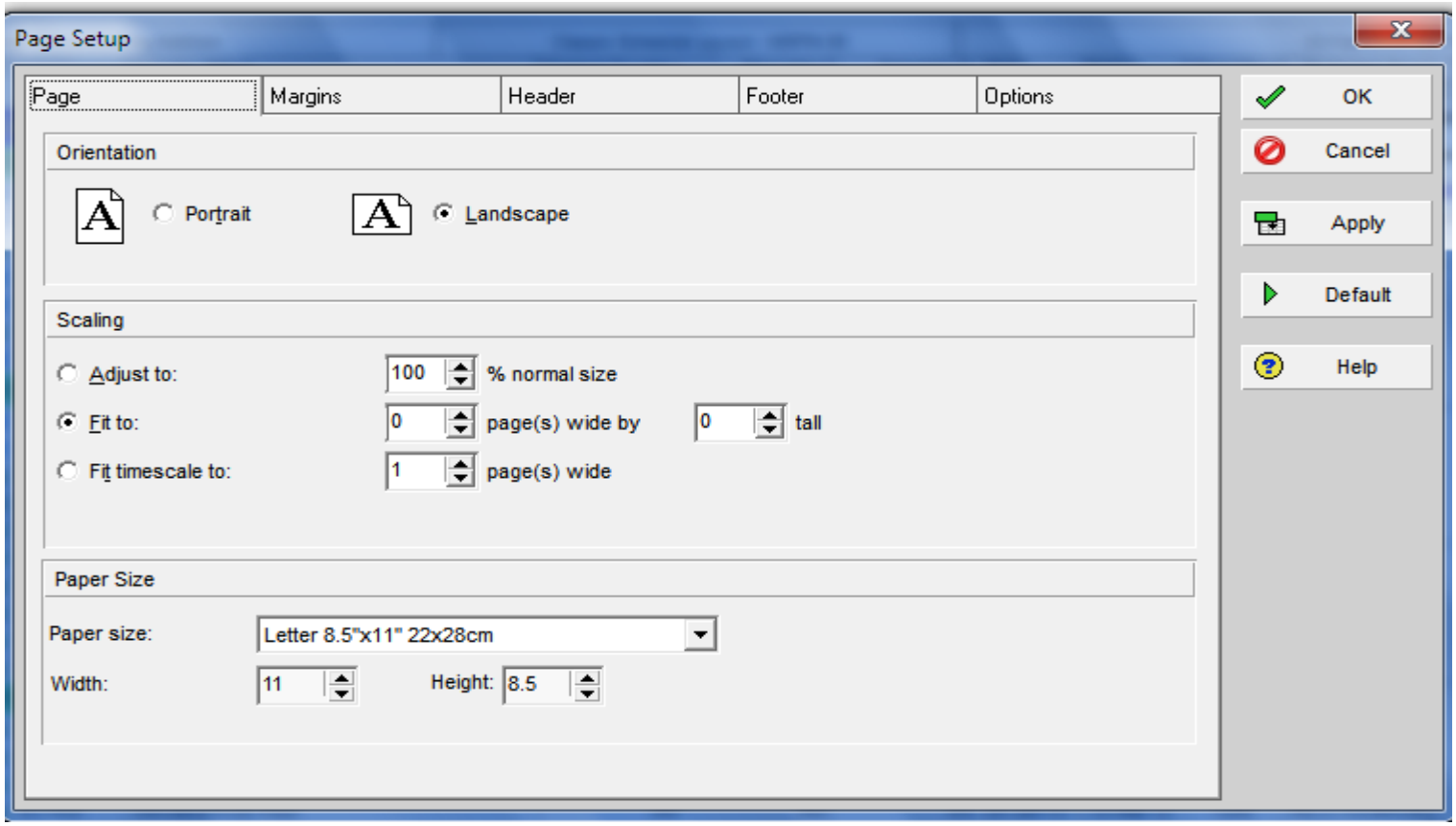


  - Print Preview → Page Setup (button)



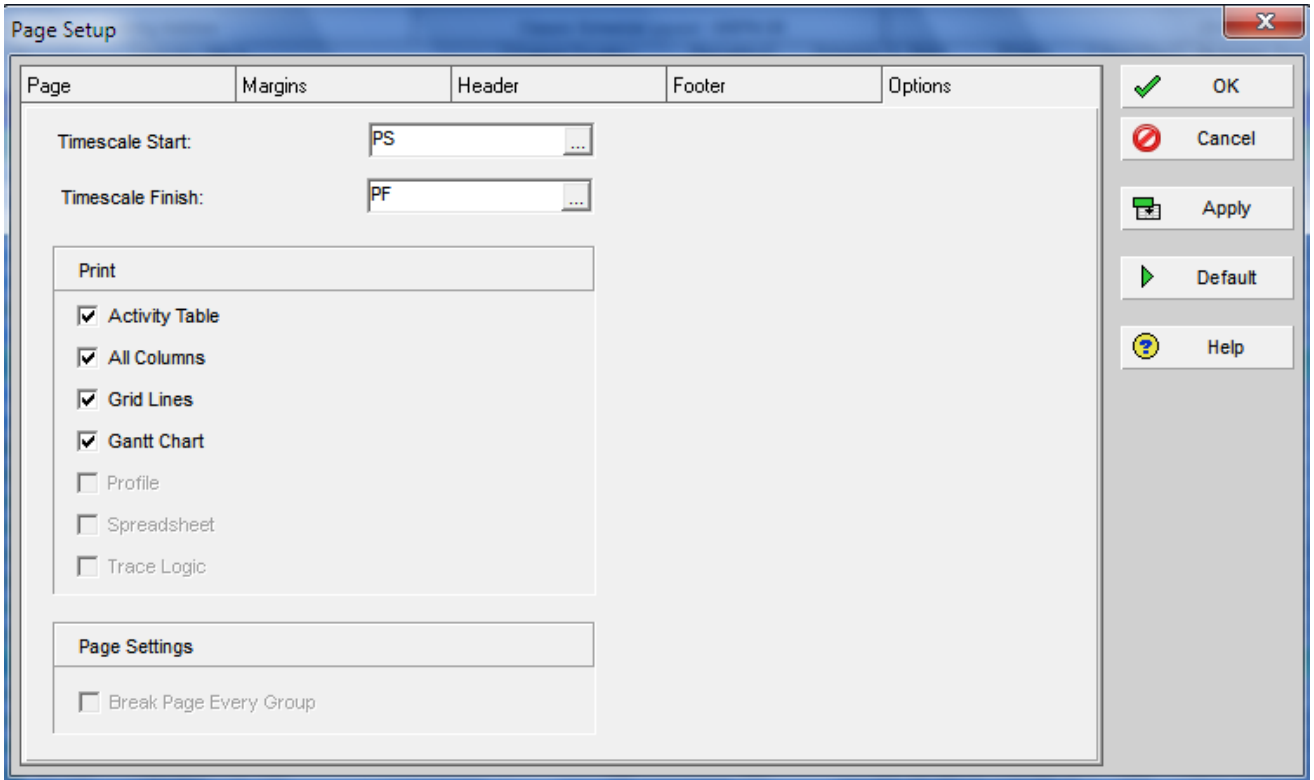
Creating a Report Using *Activity Layout*

- Page Setup → ***Page (Tab)***
  - Page Orientation, Page Fit, Timescale Fit, Paper Size



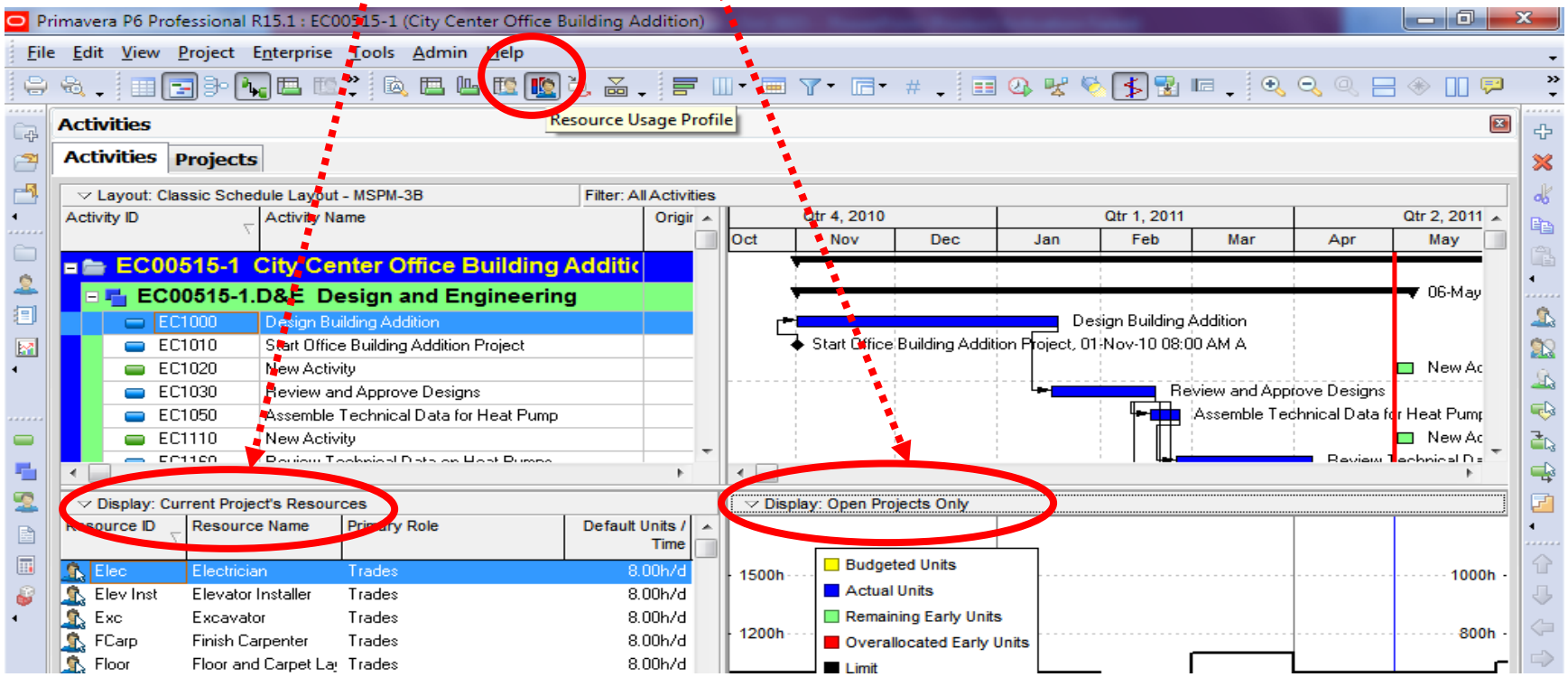
Creating a Report Using *Activity Layout*

- Page Setup → ***Options (Tab)***
  - Timescale START & FINISH
  - Print (***Top Layout View*** or ***Profile View*** or Both)
  - Profile View is only for ***Activity Usage Profile & Resource Usage Profile***



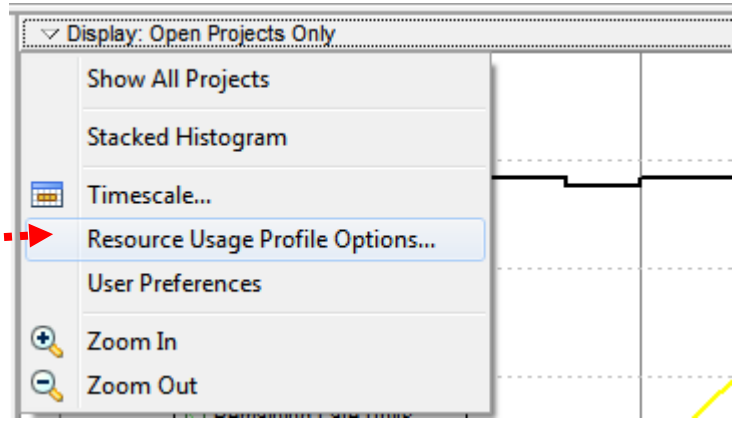
Resource Usage Profile Settings

- Use ***Resource Usage Profile***
- Display: ***Current Project's Resources***
- Display: ***Open Projects Only***

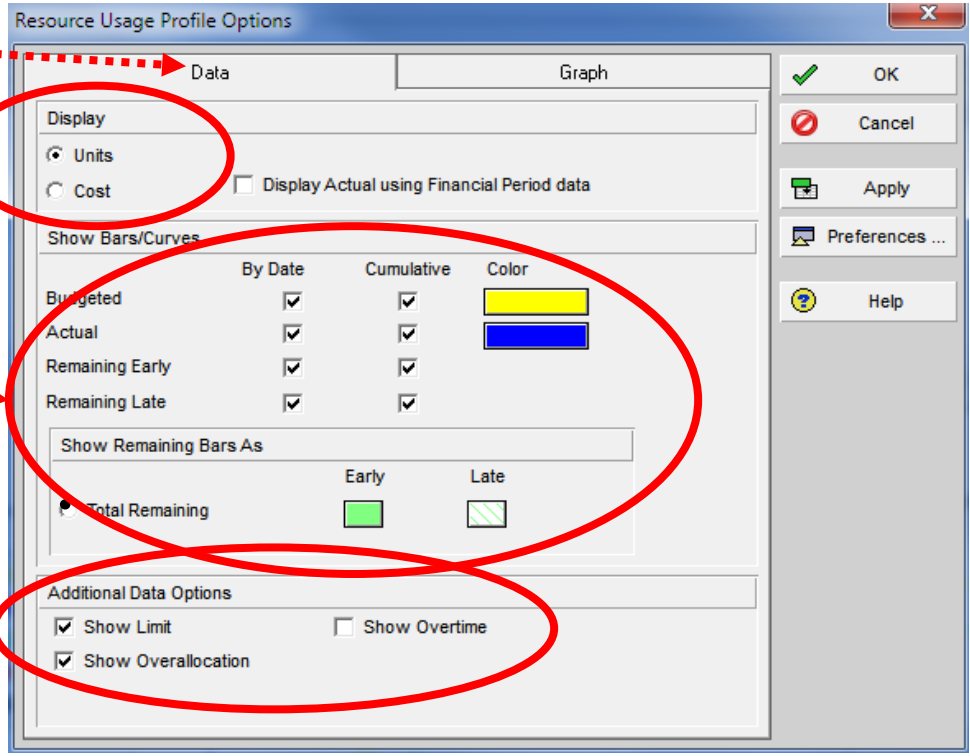


Resource Usage Profile Options

- *Use Display Option bar on Right-Pane*
- *Click*

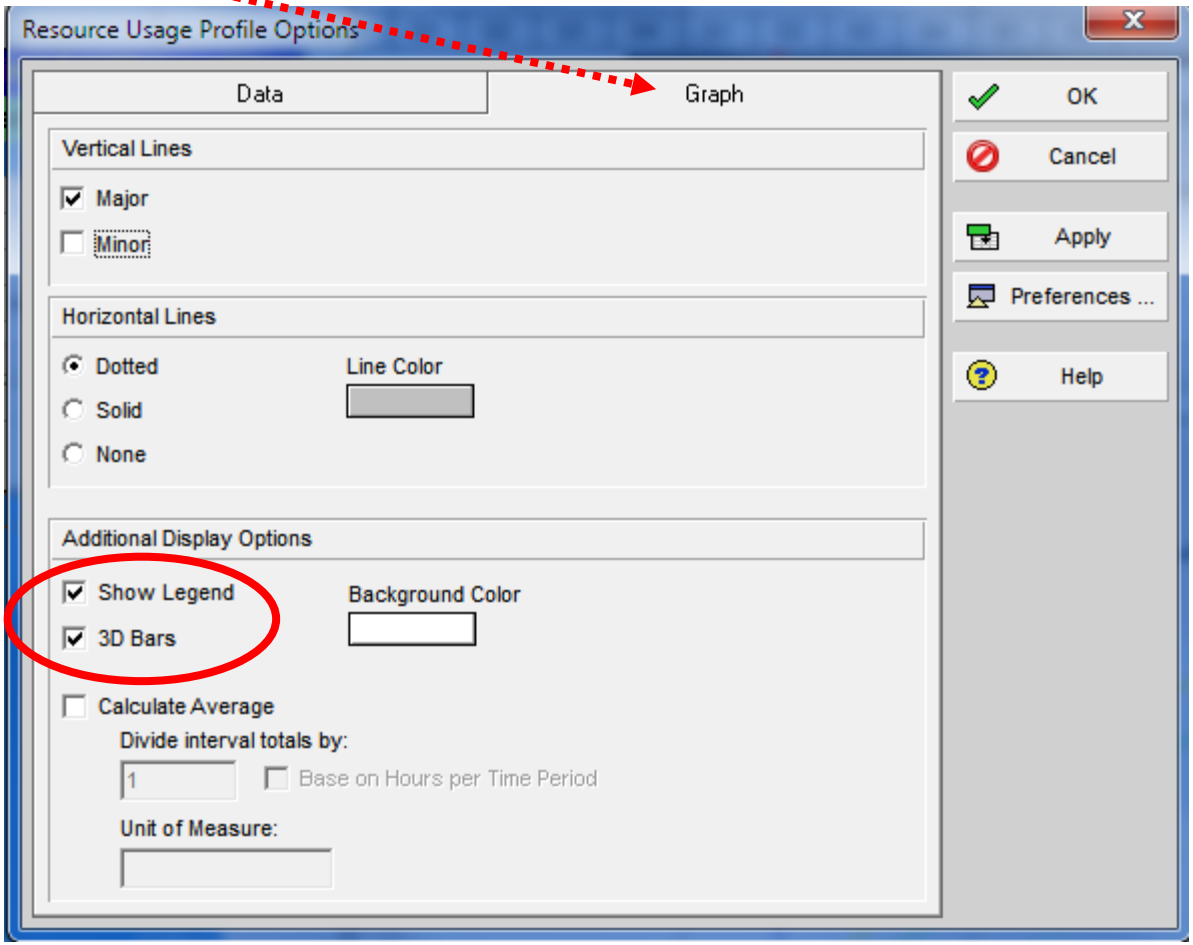


- Use *Data (Tab)*
- Use *Units* or *Cost*
- *Show Bars/Curves*
- Use *Additional Data Options*



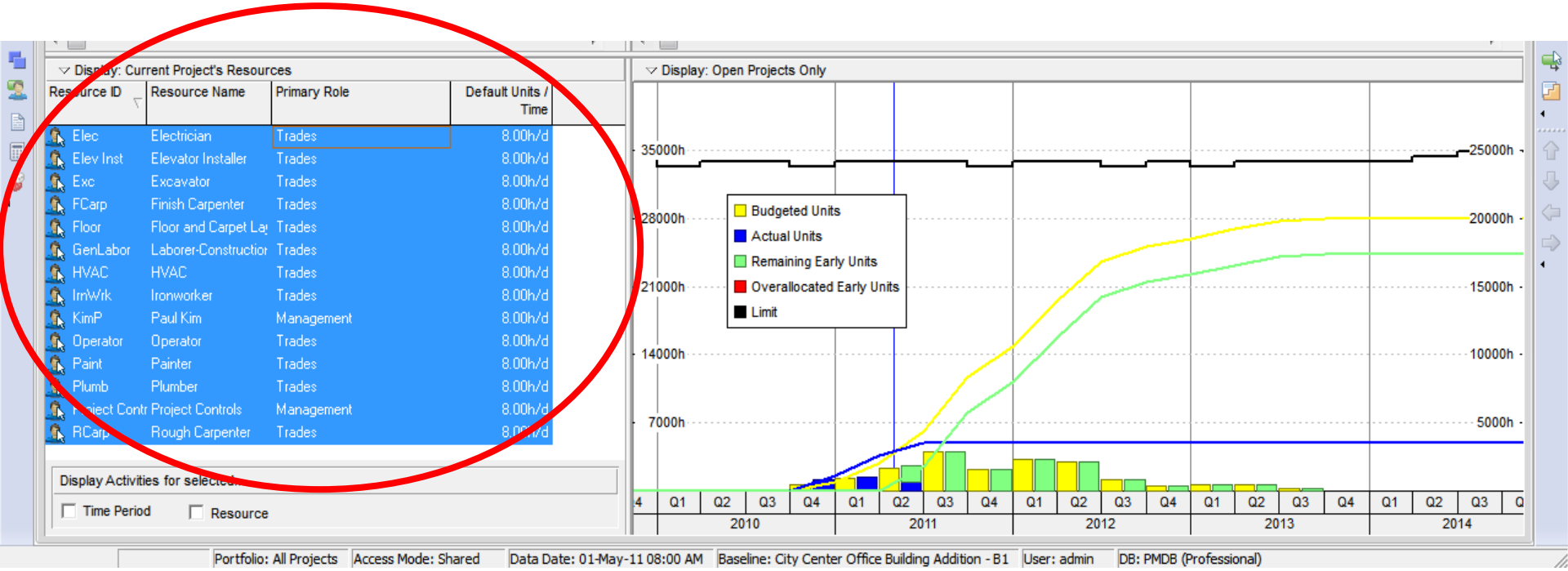
Resource Usage Profile Options

- Use ***Graph (Tab)*** to display Legend and 3D Bars



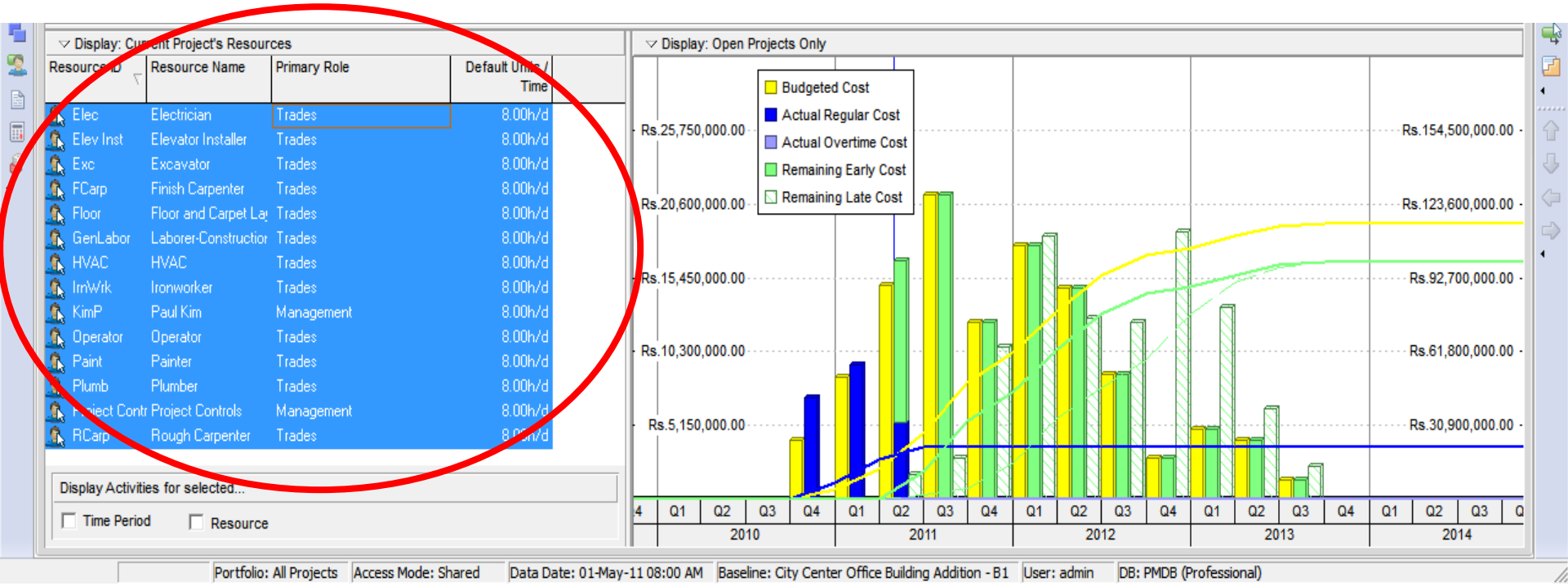
Resources' Units Profiling

- Select all "**Current Project's Resources**" on Left-Pane



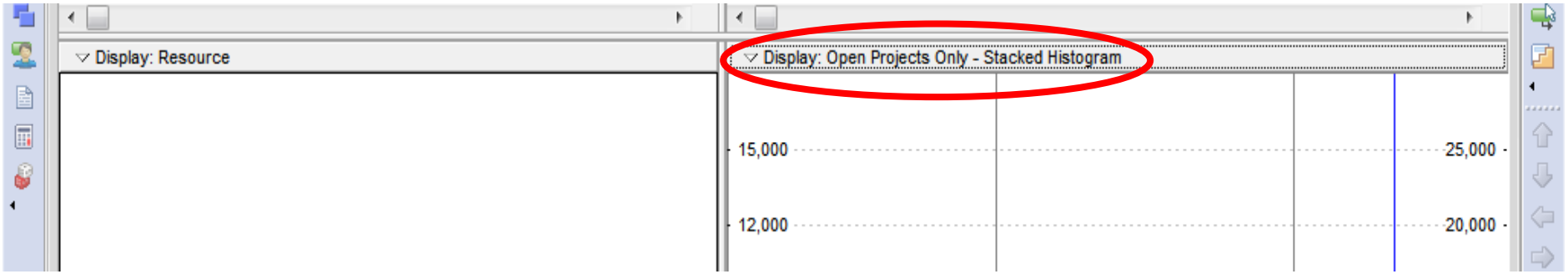
Resources' Cost Profiling

- Select all "**Current Project's Resources**" on Left-Pane

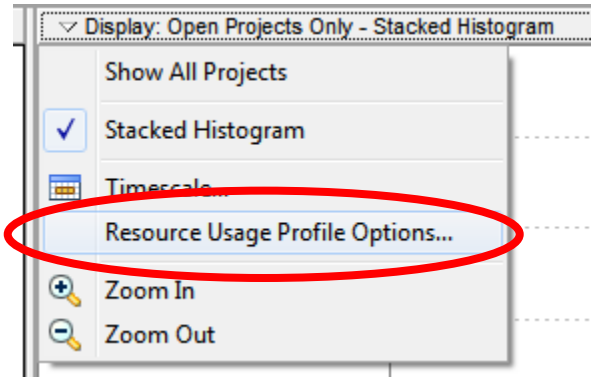


S-Curve with Resource Loading

- Display: ***Open Projects Only – Staked Histogram***

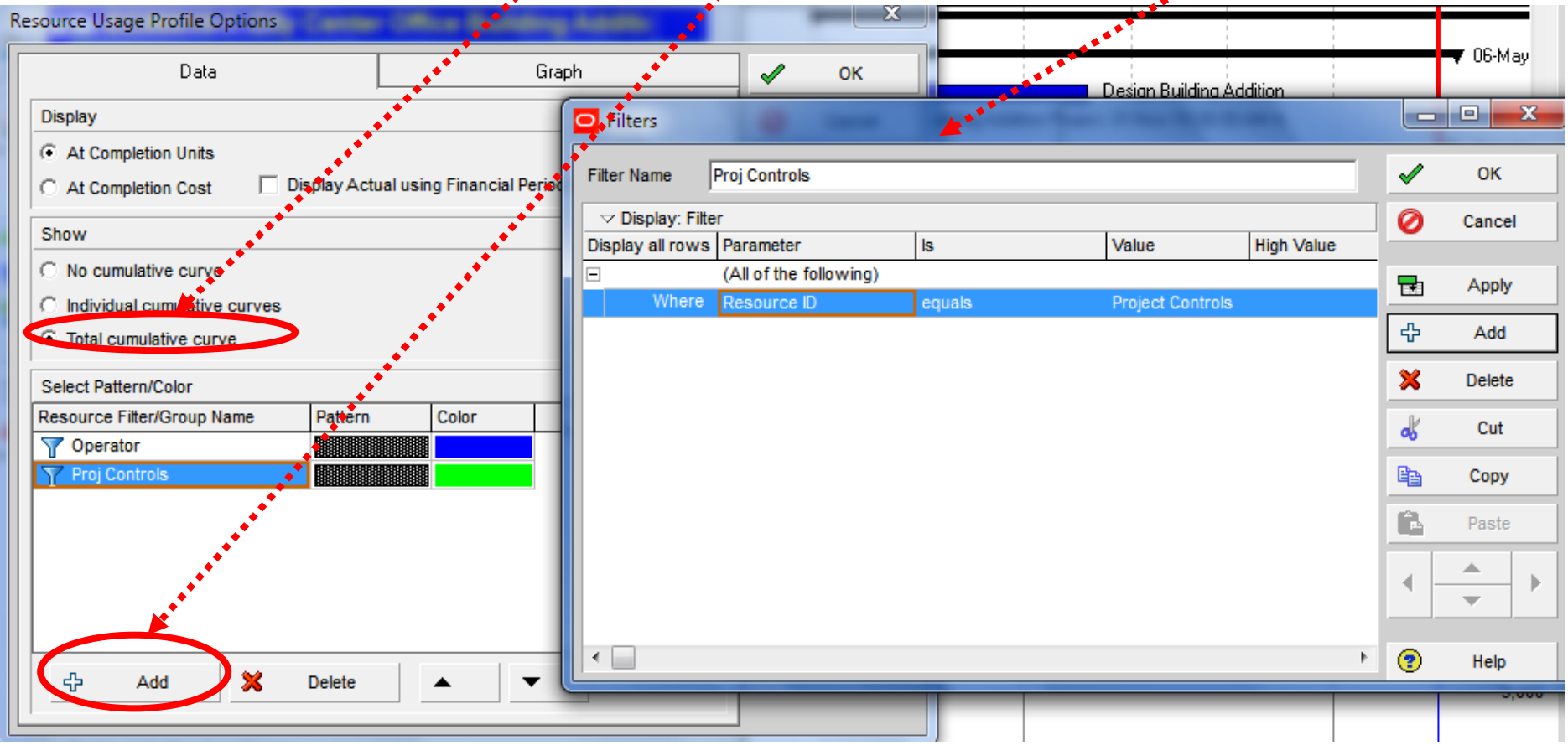


- Now, Select ***Resource Usage Profile Options*** from Display Options



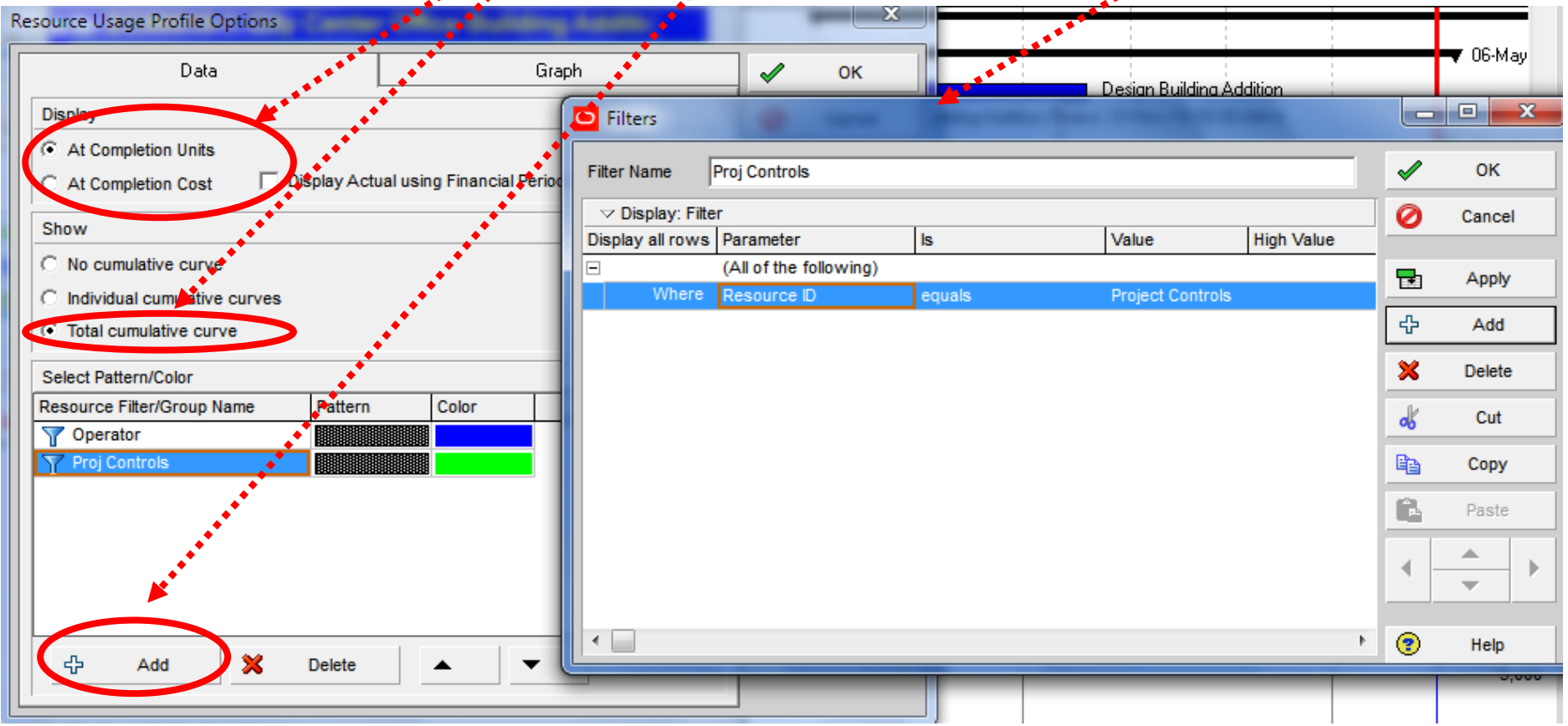
S-Curve with Resource Loading

- Now, Add Resources using ***Add*** (button) using ***Filters***
- Select ***Total Cumulative Curve*** (for S-Curve)



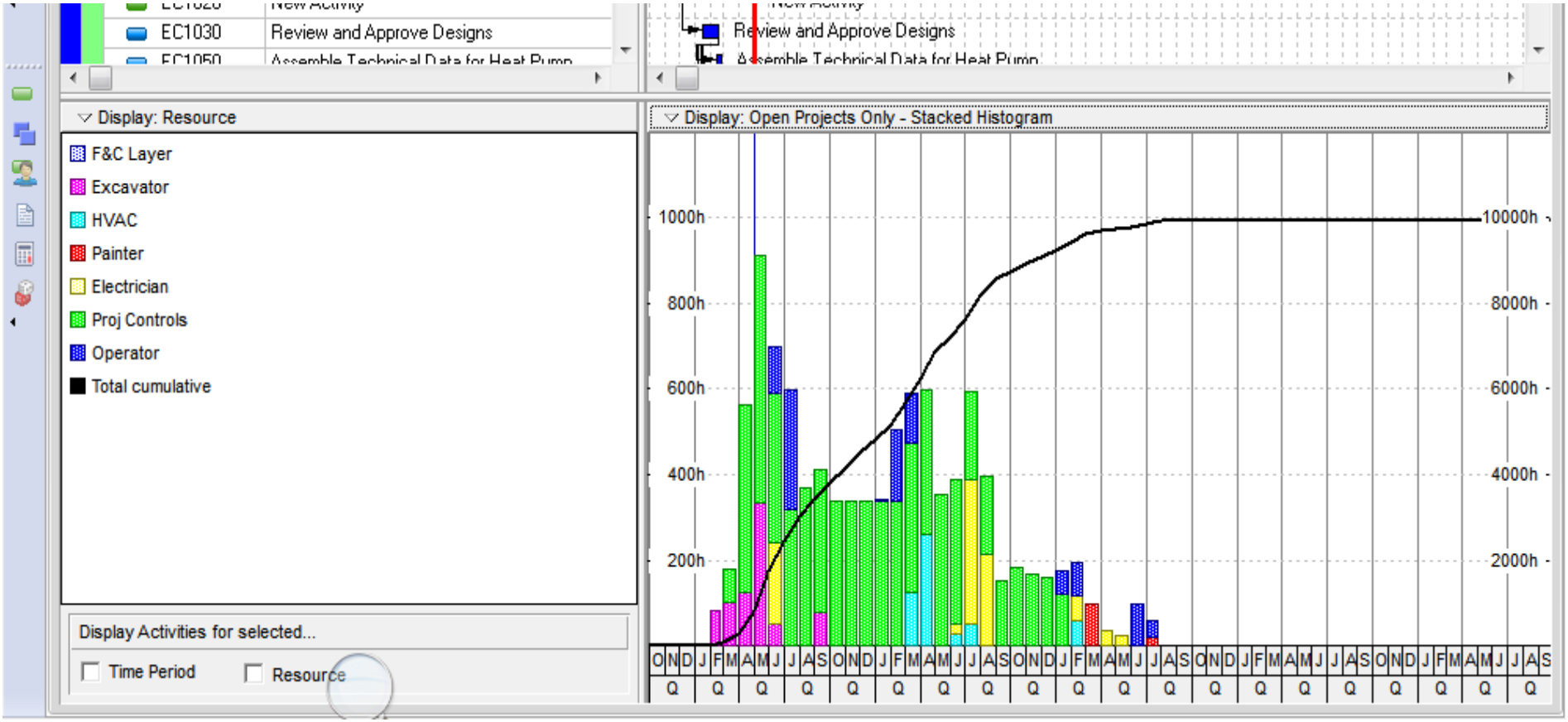
S-Curve with Resource Loading

- Now, Add Resources using ***Add*** (button) using ***Filters***
- Select ***Total Cumulative Curve*** (for S-Curve)
- You can use Cost or Units



S-Curve with Resource Loading

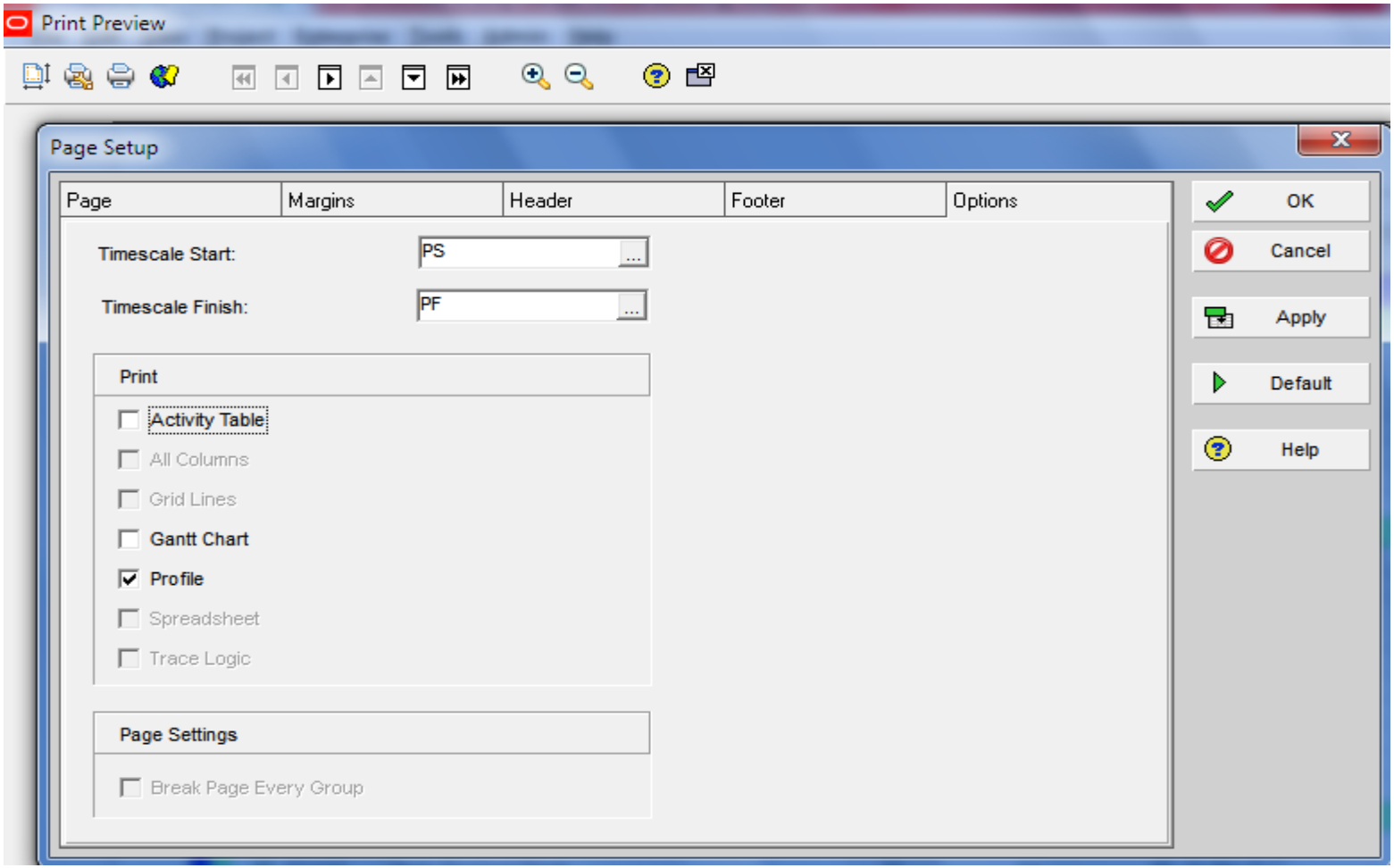
- ***See Results***



S-Curve with Resource Loading

- *Take Print* using:

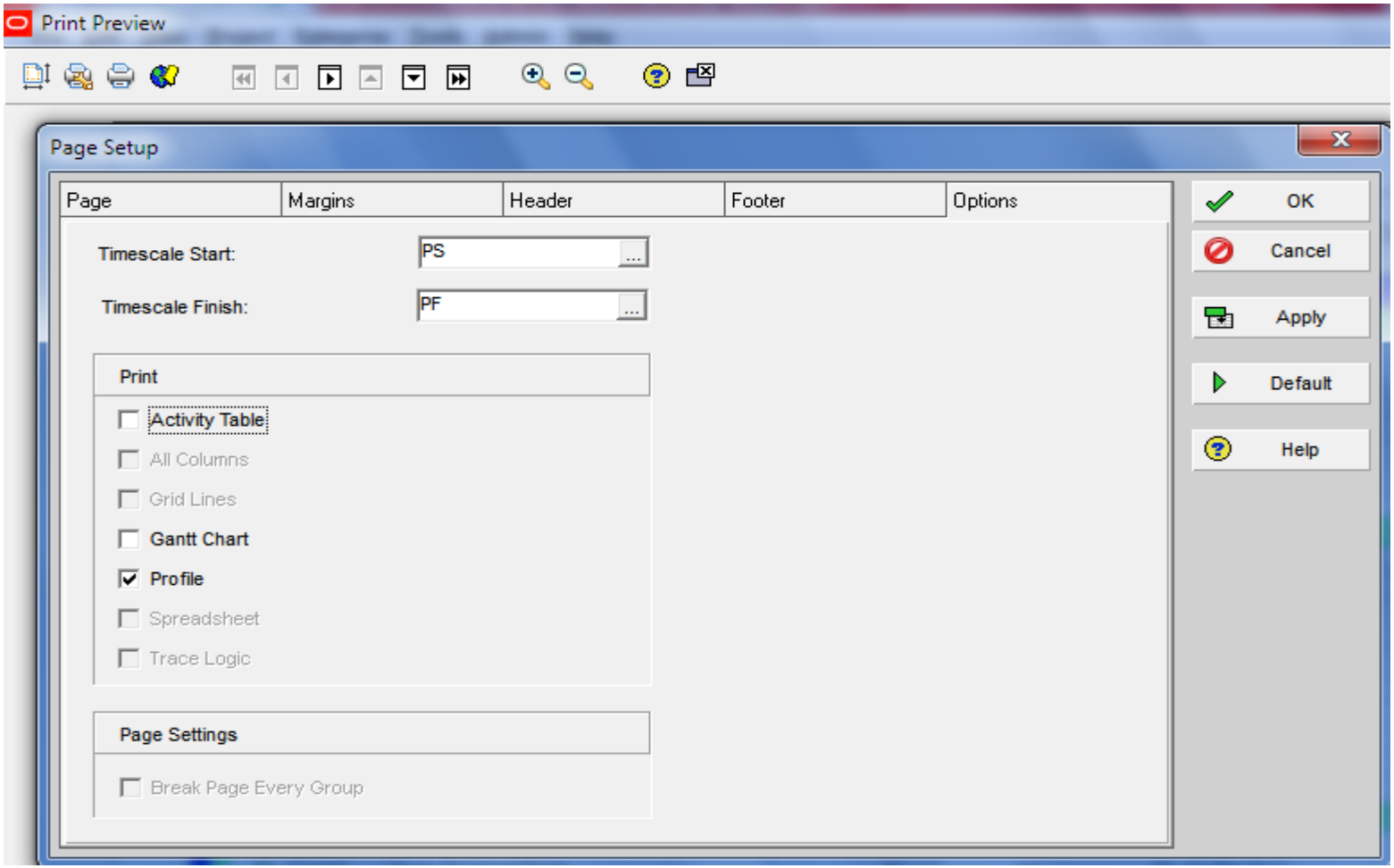
Print Preview → Page Setup →Options (Tab)→ Profile



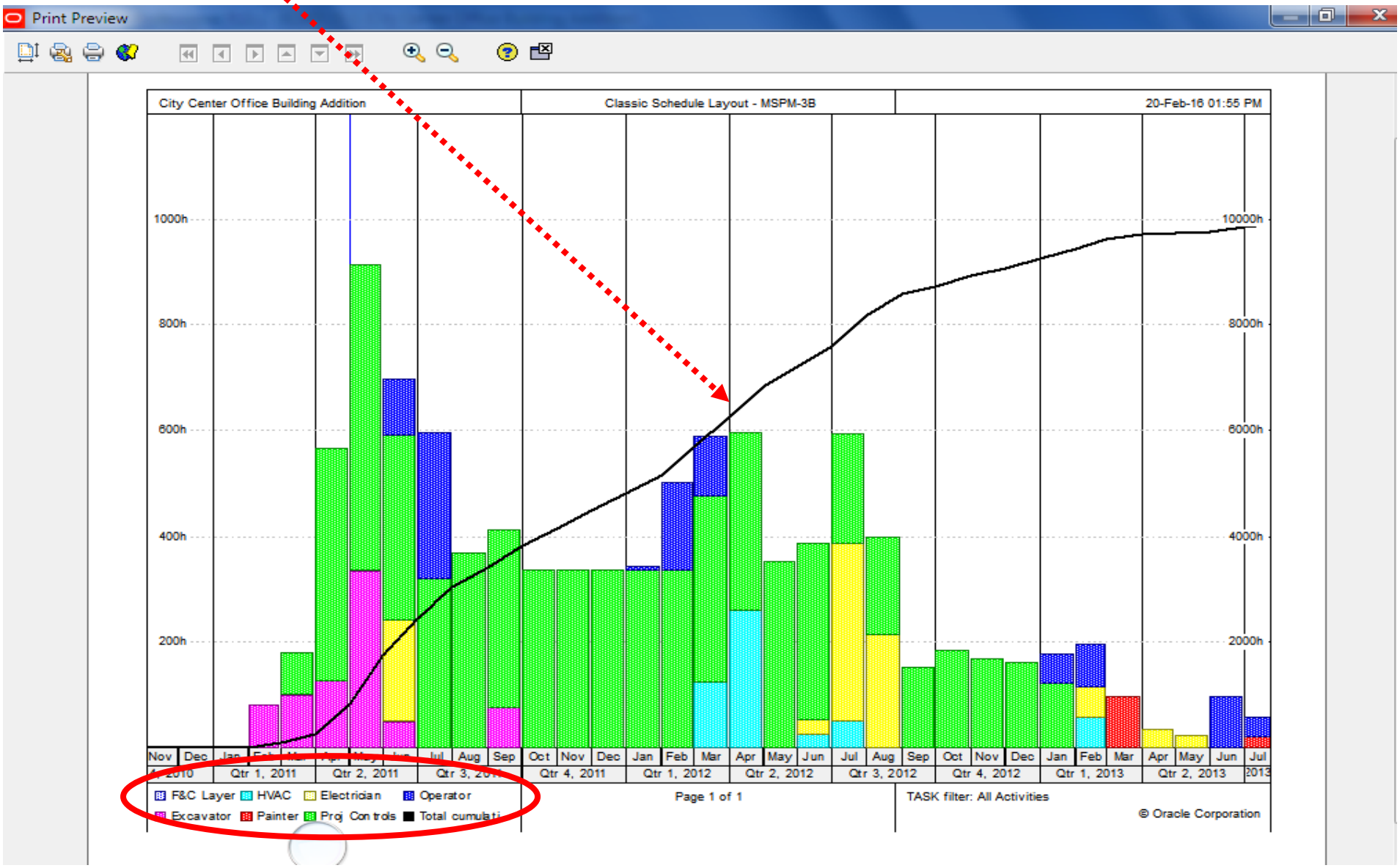
S-Curve with Resource Loading

- *Take Print* using:

Print Preview → Page Setup →Options (Tab)→ Profile

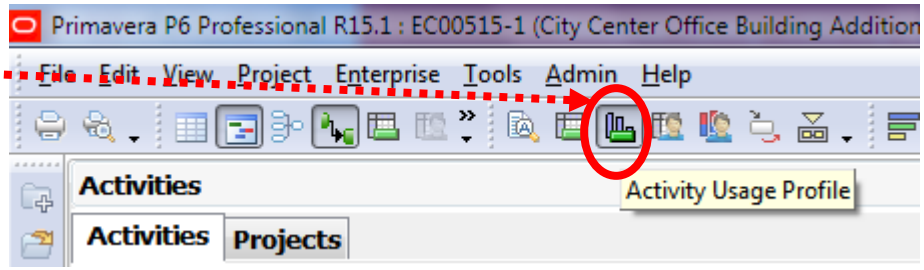


S-Curve with Resource Loading

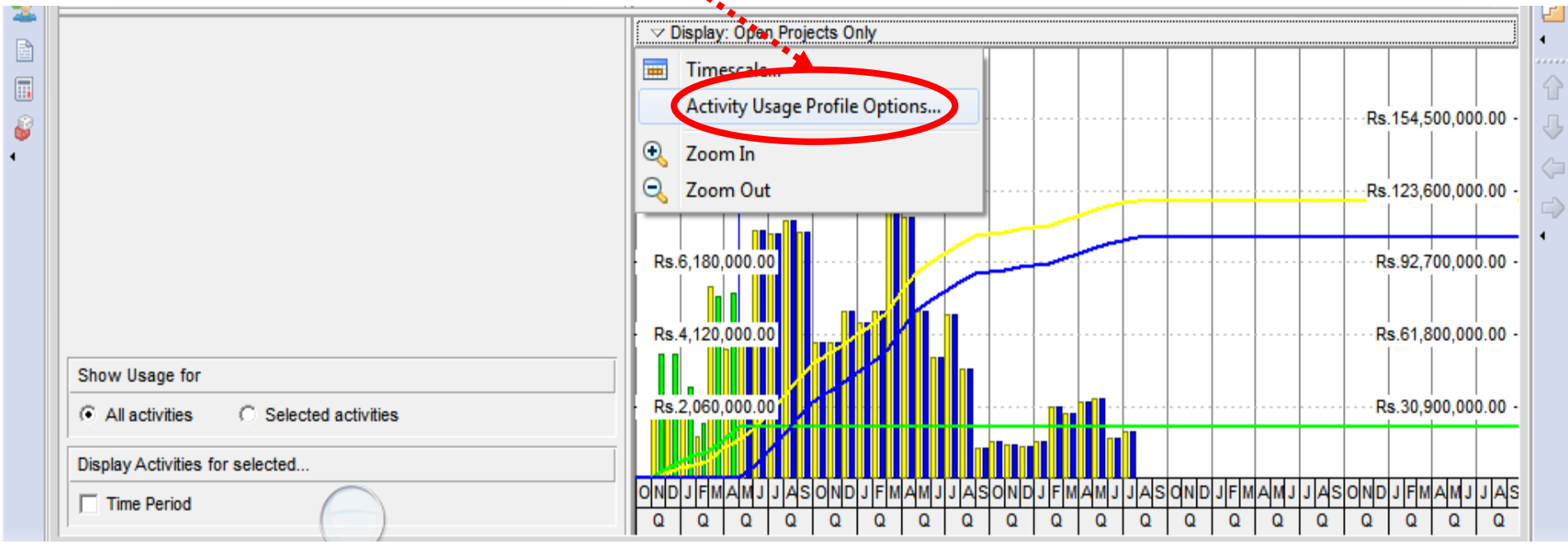


S-Curve with Earned Value Costs

- Use ***Activity Usage Profile***

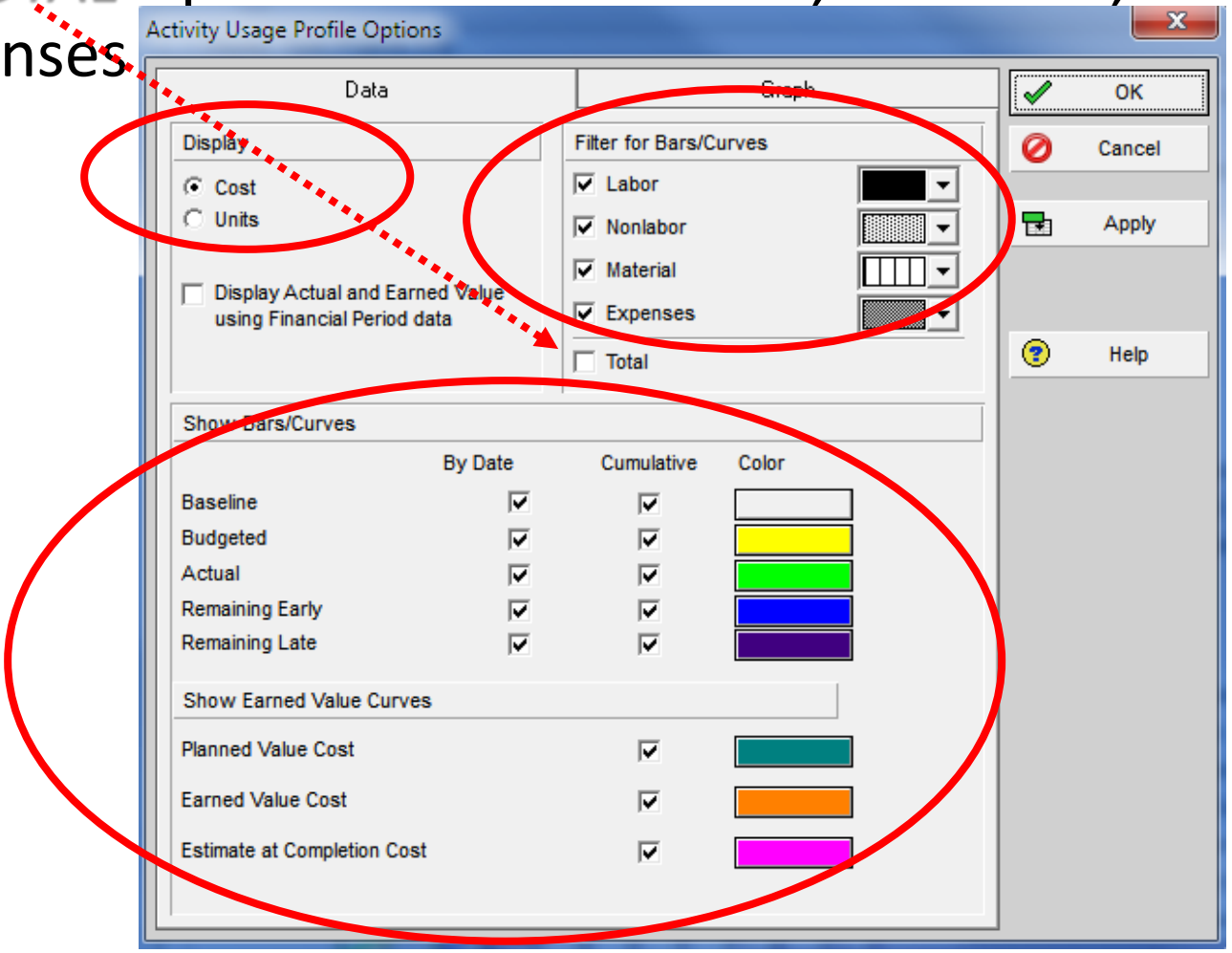


- Use ***Display: Activity Usage Profile Options***

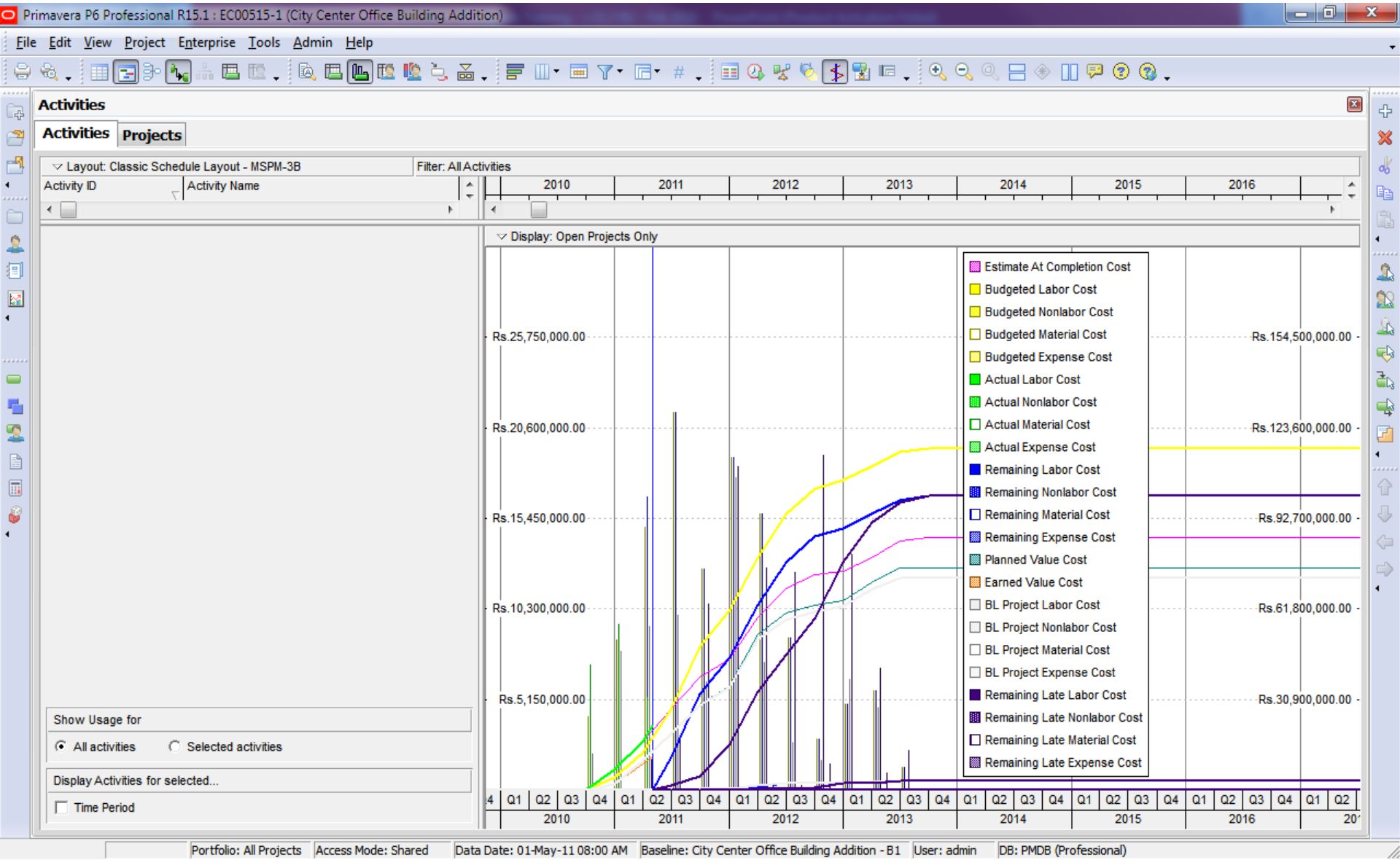


S-Curve with Earned Value Costs

- Use ***Highlighted Options***
- You can use ***TOTAL*** Option instead of Labor, Nonlabor, Material, Expenses



S-Curve with Earned Value Costs



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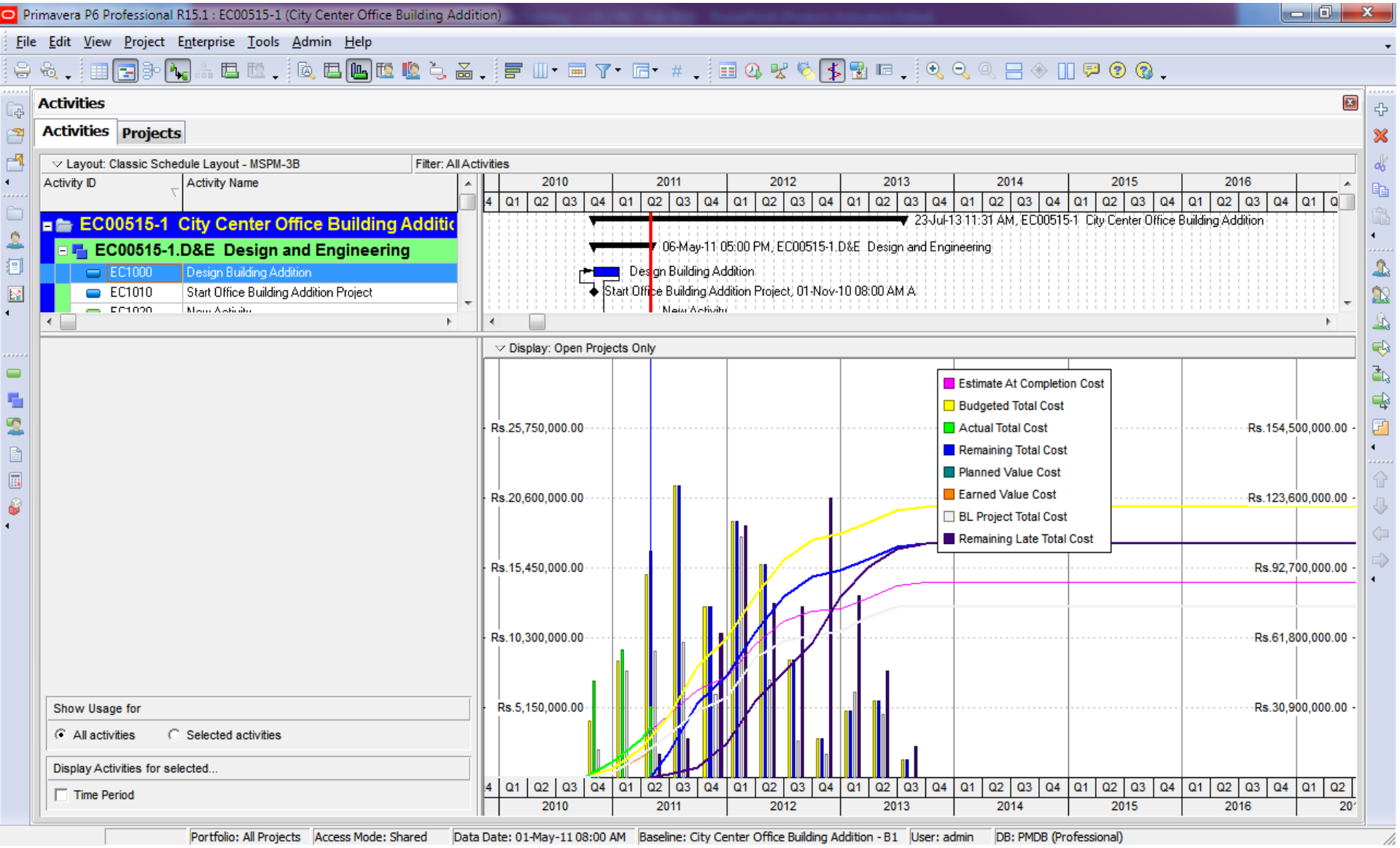
S-Curve with Earned Value *Total* Cost



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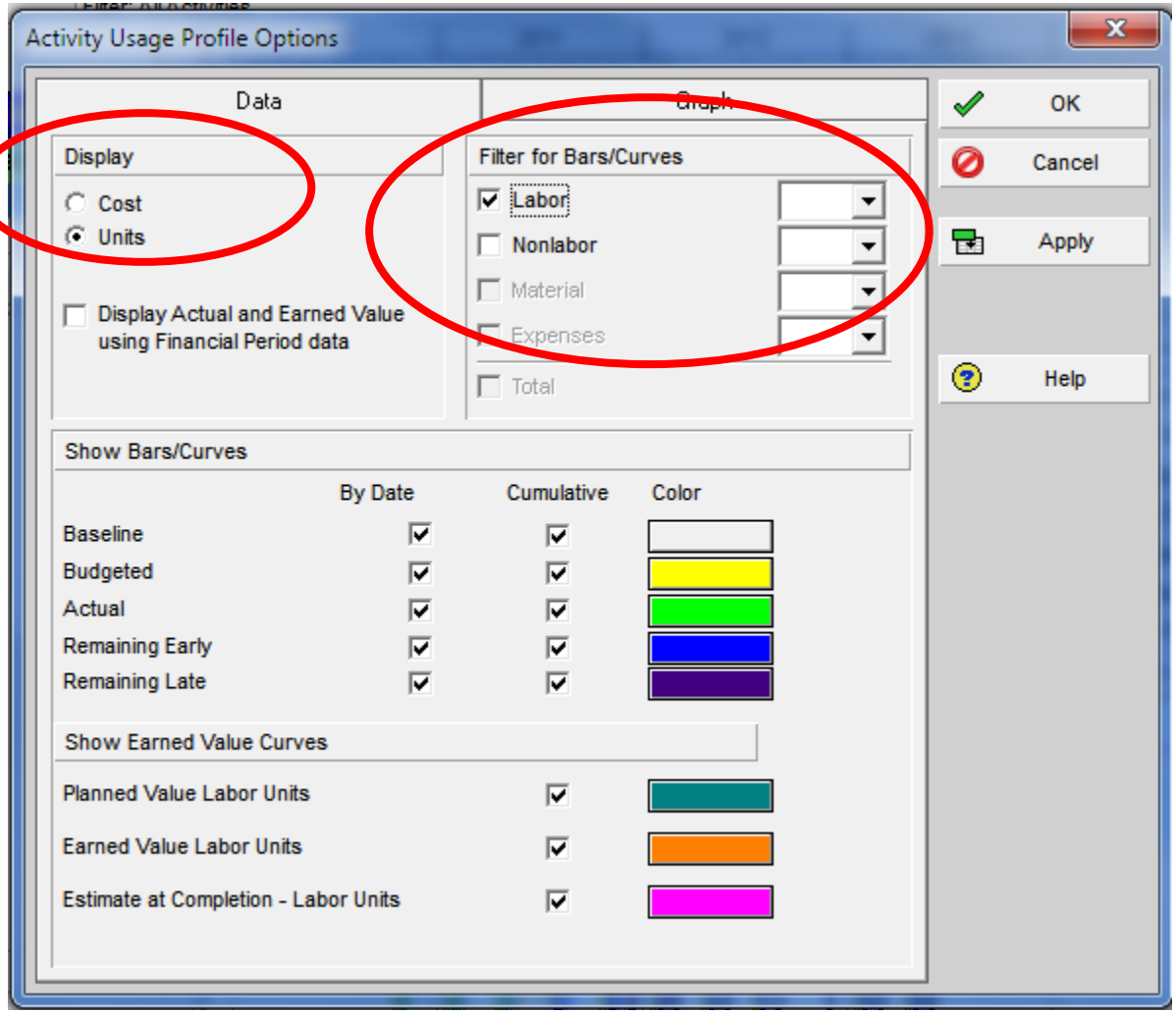
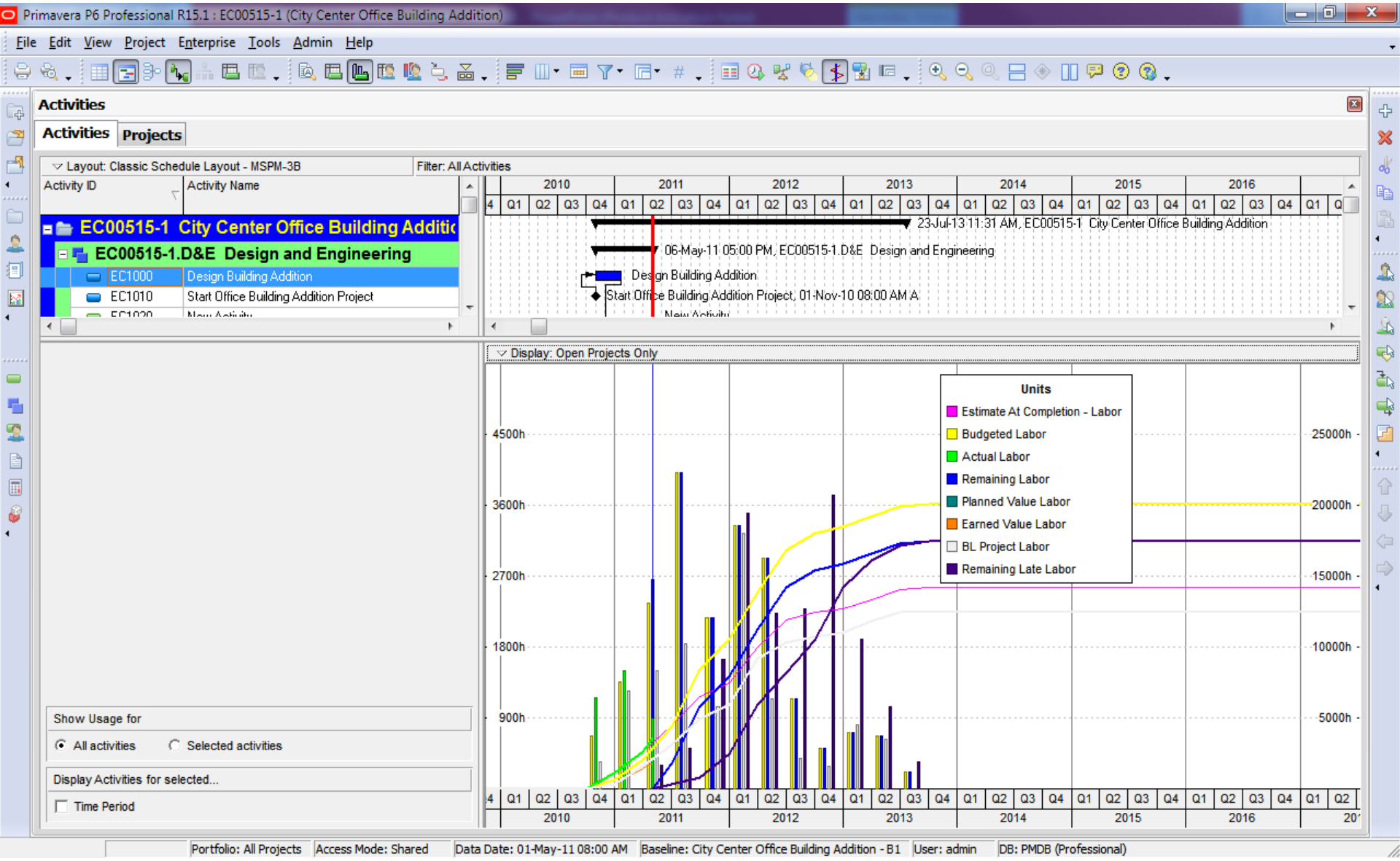
S-Curve with Earned Value Units

- You can switch between ***Labor*** Units and ***Nonlabor*** Units



S-Curve with Earned Value Units



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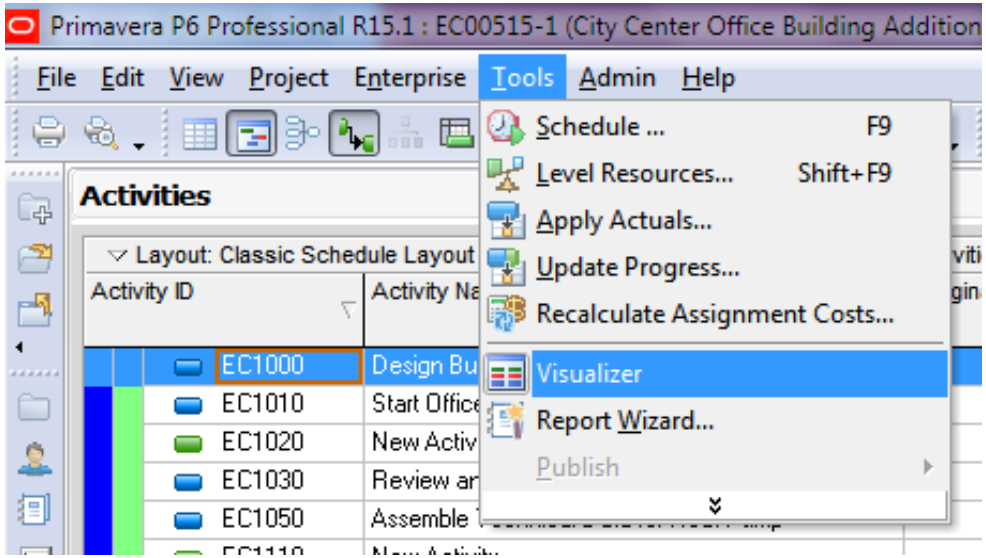
Primavera Visualizer

- Visualizer is a feature that supports graphical reporting by enabling users to create customizable Gantt charts and TimeScaled Logic Diagrams (TSLDs).

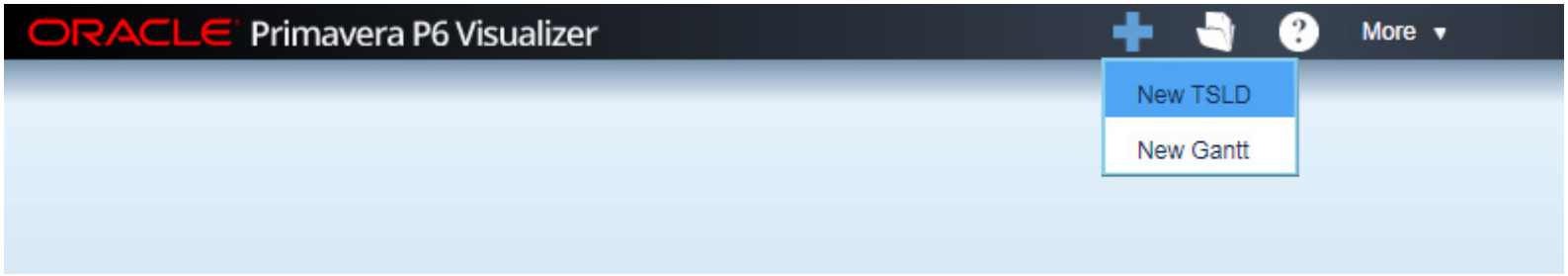
- Visualizer enables a user to:
  - Stack columns & use word wrapping in the Gantt chart
  - Use notebook topics or a list of steps as a bar label or as an field in the activity table
  - Apply various fonts to individual labels and fields
  - Color-code and apply different shapes for bars and endpoints
  - Draw bars on top of each other, for example, to show critical highlighting

Primavera Visualizer

- Click *Tools (Menu)* → *Visualizer*

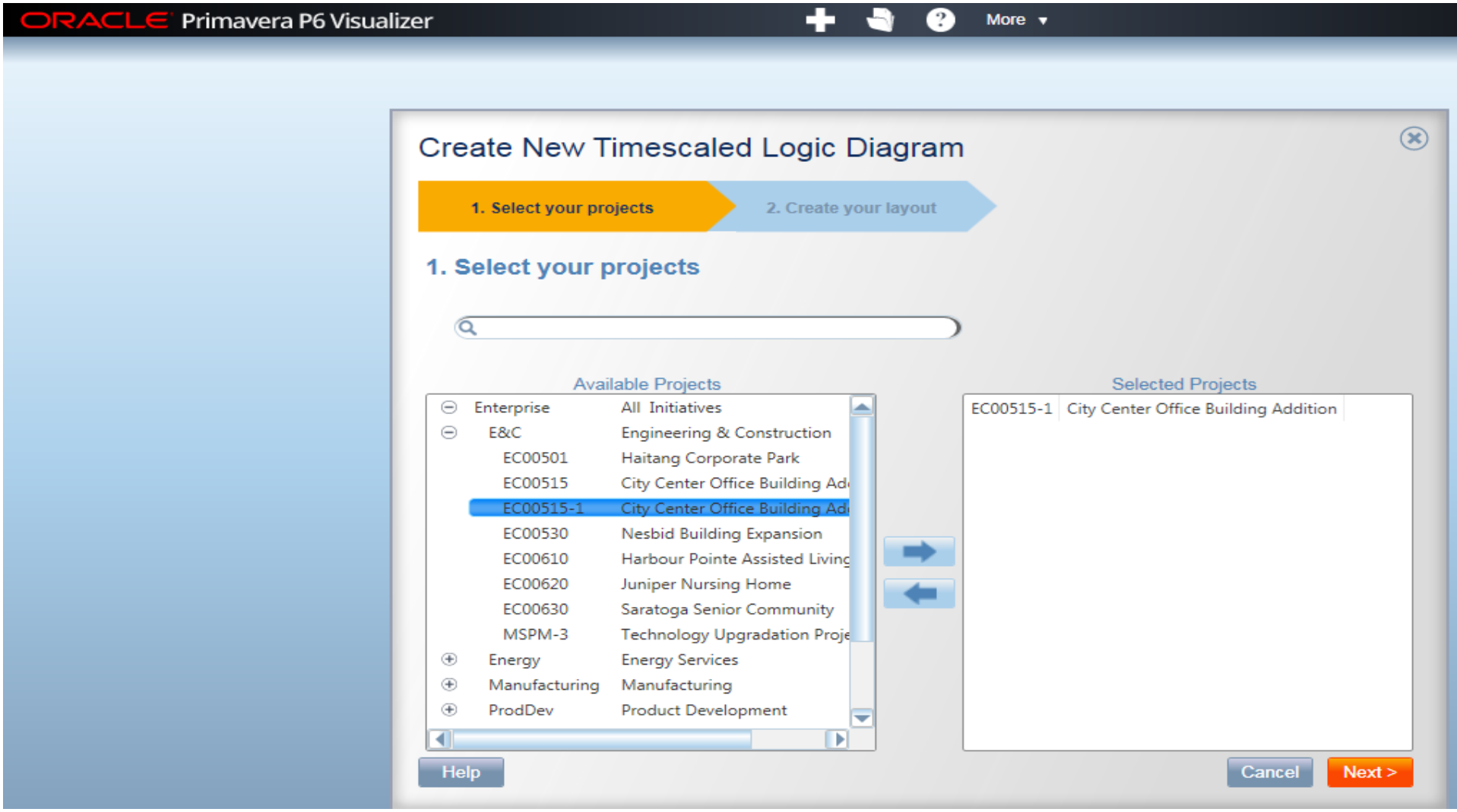


- *Use Add (Button)* to select *New TSLD* or *New Gantt*



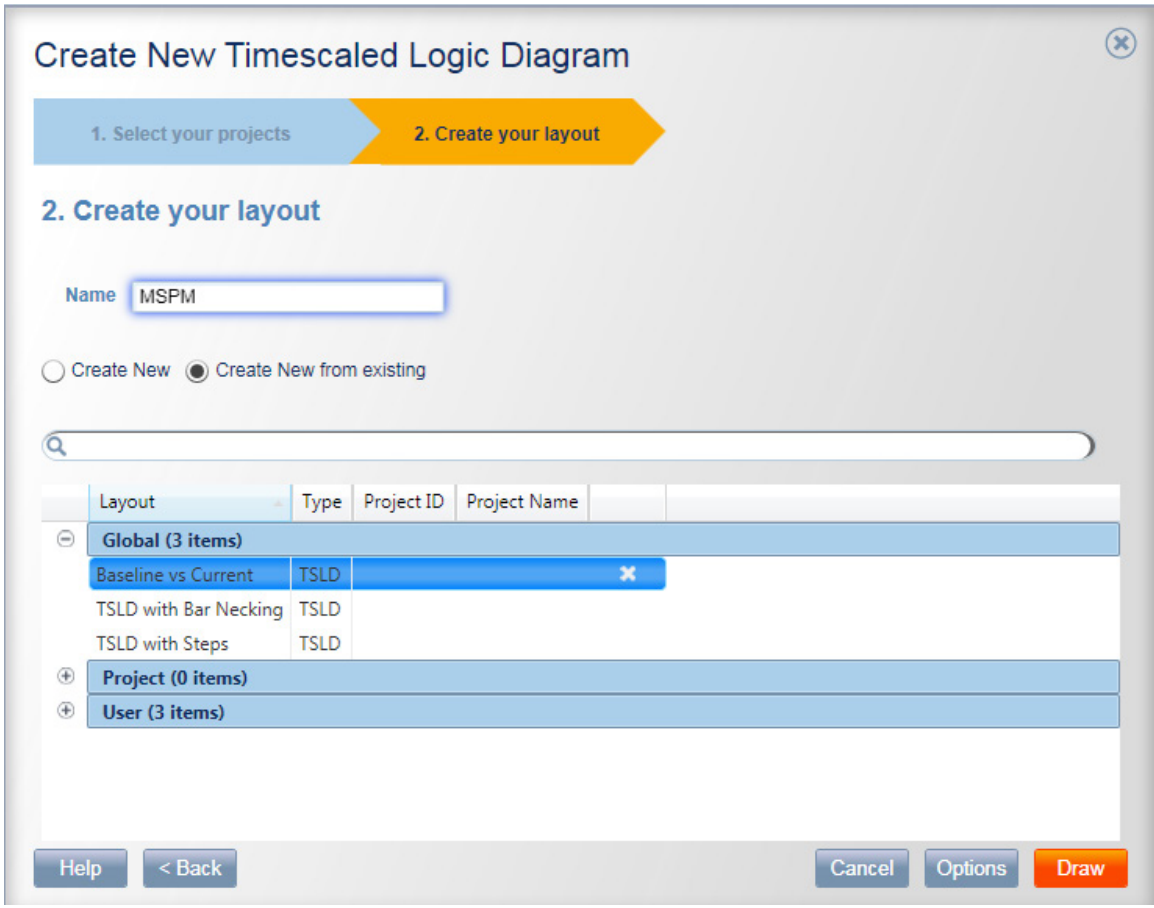
Primavera Visualizer

- *Select* your *Project(s)* then Click *Next (Button)*



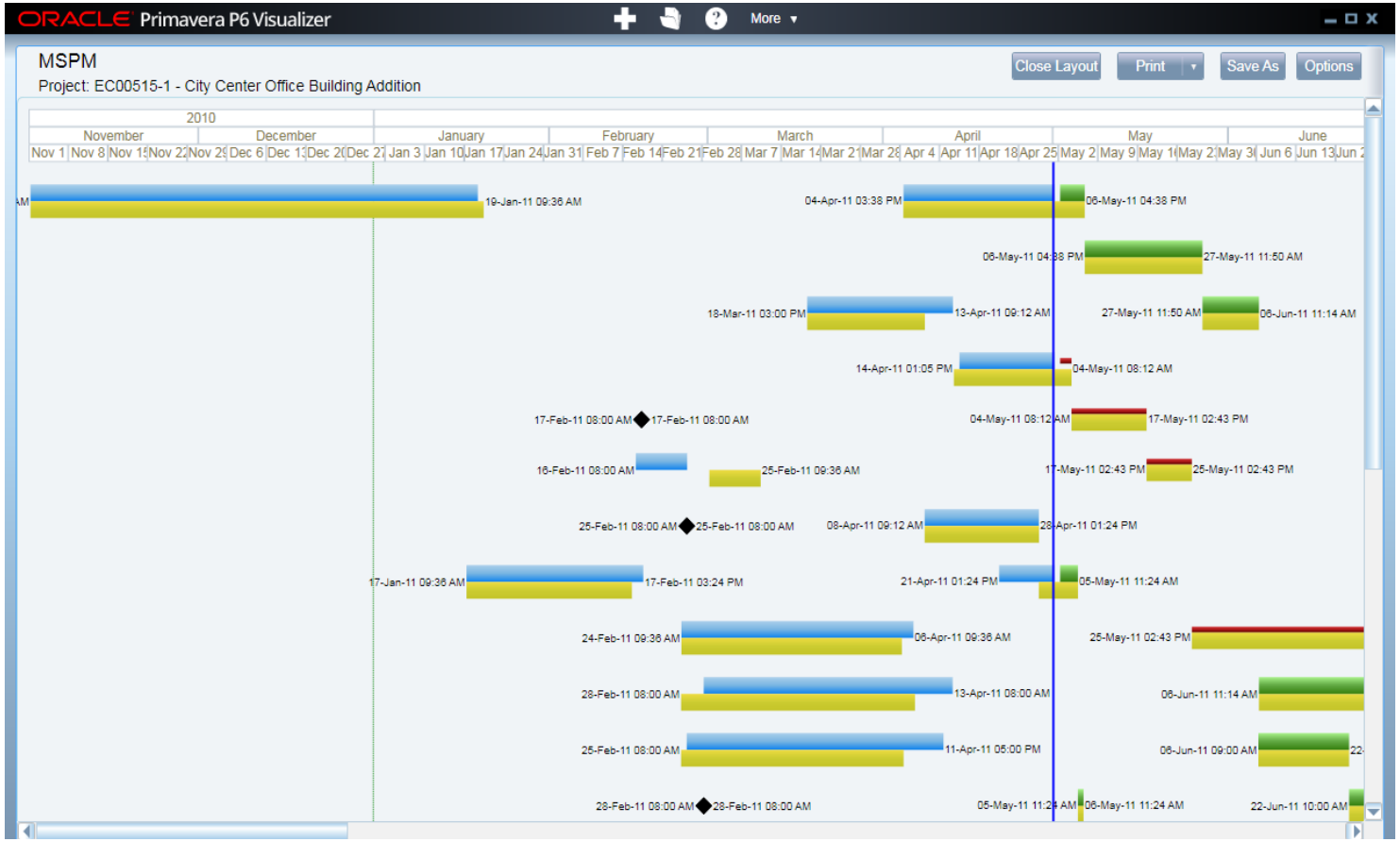
Primavera Visualizer

- ***Create a Layout*** by ***Creating New from existing***; write ***Name*** of the Layout in the field
- Select any Layout from ***GLOBAL***
- Click ***Draw (button)***



Primavera Visualizer (Report)

- Use ***Options (button)*** to explore options related to filters, bars relationships etc.
- Use ***Print (button)*** to take/ set Printouts



Lesson Review

- The reports window displays reports for schedule, resource, and cost
- You can report schedule performance by choosing one of the pre-defined schedule reports listed in the Reports Window
- The Report Wizard enables you to easily create a wide variety of adhoc reports. The reports can be modified as they are built, or they can be reopened later to be modified. To create a wizard report
  - Select a base table and pertinent data fields
  - Organize the data via grouping, sorting, and filtering options

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Lesson Review

- The Report wizard can also be used to create reports based on the layout that is currently displayed

- Reports can also be used to Print Bottom Layouts (Profile)
  - S-Curve & Earned Value Reports using Activities Window Layouts (Activity Usage Profile & Resource Usage Profile)

- Primavera Visualizer is used to display/ print Gantt Charts & TSLDs

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Project Website

Lesson 19

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Project Website

- Objectives
  - Create a launch a project website
  - Customize the appearance of a project website
  - Publish activity layouts as HTML pages

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Project Website

- The ***Project Website*** feature is used to publish a project plan as a website on an intranet or in internet. Using a web browser, the project team and other interested parties can view project documents that contain hyperlinks to other pages, enabling them to move between projects and from page to page within a report
- You can browse a project plan at a high level and quickly view more detailed information about specific activities, work products and documents, resources, etc. You can also navigate a project website using project's WBS, resource hierarchy, reference documents outline, activity codes and values, risks, and issues
- Among the Website features
  - Customize the webpage design
  - Create a website that contains one or more multiple projects
    - The project(s) must be opened when publishing
  - Control the level of detail published, e.g. limiting activity information and personal information about resources

Project Website

- Control the information including
  - Activity Layouts
  - Tracking Layouts
  - Project Reports
  - Global Data Dictionaries
- Test project website locally prior to publishing publicly

- Exercise
  - Steps
    - Tools Menu → Publish → Project Website

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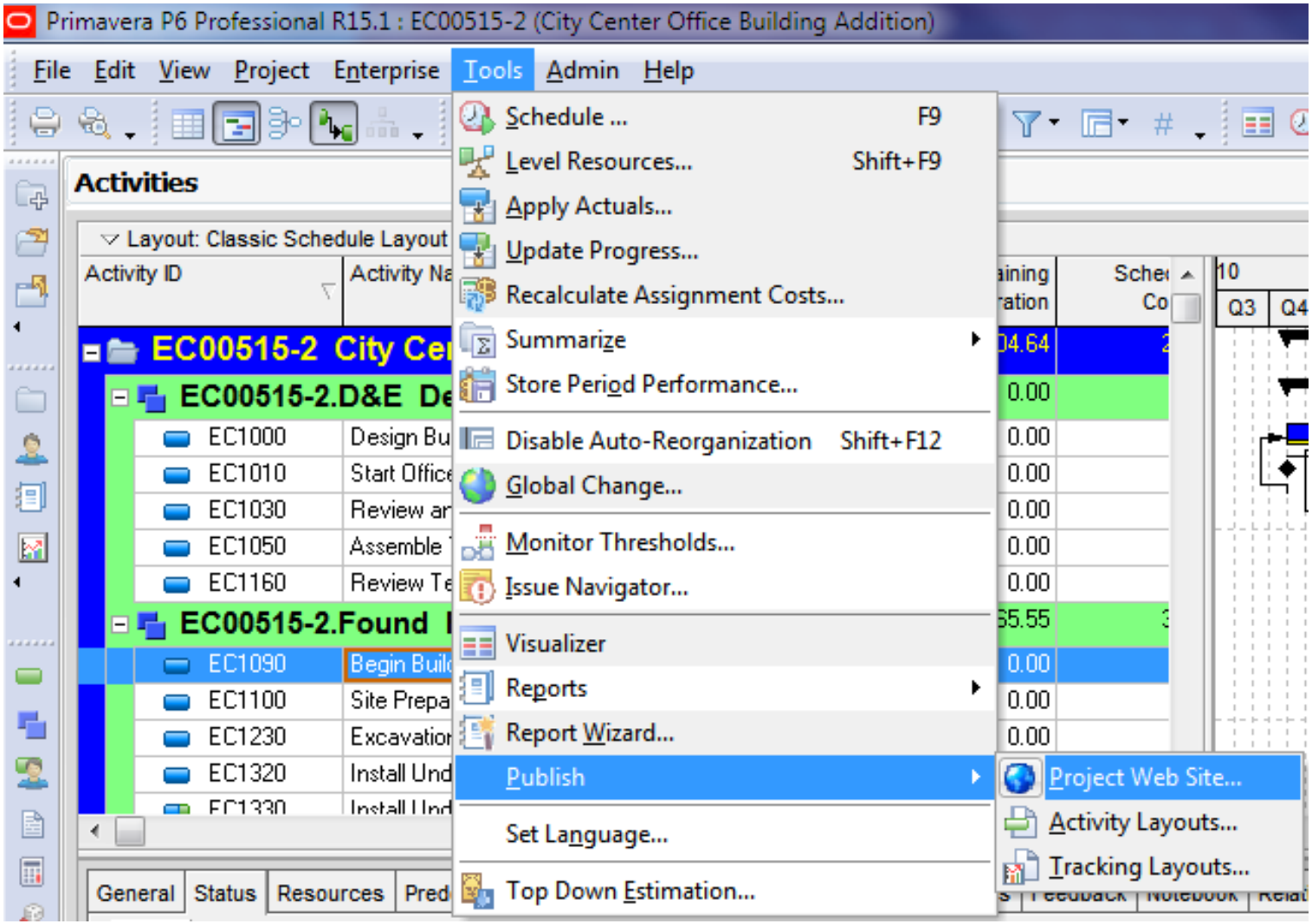
Project Website



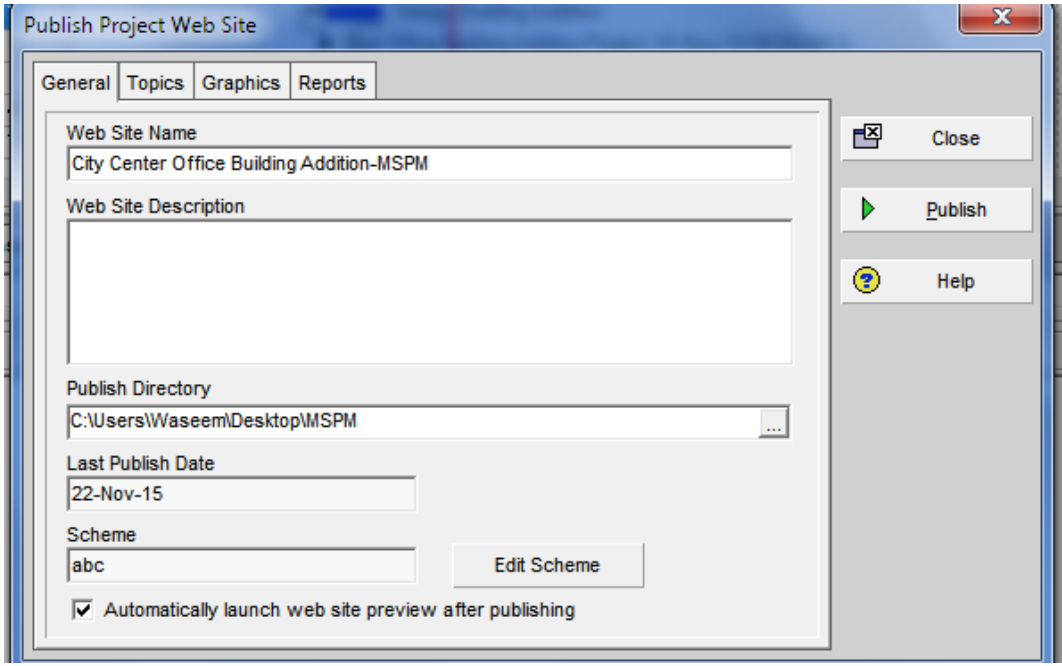
Project Website

- Use *General (Tab)* for **Website Name, Description, Publish Directory (Path)**
- Use *Topics (Tab)* to include topics of your choice
- Use *Graphics (Tab)* to include layouts
- Use *Reports (Tab)* to add Reports in your website

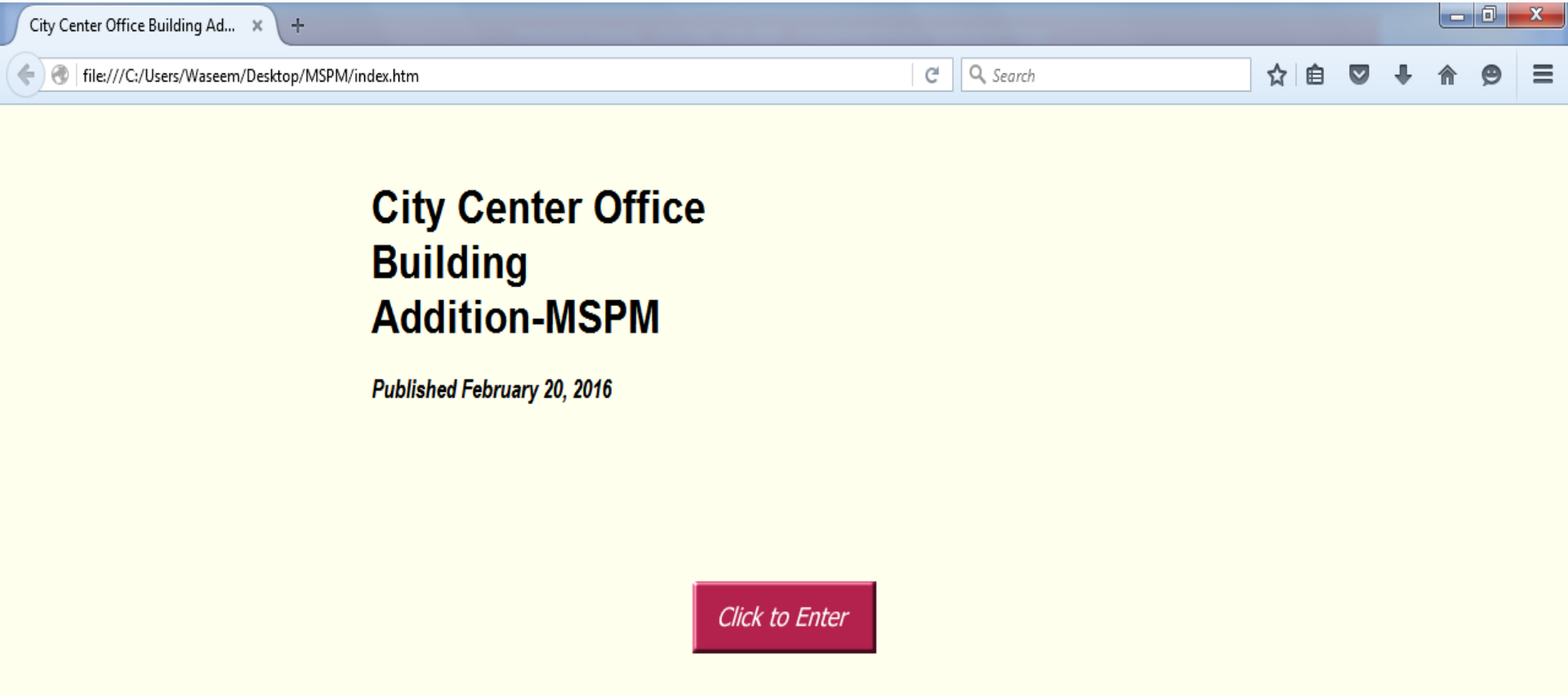
- Press *Publish (button)*

to launch the website

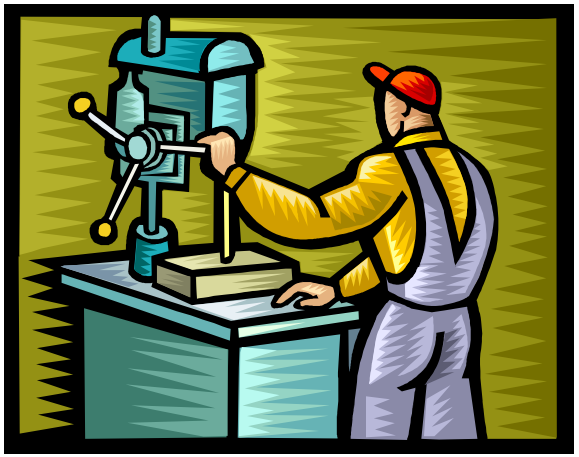
in the publish directory



Project Website



WORKSHOP
Project Website



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Lesson Review

- The project website feature is used to publish a project plan as a website on an intranet or in internet.
- The website can include activity layouts, tracking layouts, project reports, and global data dictionaries
- You can use default scheme or create your own scheme by adding graphics, fonts, and colors
- You can also save activity layouts as HTML files that are not linked to any project website you previously created. These layouts represent a static picture of the project

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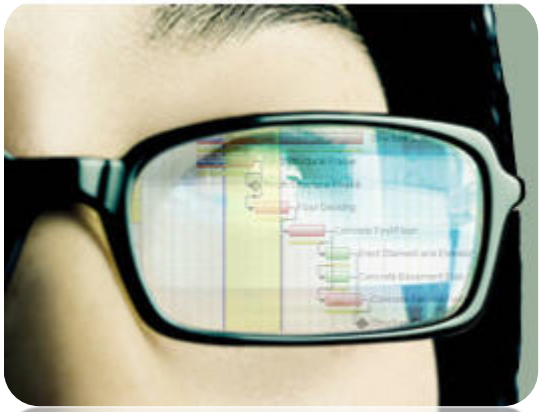
CONGRATULATIONS

ORACLE
PRIMAVERA