Project

Planning and Control with Primavera P6 Professional.

Jeddah, KSA

Feb 2026

MSc, BSc Civil, GPM-b, PMI-PMOCP, CCP, PMP, VMA, PMI-RMP, KMSP, LSSGB, IMS

PMI Authorized Trainer

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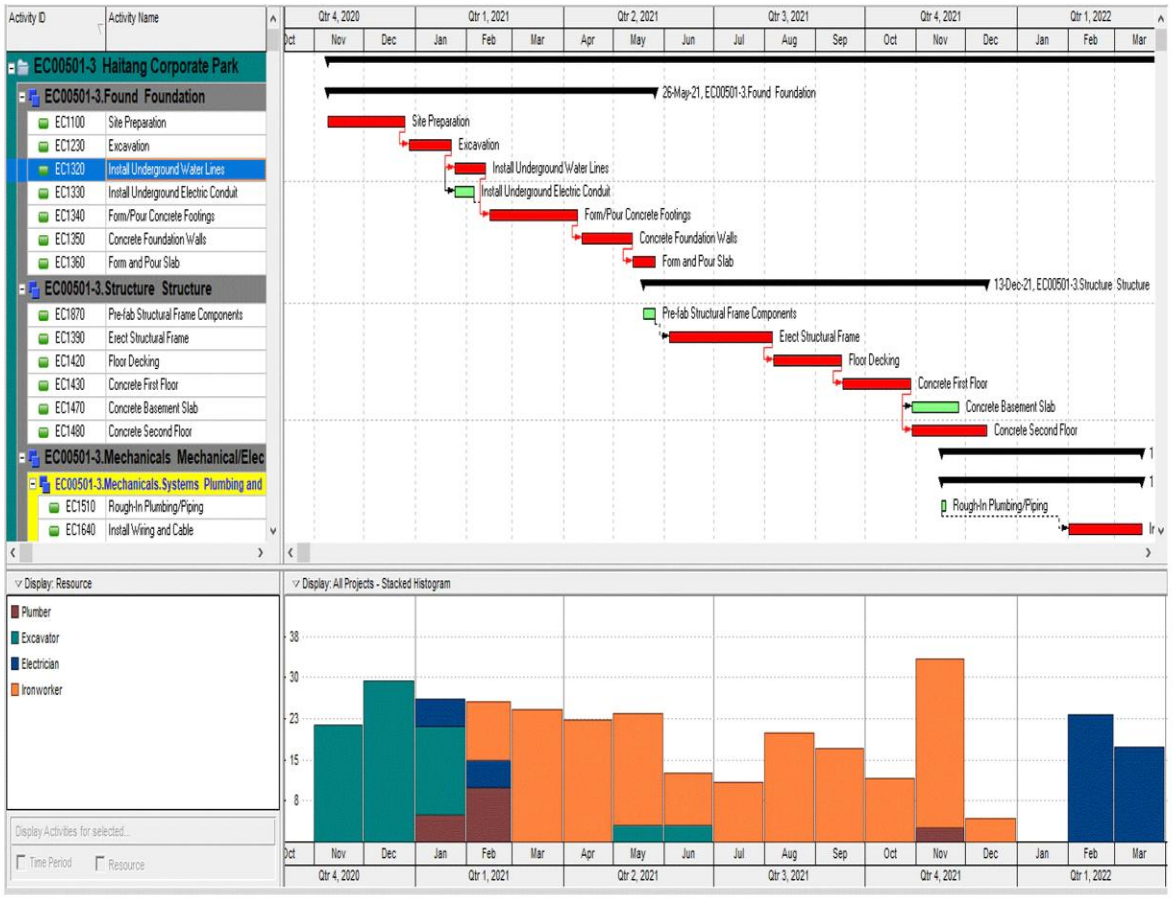
Primavera P6 Professional Rel 25.12



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Topics

1. Create New a Project
2. Creating a Work Breakdown Structure (WBS)
3. Create a Project Calendars
4. Adding Activities
5. Creating Relationships
6. Activities Duration
7. Scheduling
8. Create Resources
9. Assign Resources To Activities

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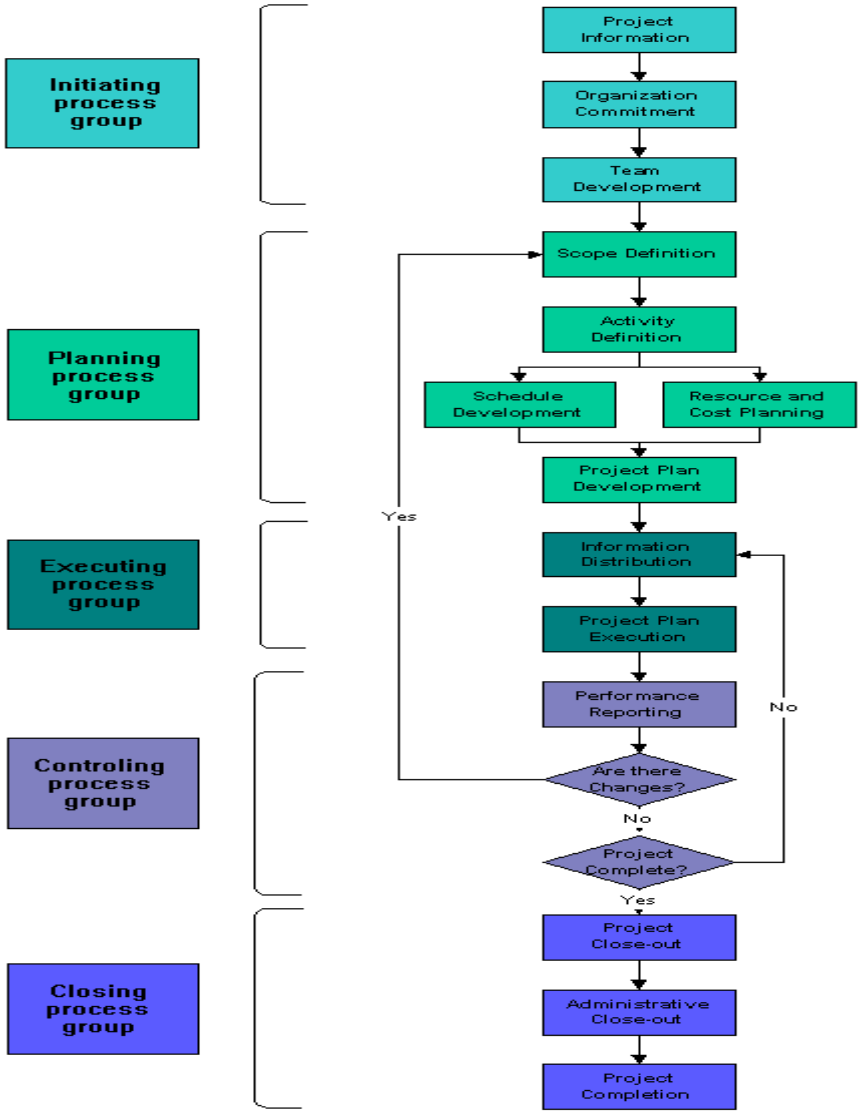
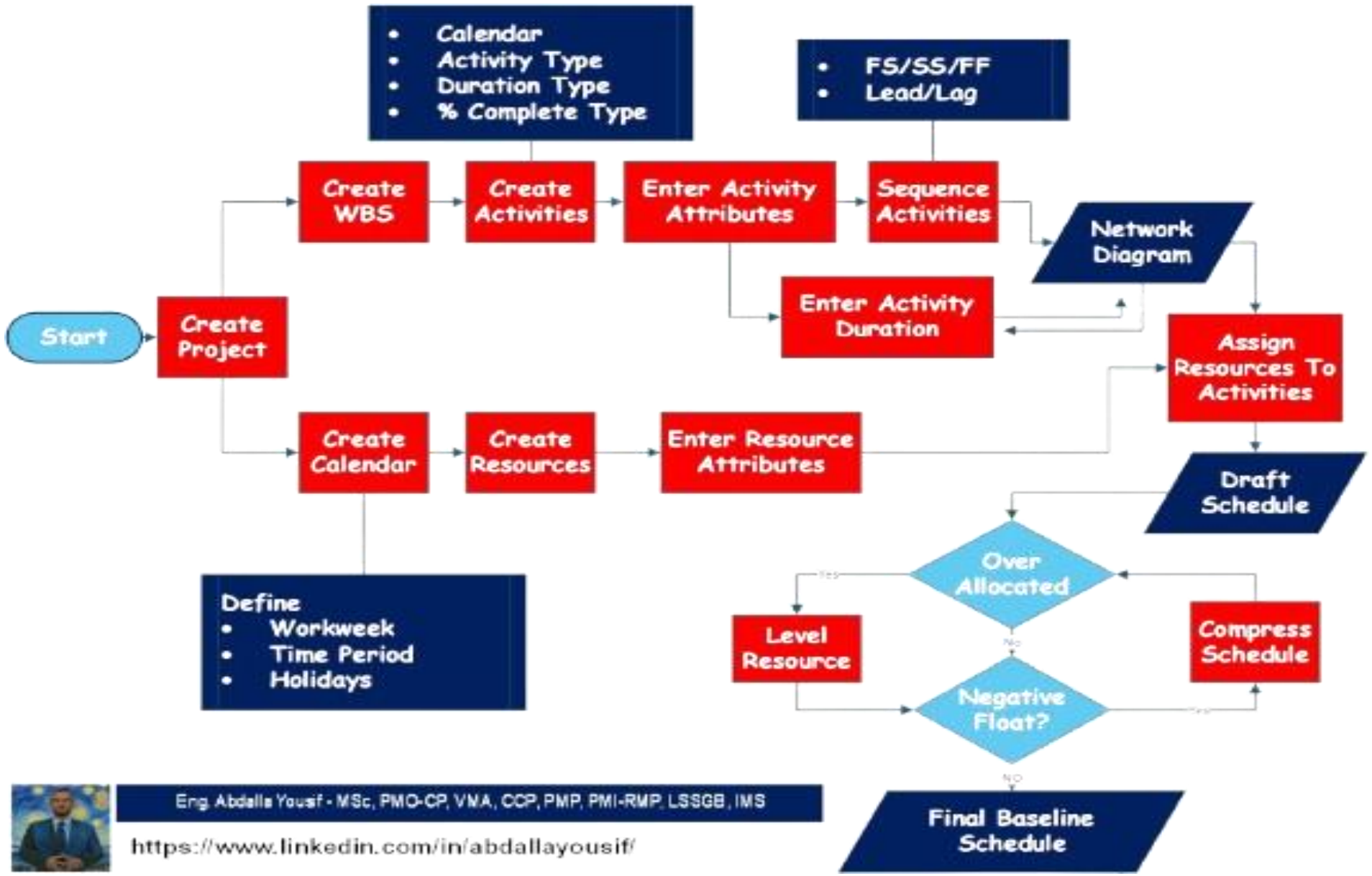
Project Management Life Cycle



P6 EPPM Roadmap To Create PMB



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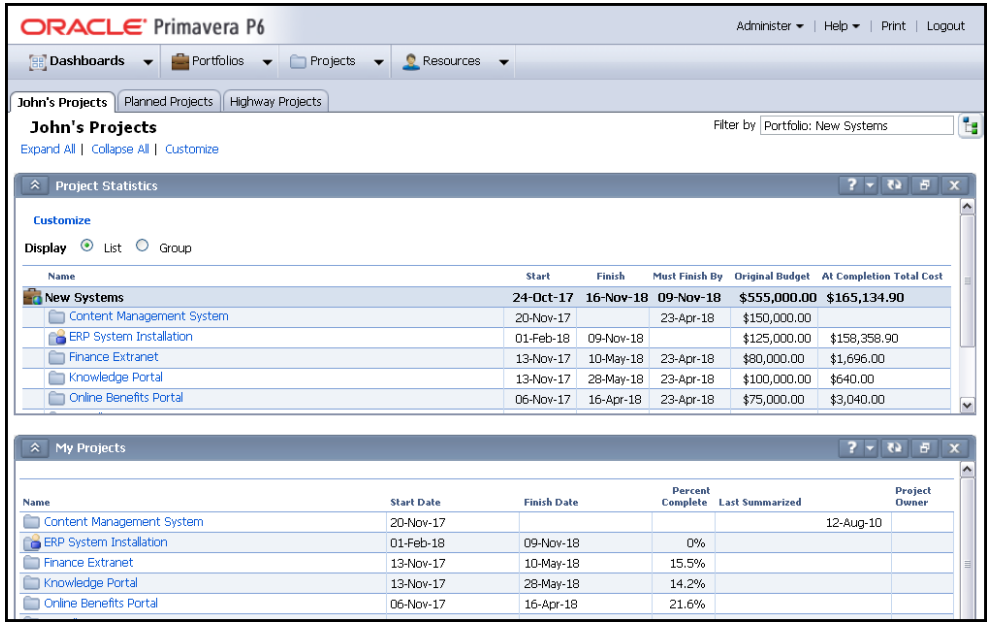
P6 Features Overview: Project & Portfolio Management Software

- Web-based
- Enterprise-wide project and resource management
- Portfolio management and analysis
- Customizable dashboards
- Document management
- Workflows
- Application administration



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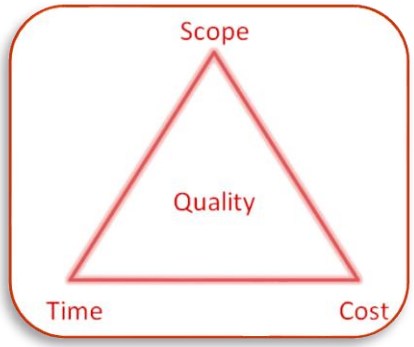
What's Project

Project is a temporary endeavor undertaken to create a unique product, service, or result.

Examples:

- **The development of software**
- **The construction of a building or bridge**
- **The expansion of sales into a new geographic market**

المشروع هو سلسلة من الانشطة او المهام لها أهداف محددة ، يجب ان ينجز ضمن مواصفات محددة وله وقت محدد وله تمويل محدد ويستغل موارد مختلفة من مواد وعمالة ومعددات ويعتبر المشروع ناجح اذا تم في أقصر وكت باقل تكلفة وافضل جودة.



What's Project Objectives?

- **Minimum Time**
- **Minimum Cost**
- **Required Quality**

Project Management Definitions

- **Project Management** is the application of **knowledge, skills, tools, and techniques** to project activities to meet project requirements.
- **إدارة المشاريع** هي تطبيق **المعرفة** ،**المهارات** ،**الادوات والتقنيات** على انشطة المشروع لتحقيق متطلبات المشروع.
- – The process of achieving project objectives within the constraints of schedule, cost, and resource restrictions.
- **Project Management Life Cycle** – A sequence of phases that defines the overall process from the beginning to the end of a project.

Project Management Life Cycle

Can be divided into five process groups:

Initiating Process Group

- Collect project information.
- Obtain organizational commitment.
- Develop the team.

Planning Process Group

- Establish project objectives and scope of work.
- Define the work.
- Determine the timing.
- Establish resource requirements/availability.
- Establish a cost budget.
- Evaluate, optimize, and create a baseline plan.

Executing Process Group

- Track work in progress and actual costs.
- Distribute information.

Controlling Process Group

- Analyze and evaluate the project.
- Recommend necessary action.
- Modify the current project with realistic data.
- Reforecast the schedule.
- Communicate project performance to the project team.

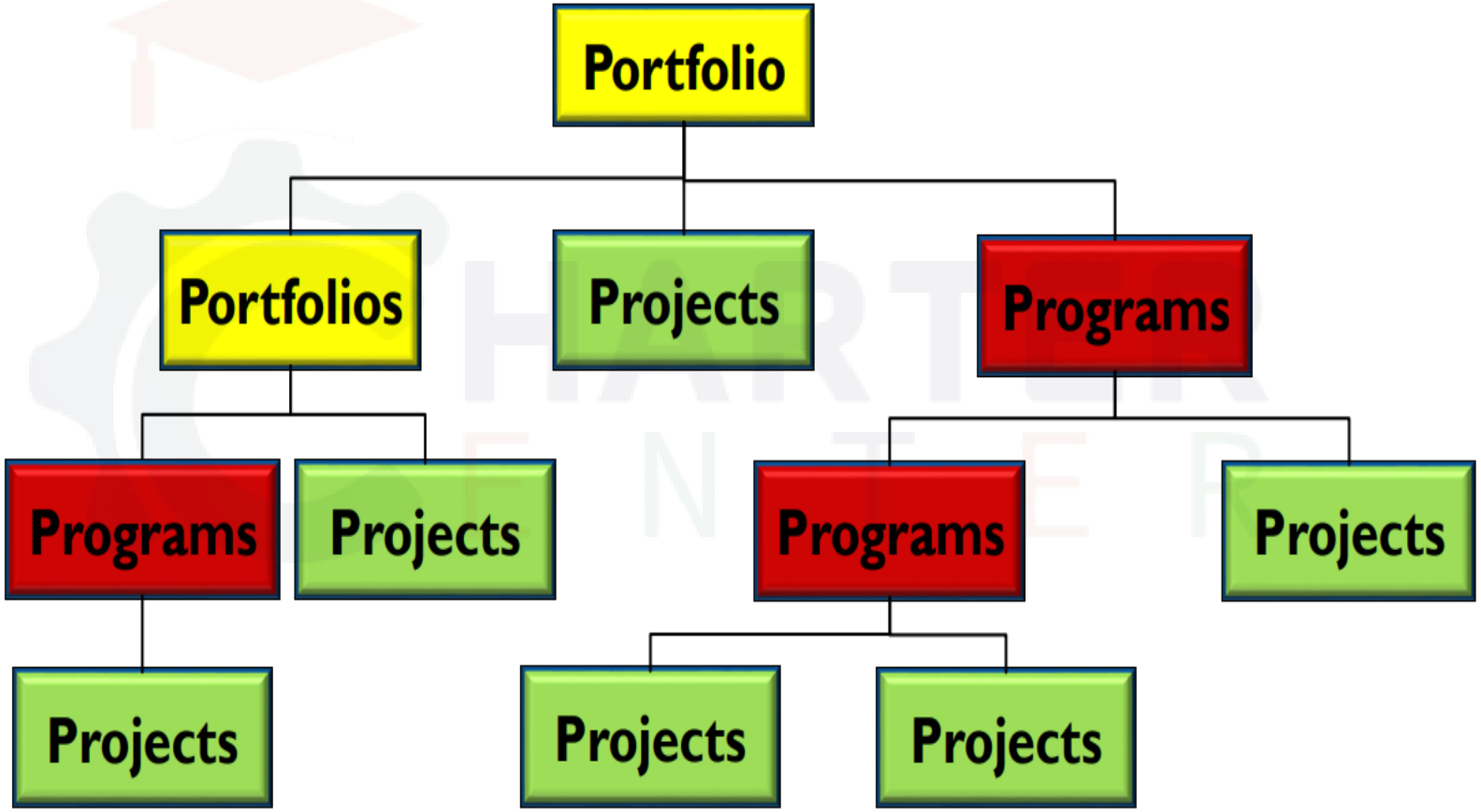
Closing Process Group

- Deliver product to client or stakeholders.
- Document lessons learned.
- Back-up or archive project files.

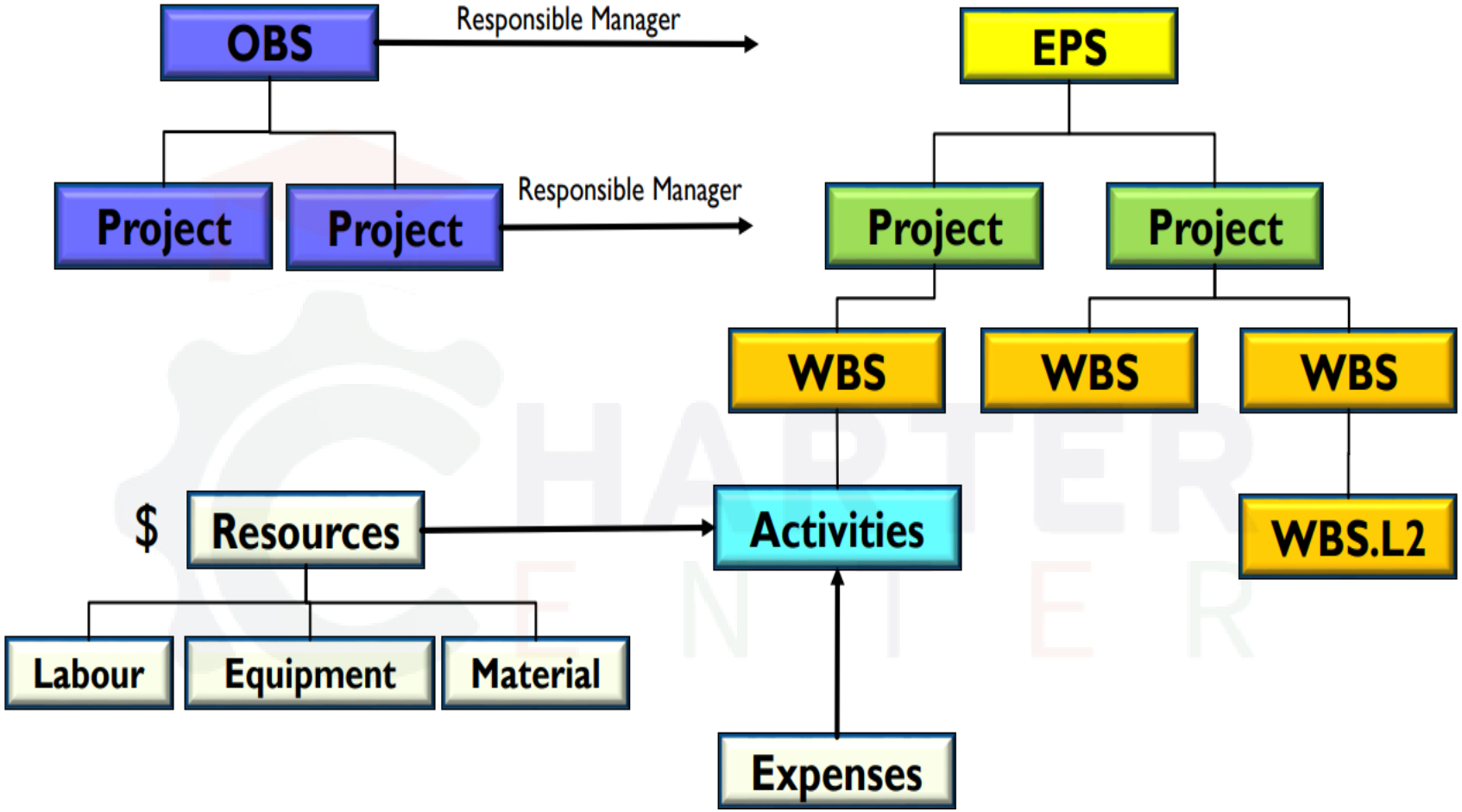
What Is Primavera P6 use in?

- Planning, Monitoring and Controlling Projects and Programs
- Scheduling, Budget estimation, Cost control, Resource Management
- Standalone & Cloud Based

Project ,Programs , Protfolio

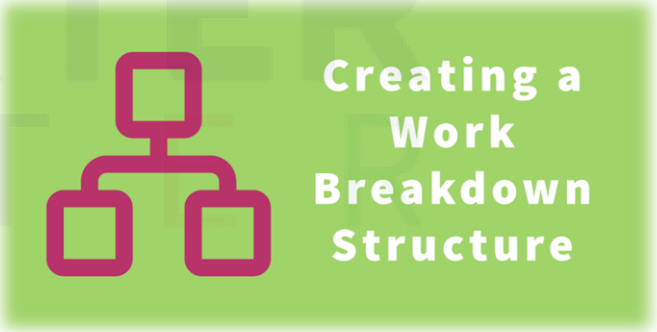


EPS ,OBS


OBS
Responsible Manager
EPS
Project
Project
Responsible Manager
Project
Project
WBS
WBS
WBS
$
Resources
Activities
WBS.L2
Labour
Equipment
Material
Expenses

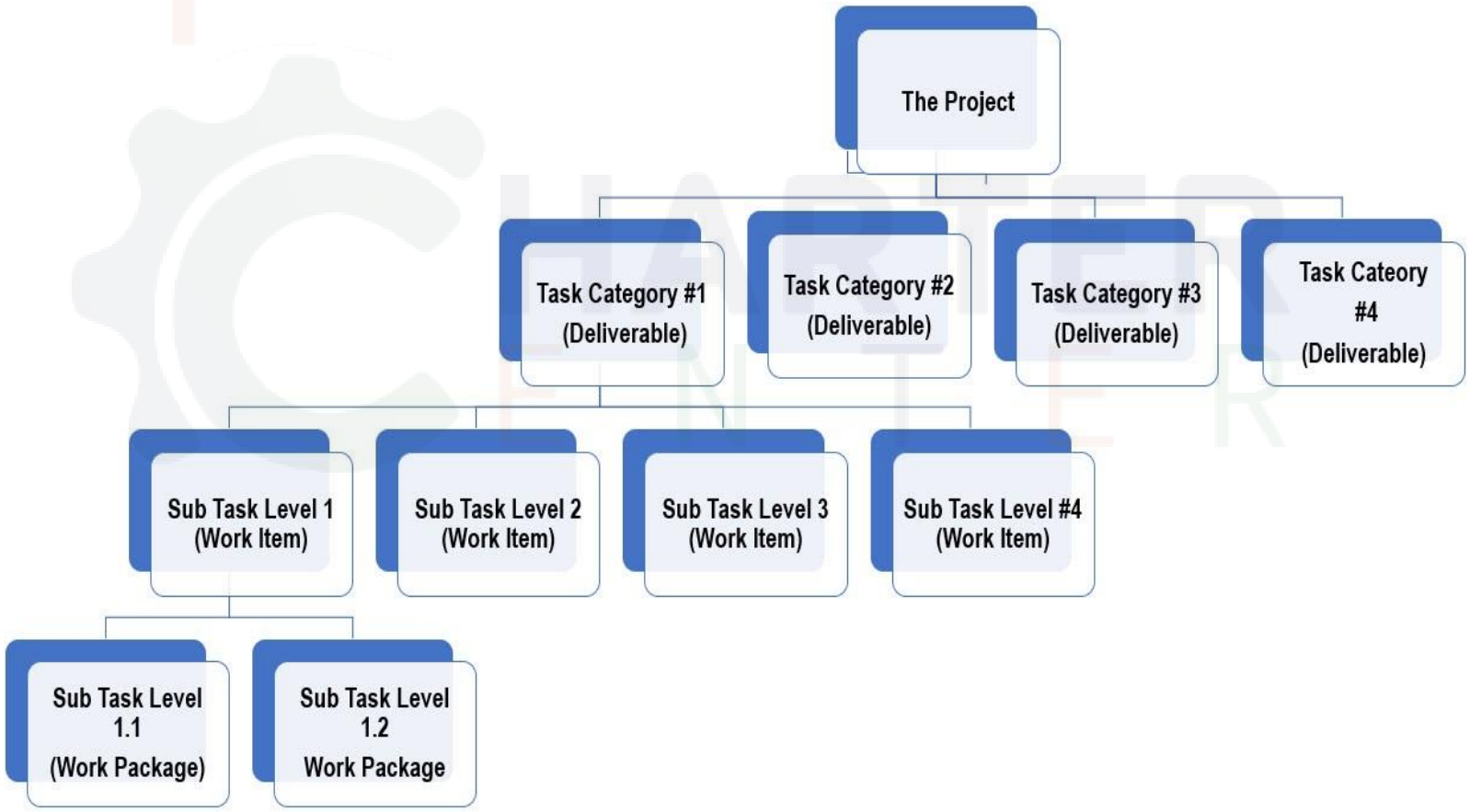
Creating a Work Breakdown Structure

- The process of subdividing project work into a smaller , more manageable component.
- A hierarchical arrangement of the products and services produced during, and by, a project.
- Element represents a deliverable, product, or service
- Each element contains the activities needed to produce the deliverable
- Enables you to divide a project into logical pieces for the purpose of planning and control



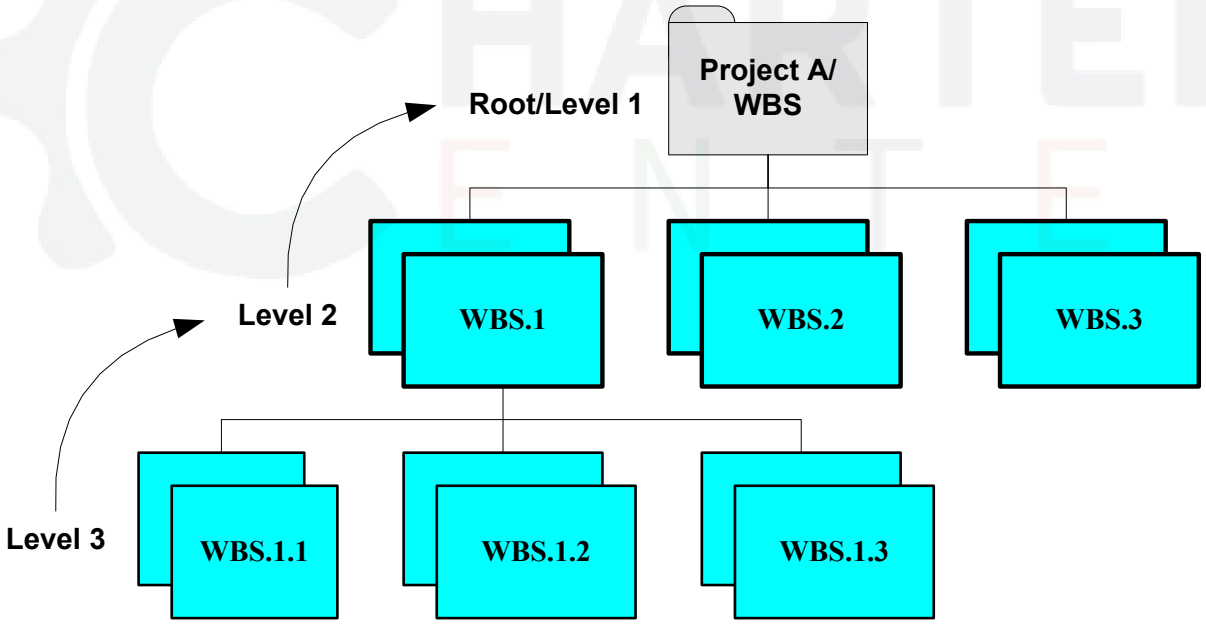
- A WBS is defined by the PMBOK as “a deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and created the required deliverables

Work Breakdown Structure (WBS)

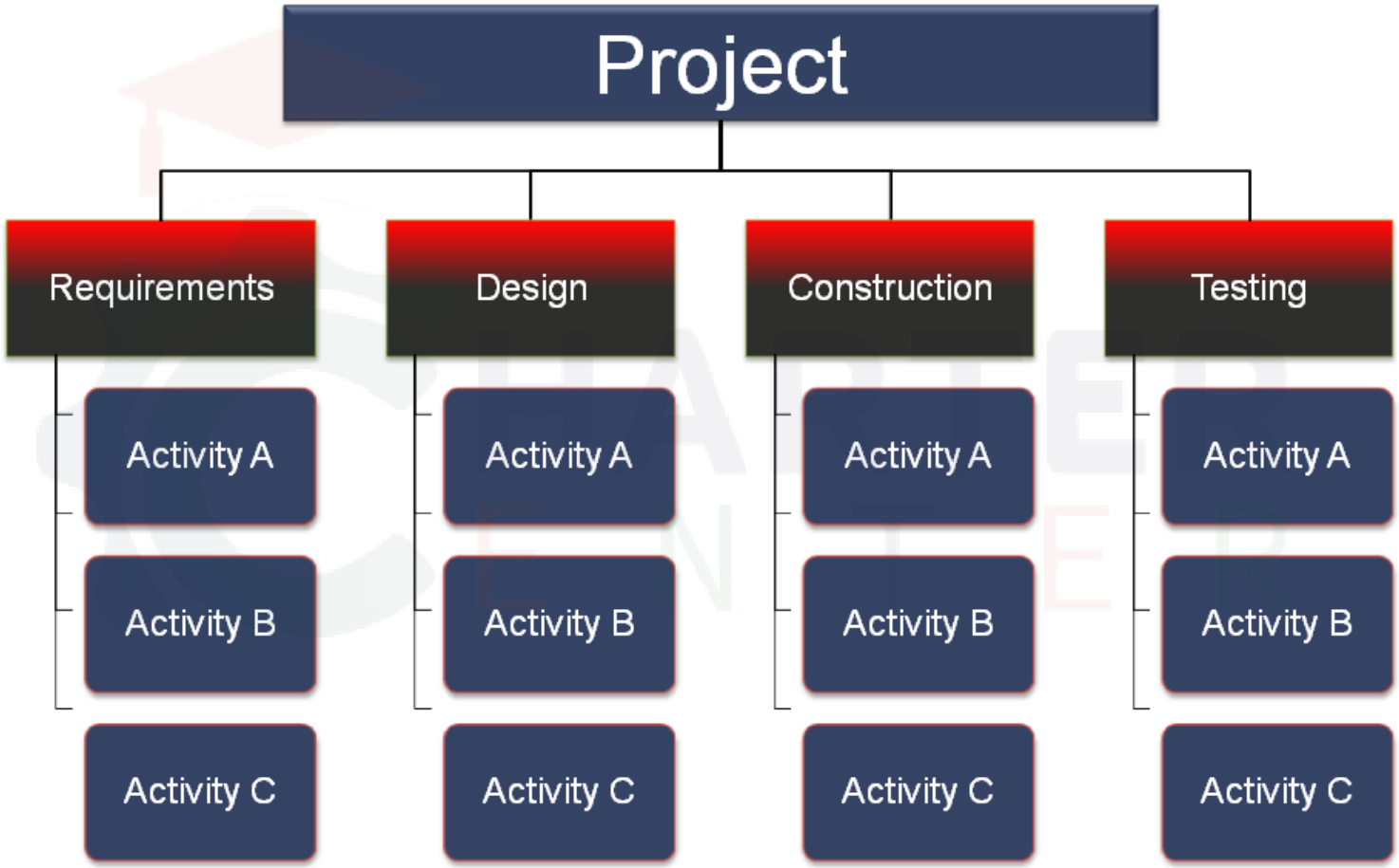


WBS

- Project is root node of WBS.
- Child/parent relationships between elements enable lower levels to be rolled up and summarized.



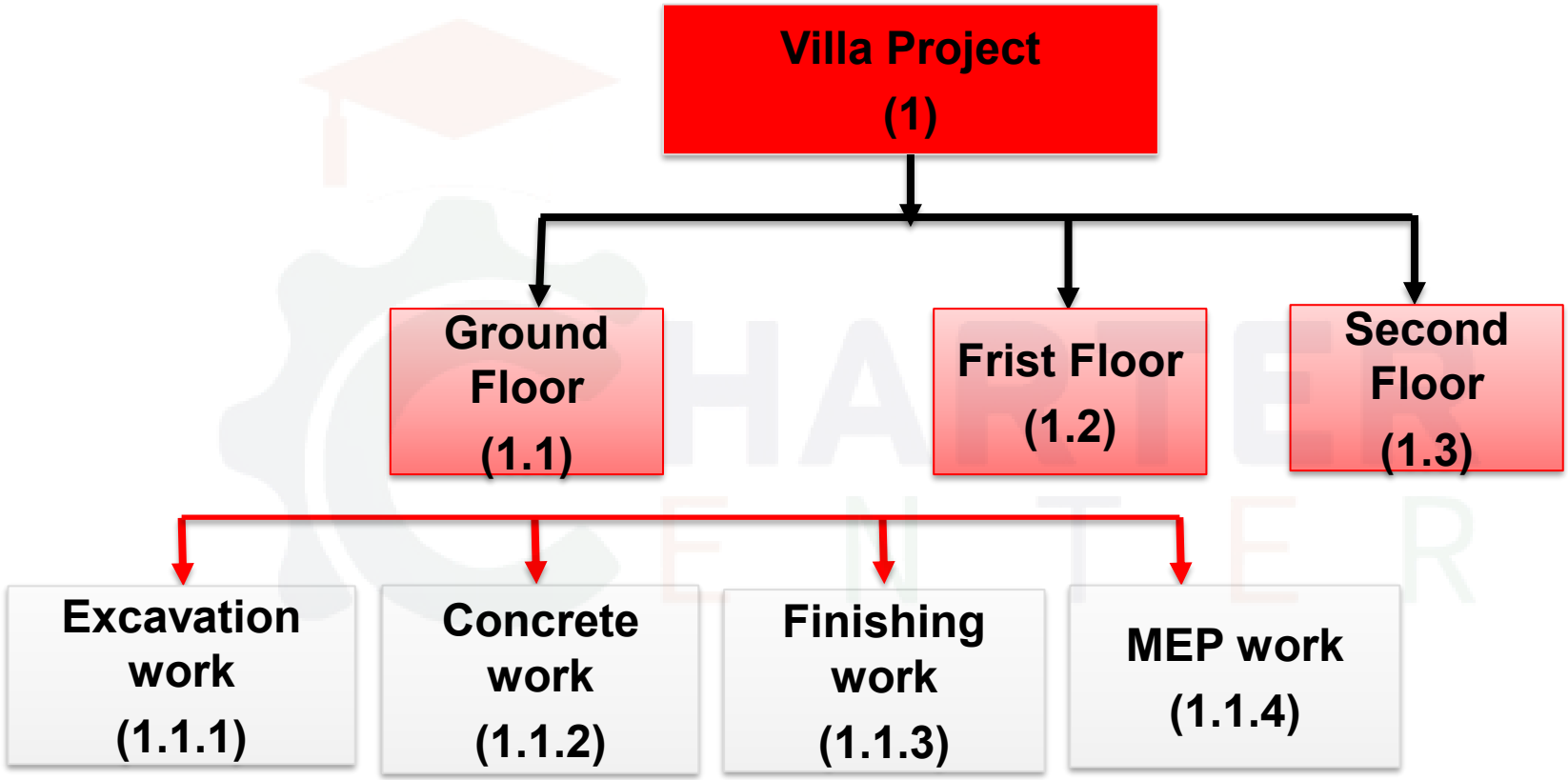
WBS Example


Project
Requirements
Design
Construction
Testing
Activity A
Activity B
Activity C
Activity A
Activity B
Activity C
Activity A
Activity B
Activity C
Activity A
Activity B
Activity C

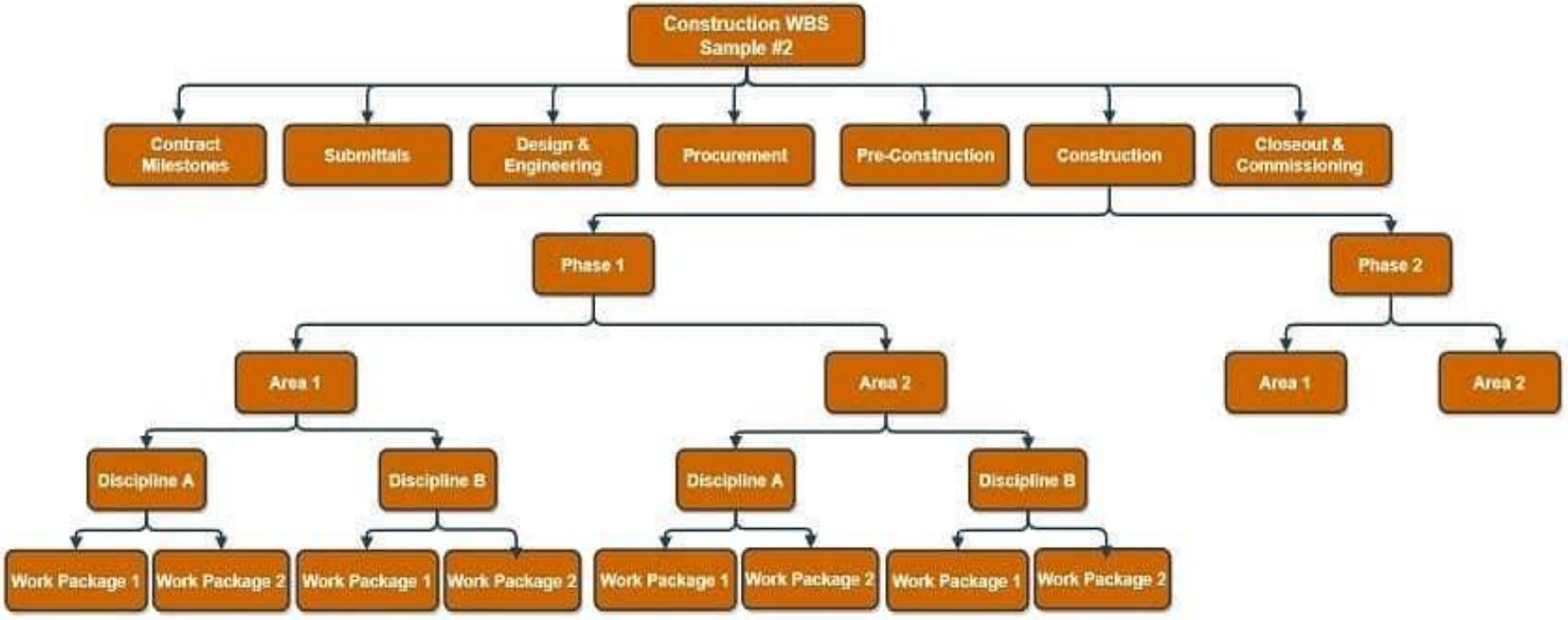
WBS Example

1.0
e-Commerce
Site
Project
WBS
1.1 Planning
1.1.1 Develop Requirements
1.1.2 Research Hosting Options
1.1.3 Design Site User Interface
1.2
Implementation
1.2.1 Develop the Architecture
1.2.2 Develop Site
1.2.2.1 Develop Product Database
1.2.2.2 Develop Web Site
1.2.2.3 Test the Site
1.3 Monitoring
and Control
1.3.1 Perform Risk Management
1.3.2 Perform Quality Assurance
1.3.3 Perform Issue Management
1.4
Deployment
1.4.1 Perform Deployment

WBS Example


Villa Project
(1)
Ground Floor
(1.1)
Frist Floor
(1.2)
Second Floor
(1.3)
Excavation work
(1.1.1)
Concrete work
(1.1.2)
Finishing work
(1.1.3)
MEP work
(1.1.4)

WBS Example

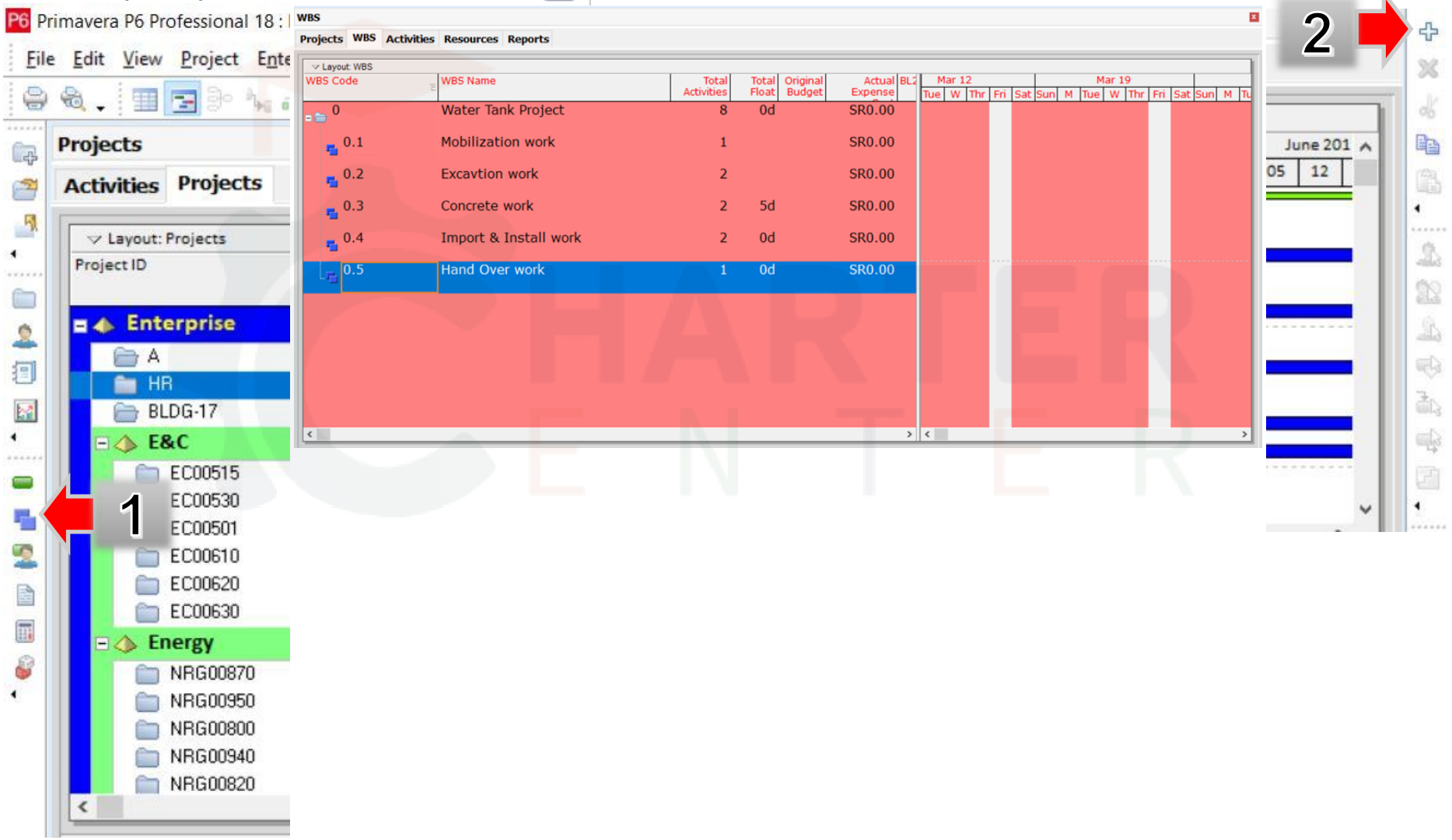

Construction WBS Sample #2
Contract Milestones
Submittals
Design & Engineering
Procurement
Pre-Construction
Construction
Closeout & Commissioning
Phase 1
Phase 2
Area 1
Area 2
Area 1
Area 2
Discipline A
Discipline B
Discipline A
Discipline B
Work Package 1
Work Package 2
Work Package 1
Work Package 2
Work Package 1
Work Package 2
Work Package 1
Work Package 2

WBS Example

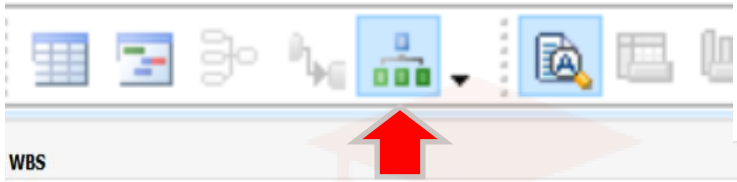
Preconstruction
Mobilization & General Requirements
Engineering and Procurement
Subcontractors Submital and Approval
Civil
Submittal
Approval
Awarding
Architectural
Submittal
Approval
Awarding
Mechanical
Submittal
Approval
Awarding
Electrical
Submittal
Approval
Awarding
Plumbing, Drainage & Fire Fighting
Submittal
Approval
Awarding

Work Breakdown Structure

- **Many way to Find This icon**



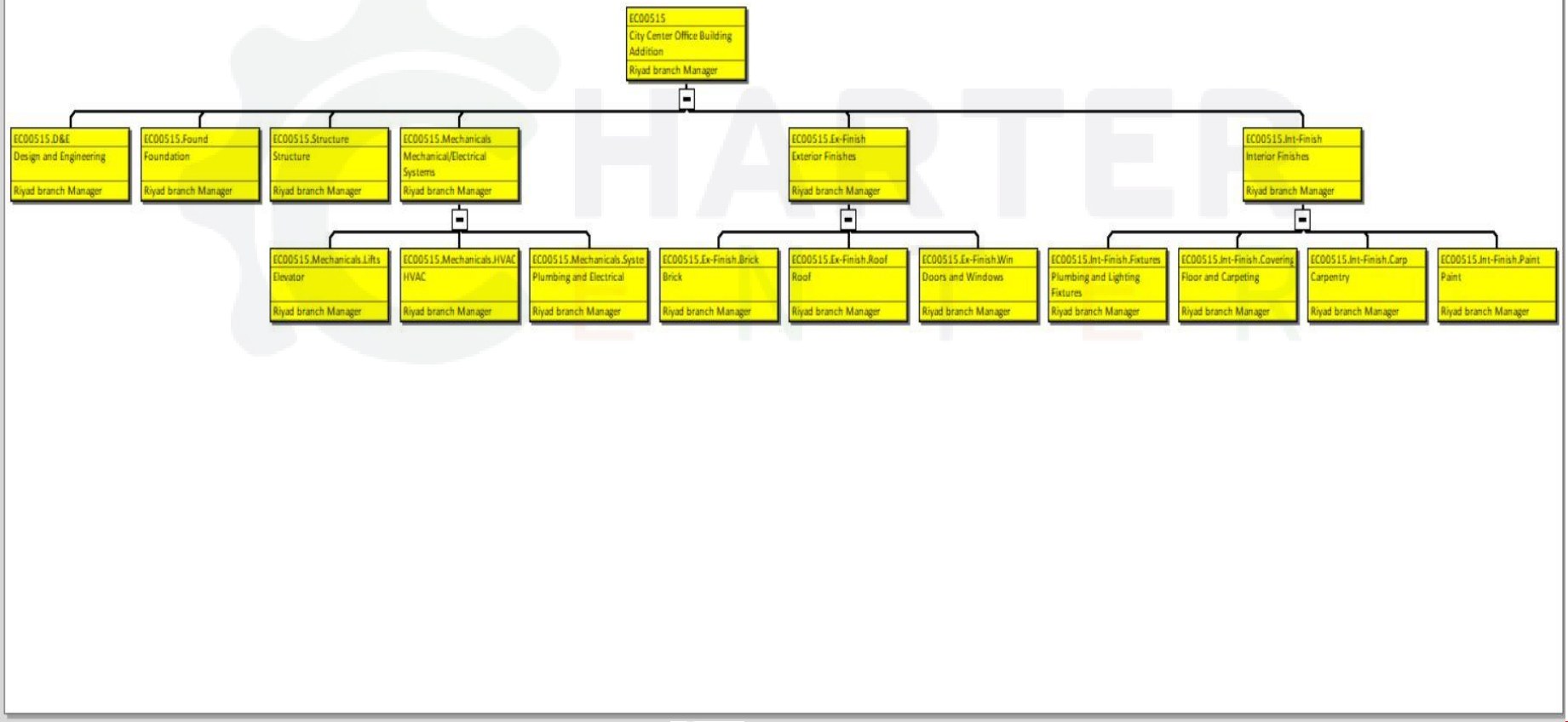
Work Breakdown Structure



WBS

Activities | Projects | WBS

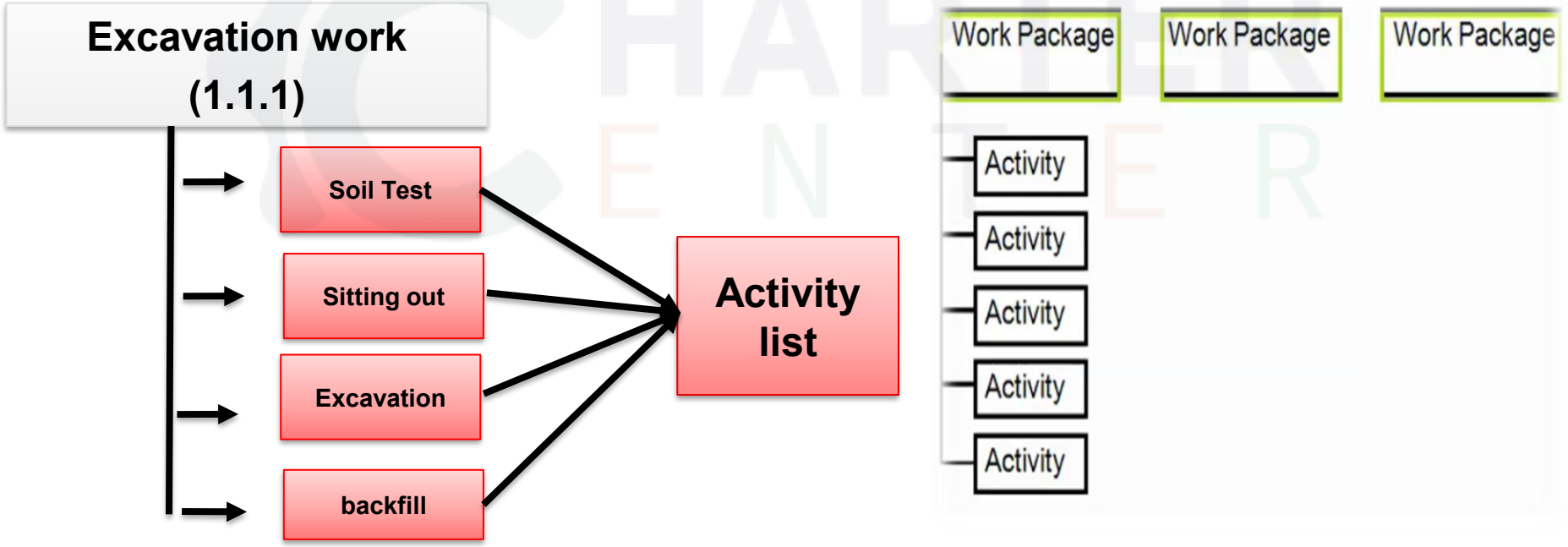
Layout: WBS



Define Activities

- is the process of identifying and documenting the specific actions to be performed to produce the project deliverables.
- **Define Activities Tools &Techniques-**
  - **Decomposition:**

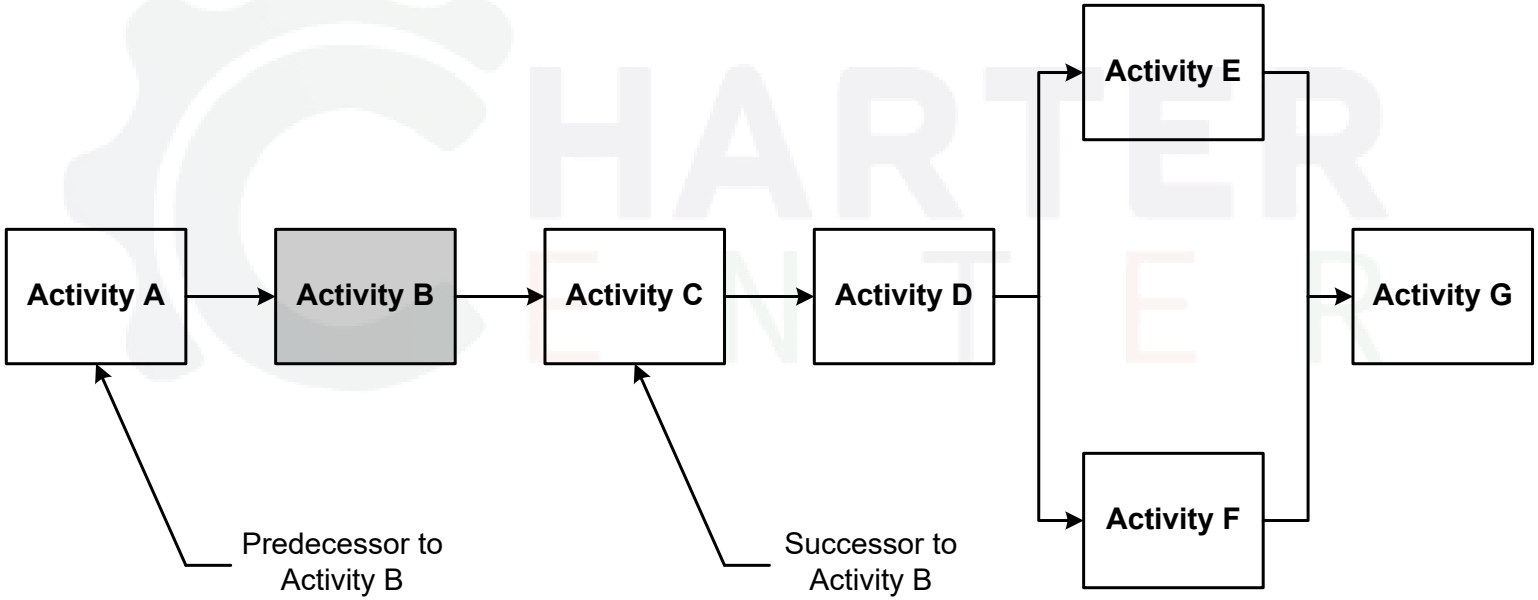
We will start from decomposing the work packages in WBS to activities (activity: effort necessary to complete a work package)



5-Sequence Activities

Network Logic Diagram

A network logic diagram is a graphic representation of all of the activities in a project and their logical (dependent) relationships.



Precedence Diagramming Method (PDM)

PDM is a technique for creating network logic diagrams.

- A box or rectangle represents each 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.
- Start with either the first activity in the network and enter each successor, or start with the last activity in the network and enter each predecessor.

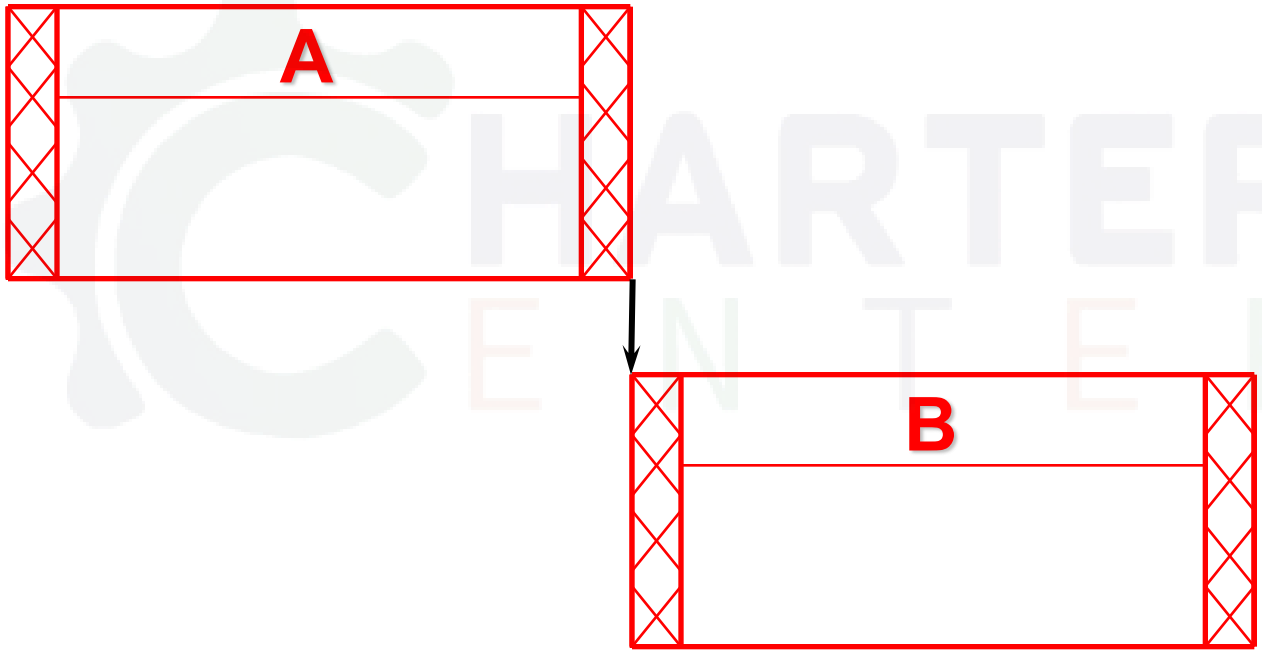
Relationship Types

There are four relationship types:

- **Finish to Start (FS)** – When A finishes, B can start.
- **Start to Start (SS) –** When A starts, B can start.
- **Finish to Finish (FF) –** When A finishes, B can finish.
- **Start to Finish (SF) –** When A starts, B can finish.

Finish to Start (FS)

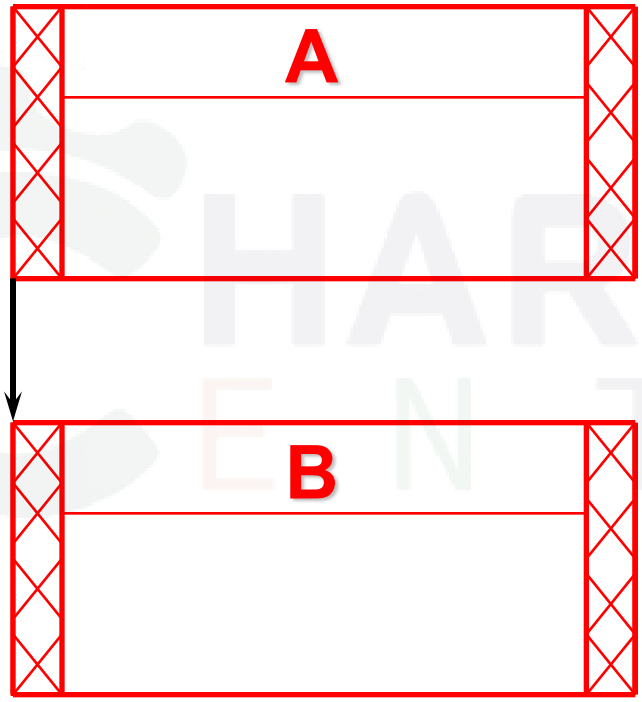
When activity A finishes, activity B can start. This is the most common type of relationship.



Example: When we finish writing the report, we can send it to the client.

Start to Start (SS)

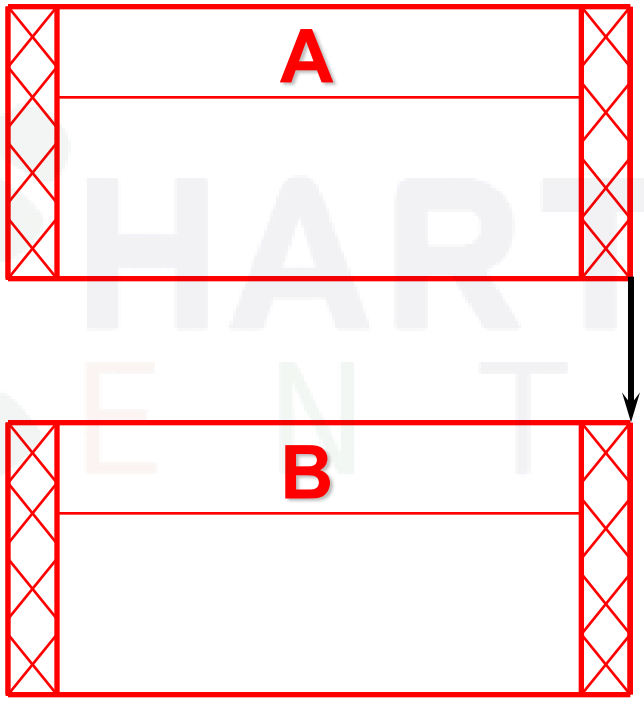
When activity A starts, then activity B can start.



Example: When we start selling our new software, we will start offering support service.

Finish to Finish (FF)

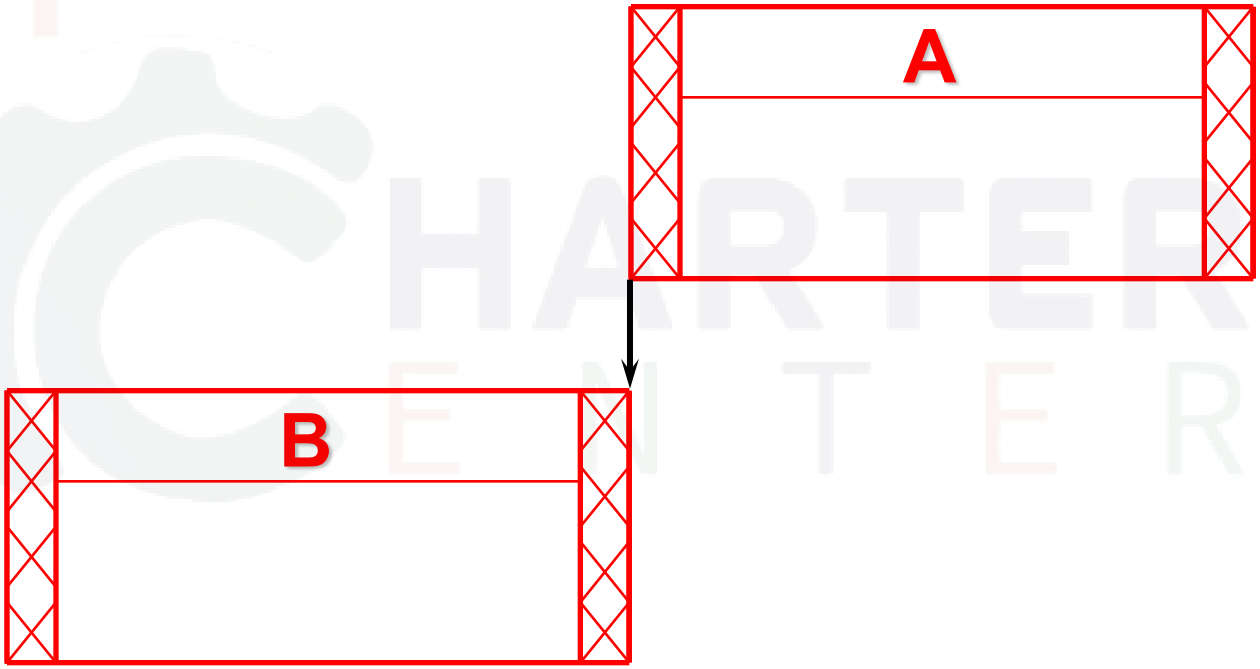
When activity A finishes, then activity B can finish.



Example: When we finish testing, we can finish collecting data.

Start to Finish (SF)

When activity A starts, then activity B can finish.



Example: When we begin manufacturing our own components, we can stop outsourcing them.

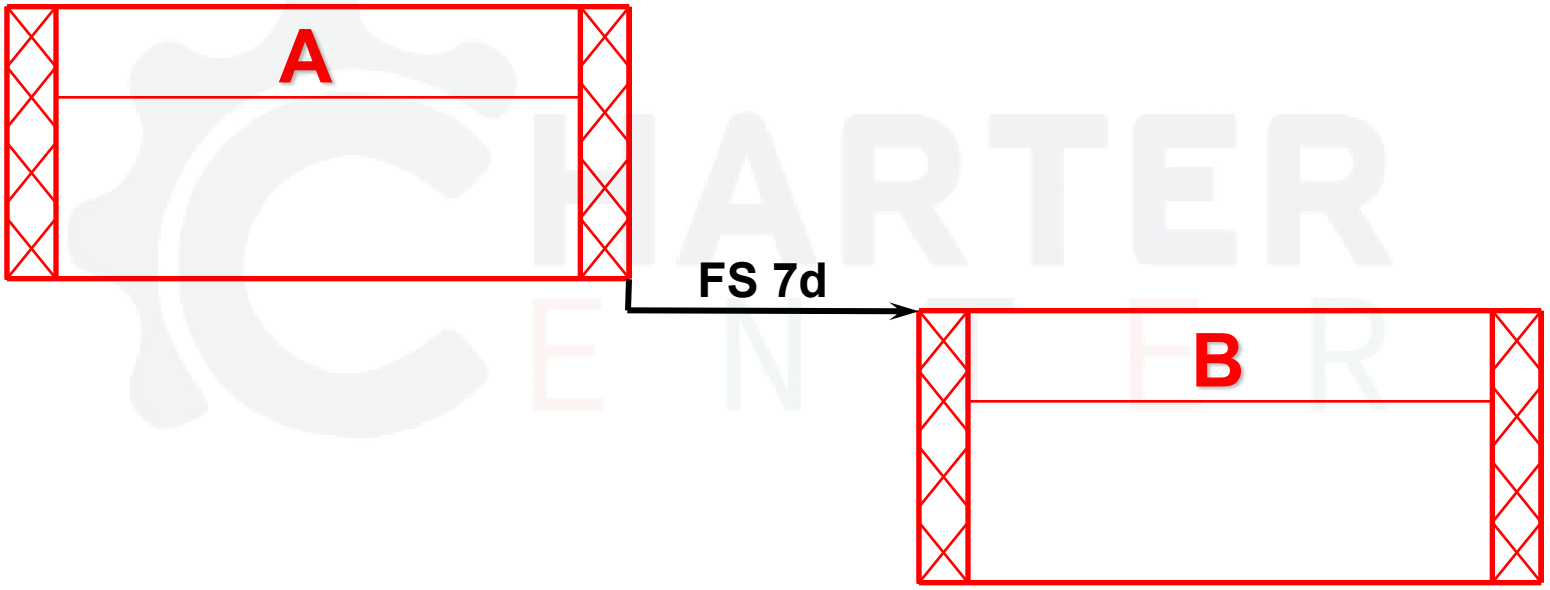
Relationships with Lag

Lag specifies an offset or delay between an activity and its successor.

- Can be added to any relationship type.
- Can be a positive or a negative value.
- There are four calendar options for scheduling lag:
  - Predecessor activity calendar
  - Successor activity calendar
  - 24-hour calendar
  - Project default calendar

Finish to Start with Lag

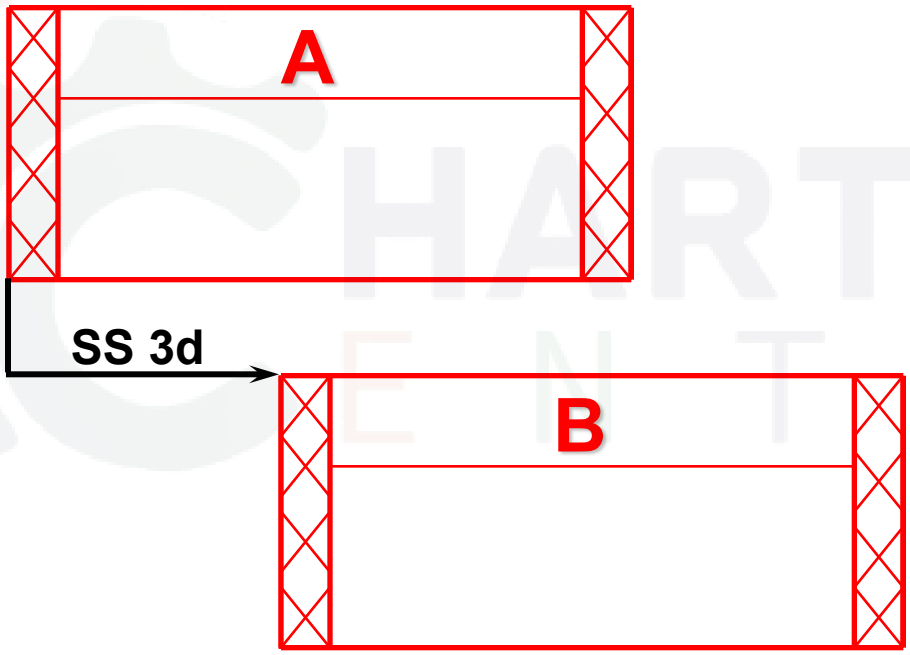
Activity B can start after activity A finishes and seven days have passed.



Example: After the concrete floor is poured and cures for seven days, we can begin constructing the walls.

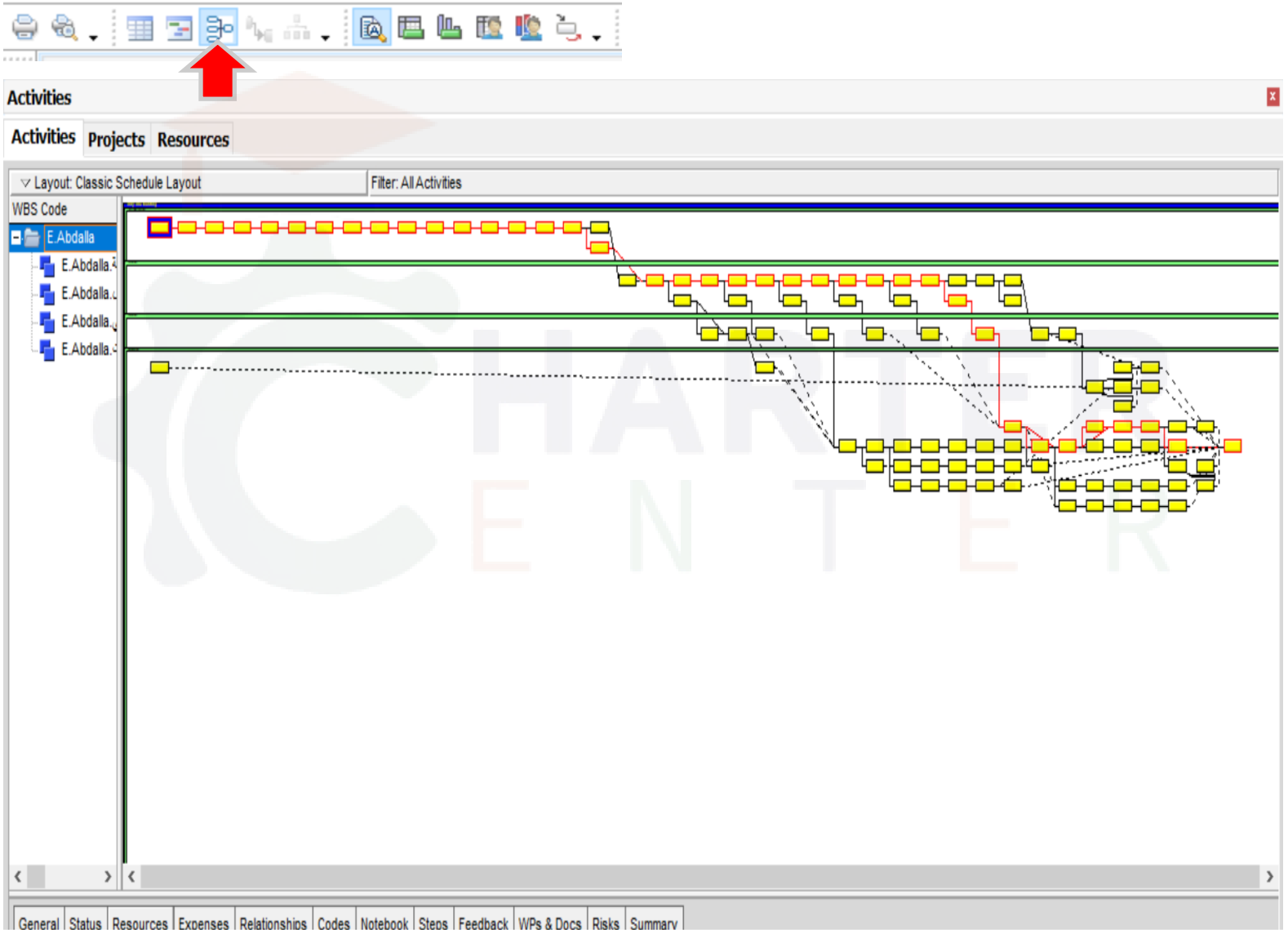
Start to Start with Lag

After activity A starts and 3 days of work have passed, then activity B can start.



Example: We can start laying the drainage pipes three days after we start digging the trenches.

Project Schedule Network Diagram



Estimate Activity Durations

- Is the process of estimating the number of work periods needed to complete each individual activity with the estimated resources.

- **Estimate Activity DurationsTools &Techniques-**

1. Analogous Estimating (Top-down)

Technique for estimating the duration or cost of an activity or a project using historical data from a similar activity or project.

It is used when there is a limited amount of detailed information about the project, especially in the early stages of project.

2. Parametric Estimating

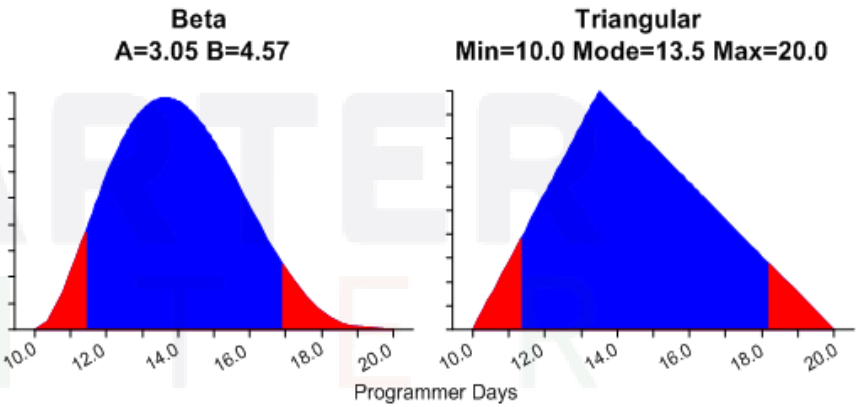
Uses a statistical relationship between historical data and other variables. Activity can be quantitatively determined by multiplying the quantity of work by labor hours per unit of work.

Estimate Activity Durations

3. Three-point Estimates (PERT)

This concept originated with the program evaluation and review technique Uses three estimates to calculate average: Most likely ,Optimistic ,Pessimistic

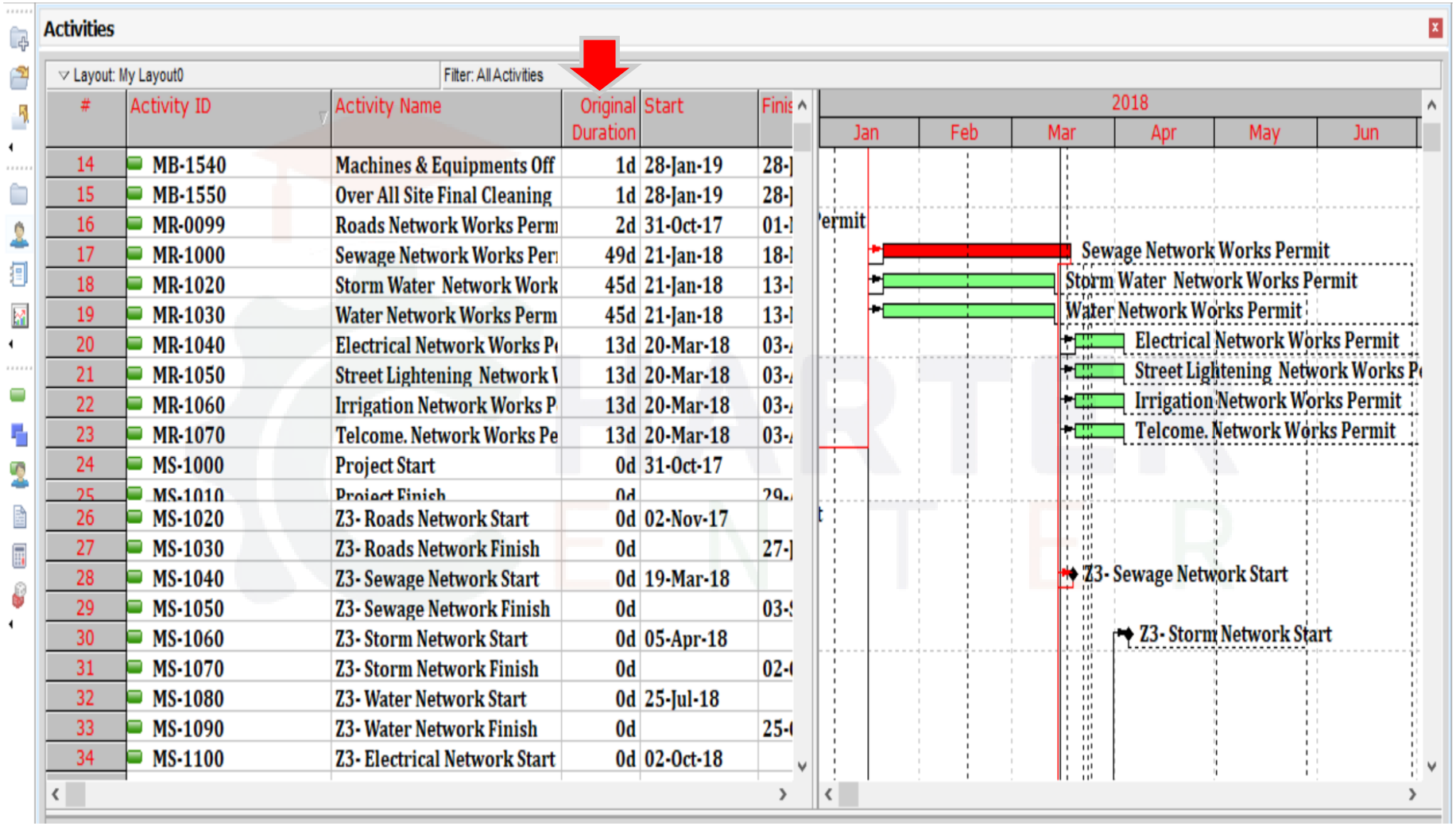
- Triangular Distribution E=(O+M+P)/3
- Beta Distribution E=(O+4M+P)/6



4-Bottom-up Estimating

In bottom-up estimating, each task is broken down into smaller components. Then, individual estimates are developed to determine what specifically is needed to meet the requirements of each of these smaller components of the work. This technique is highly accurate and can be used in both estimating cost and resources however its time consuming.

Activity Durations in P6:



#	Activity ID	Activity Name	Original Duration	Start	Finis
14	MB-1540	Machines & Equipments Off	1d	28-Jan-19	28-J
15	MB-1550	Over All Site Final Cleaning	1d	28-Jan-19	28-J
16	MR-0099	Roads Network Works Perm	2d	31-Oct-17	01-I
17	MR-1000	Sewage Network Works Per	49d	21-Jan-18	18-I
18	MR-1020	Storm Water Network Work	45d	21-Jan-18	13-I
19	MR-1030	Water Network Works Perm	45d	21-Jan-18	13-I
20	MR-1040	Electrical Network Works P	13d	20-Mar-18	03-A
21	MR-1050	Street Lightening Network V	13d	20-Mar-18	03-A
22	MR-1060	Irrigation Network Works P	13d	20-Mar-18	03-A
23	MR-1070	Telcome. Network Works Pe	13d	20-Mar-18	03-A
24	MS-1000	Project Start	0d	31-Oct-17	
25	MS-1010	Project Finish	0d		29-A
26	MS-1020	Z3- Roads Network Start	0d	02-Nov-17	
27	MS-1030	Z3- Roads Network Finish	0d		27-J
28	MS-1040	Z3- Sewage Network Start	0d	19-Mar-18	
29	MS-1050	Z3- Sewage Network Finish	0d		03-S
30	MS-1060	Z3- Storm Network Start	0d	05-Apr-18	
31	MS-1070	Z3- Storm Network Finish	0d		02-(
32	MS-1080	Z3- Water Network Start	0d	25-Jul-18	
33	MS-1090	Z3- Water Network Finish	0d		25-(
34	MS-1100	Z3- Electrical Network Start	0d	02-Oct-18	

Scheduling

Scheduling Purpose

Identify start and completion of the project.

Identify start and completion dates of all activities.

Scheduling

Scheduling steps

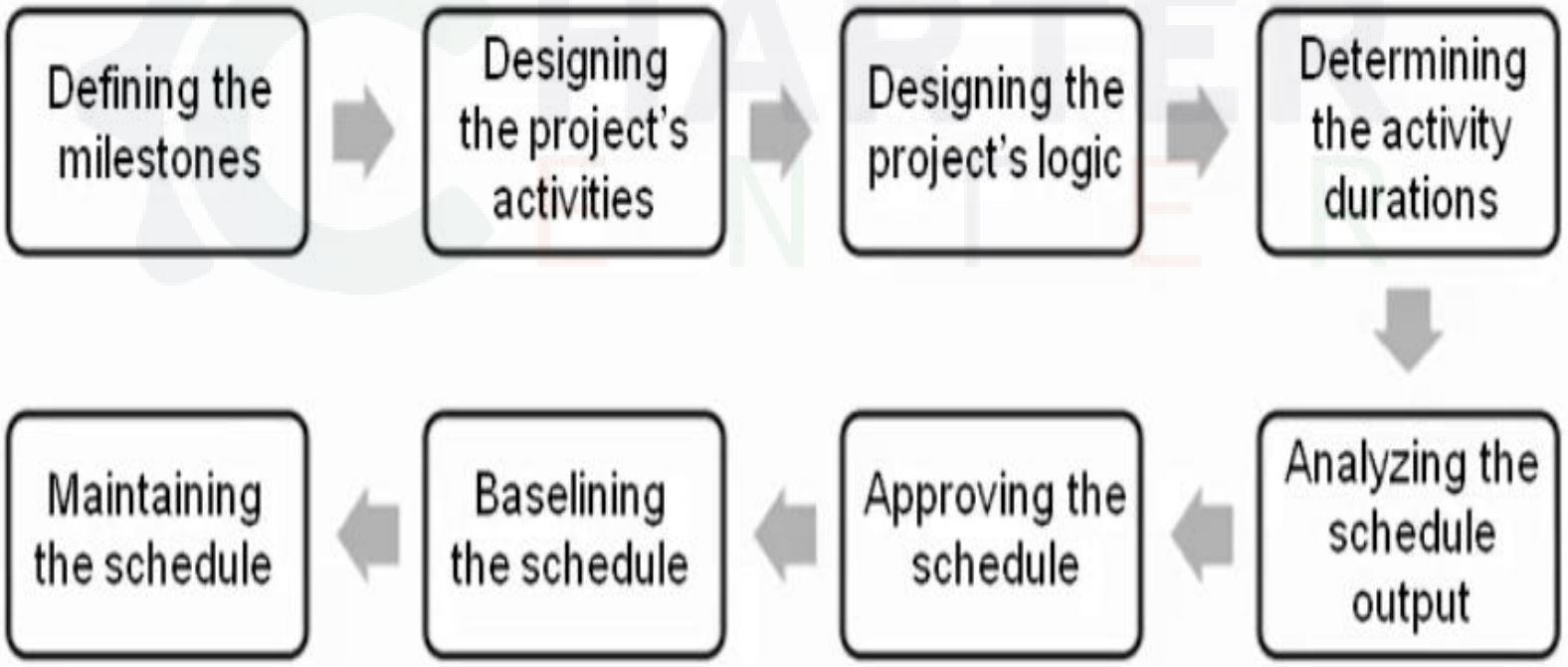
Step 1: Determine Activity Sequence By Creating a Network Diagram

Step 2: Estimate Activity Durations

Step 3: Calculate the Schedule Using Critical Path Method (CPM) Procedures

Develop Schedule

- Develop Schedule is an iterative process of analyzing activity sequence, duration, resource requirement and schedule constraints to create the schedule model, its key benefit that it gathers all the available information into a scheduling tool to generate the schedule model with planned dates for completing project activities.



Critical Path Method Scheduling

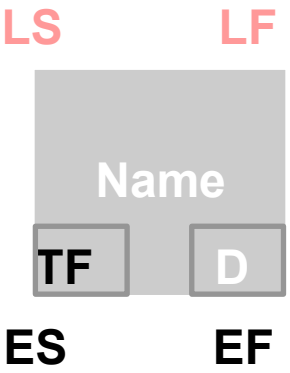
The Critical Path Method (CPM) is the traditional technique for calculating project schedules and determining the minimum total project duration.

- Uses activity durations and relationships between activities to calculate schedule dates.
- Calculation is done in two passes – forward and backward – through the activities in a project.

Critical Path

- The sequence of activities that determines a project's minimum total duration and completion date.
- Generally the longest continuous path of activities through the project.
- The duration of the activities on the critical path controls the duration of the entire project. A delay to any activity on the critical path will delay the Finish date of the project.

Critical Path Method

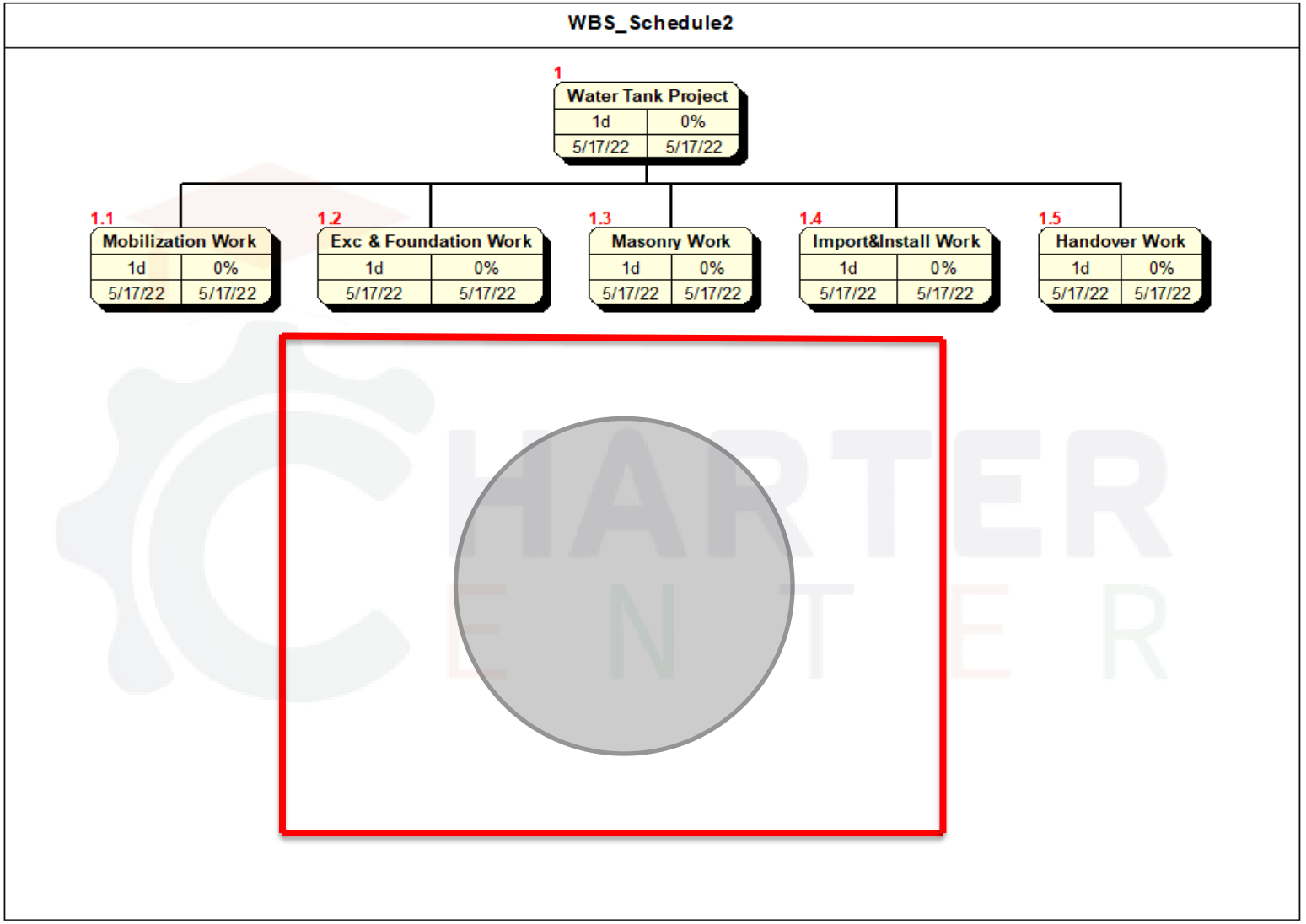


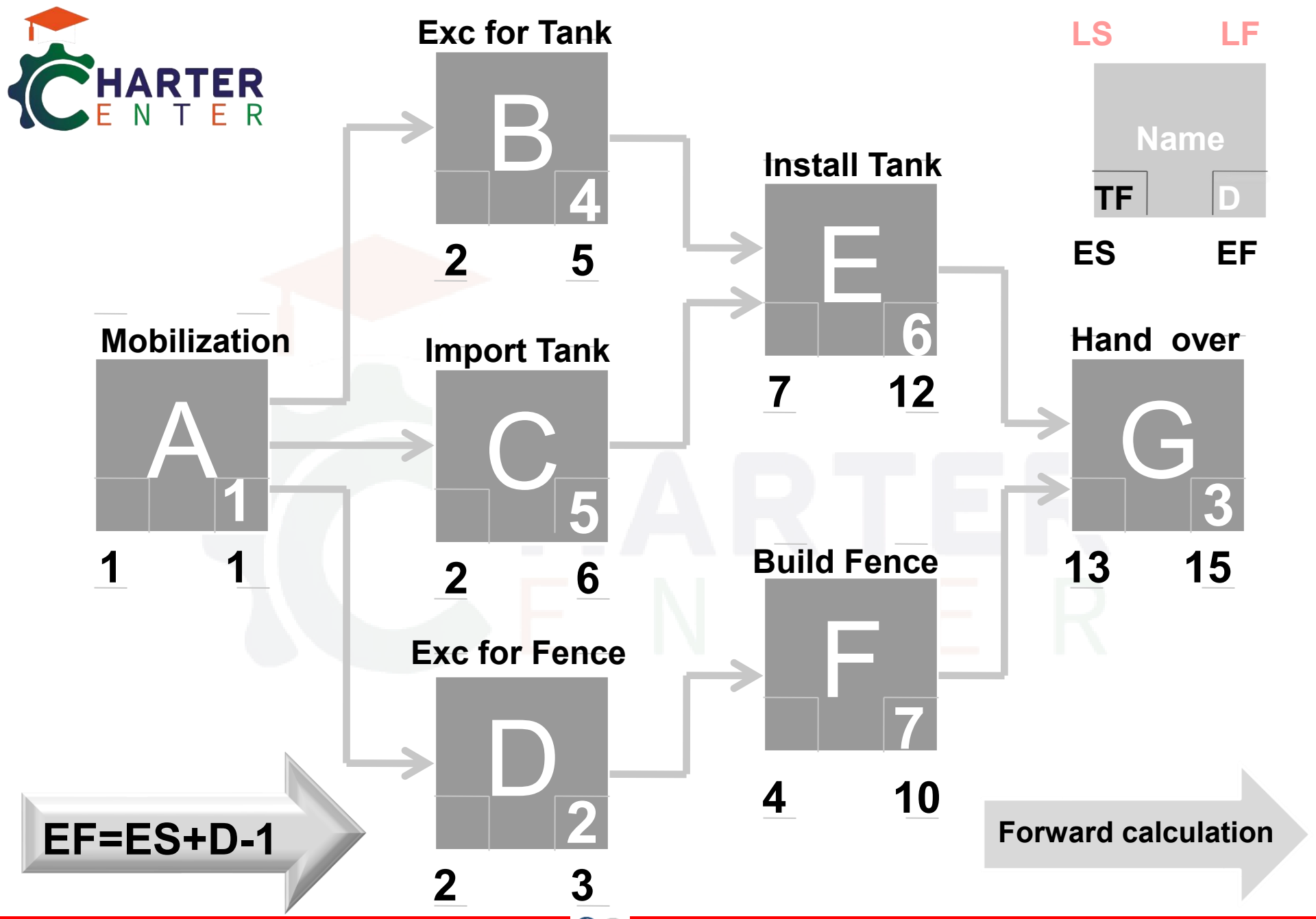
- Calculates the following for each activity

- Float (slack): is an indication of activity flexibility in relation to time, there are 3 float types:

- Total float: measures the positive differences between early and late dates. The amount of time that a schedule activity can be delayed without delaying the project. **Total Float= LS- ES OR = Lf- EF**
- Free float: the amount of time that a schedule activity can be delayed without delaying the early start date of any immediate successor activity within the network path. **Free Float(a)= ES(b)-EF(a)**
- Project float: the amount of time that the overall project can be delayed without delaying the required completion date provided by the customer.

Water Tank Project




CHARTER CENTER
Exc for Tank
B
4
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LS
LF
Name
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EF
Install Tank
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6
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12
Mobilization
A
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Import Tank
C
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Hand over
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Build Fence
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Exc for Fence
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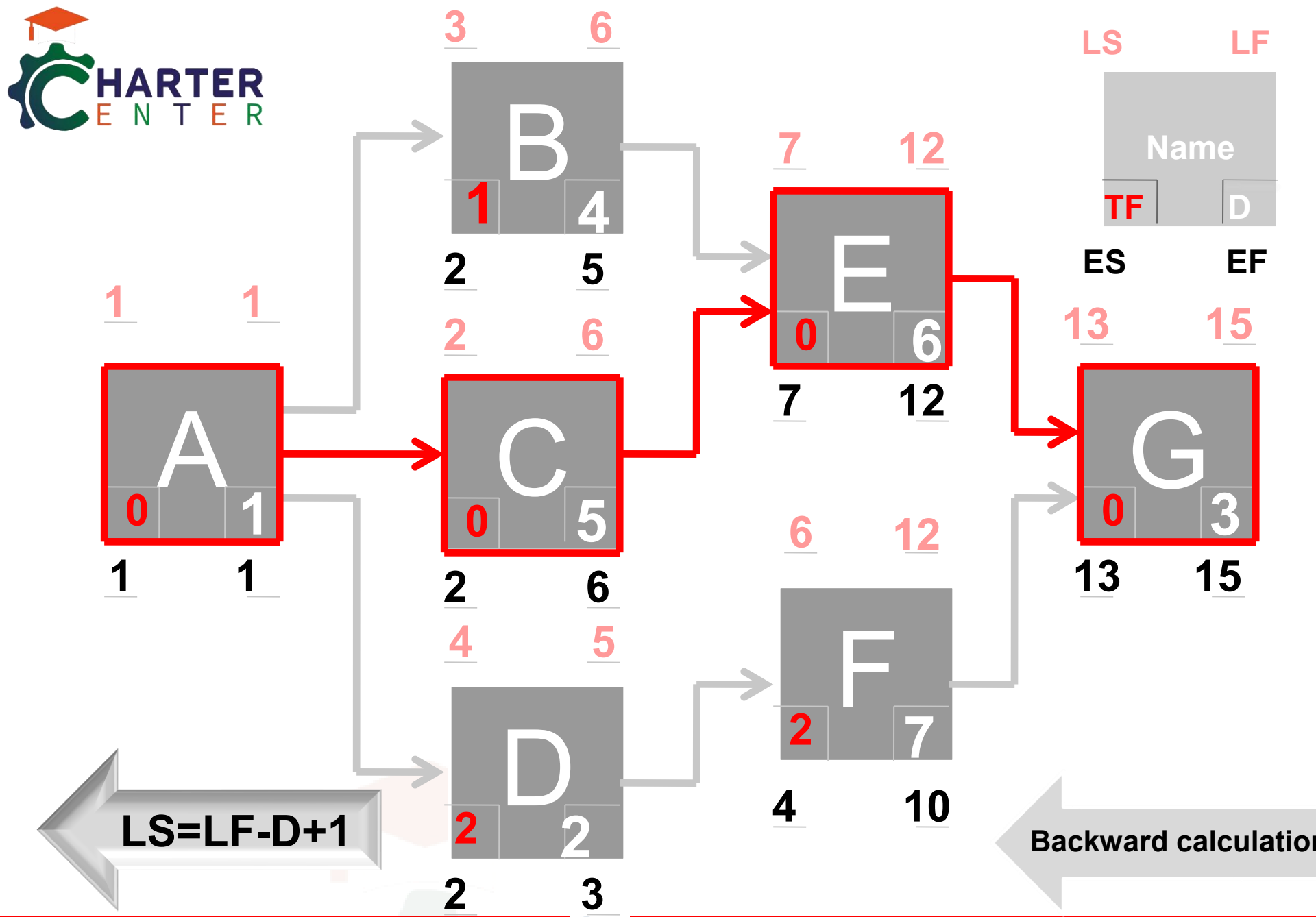
EF=ES+D-1
Forward calculation


CHARTER CENTER
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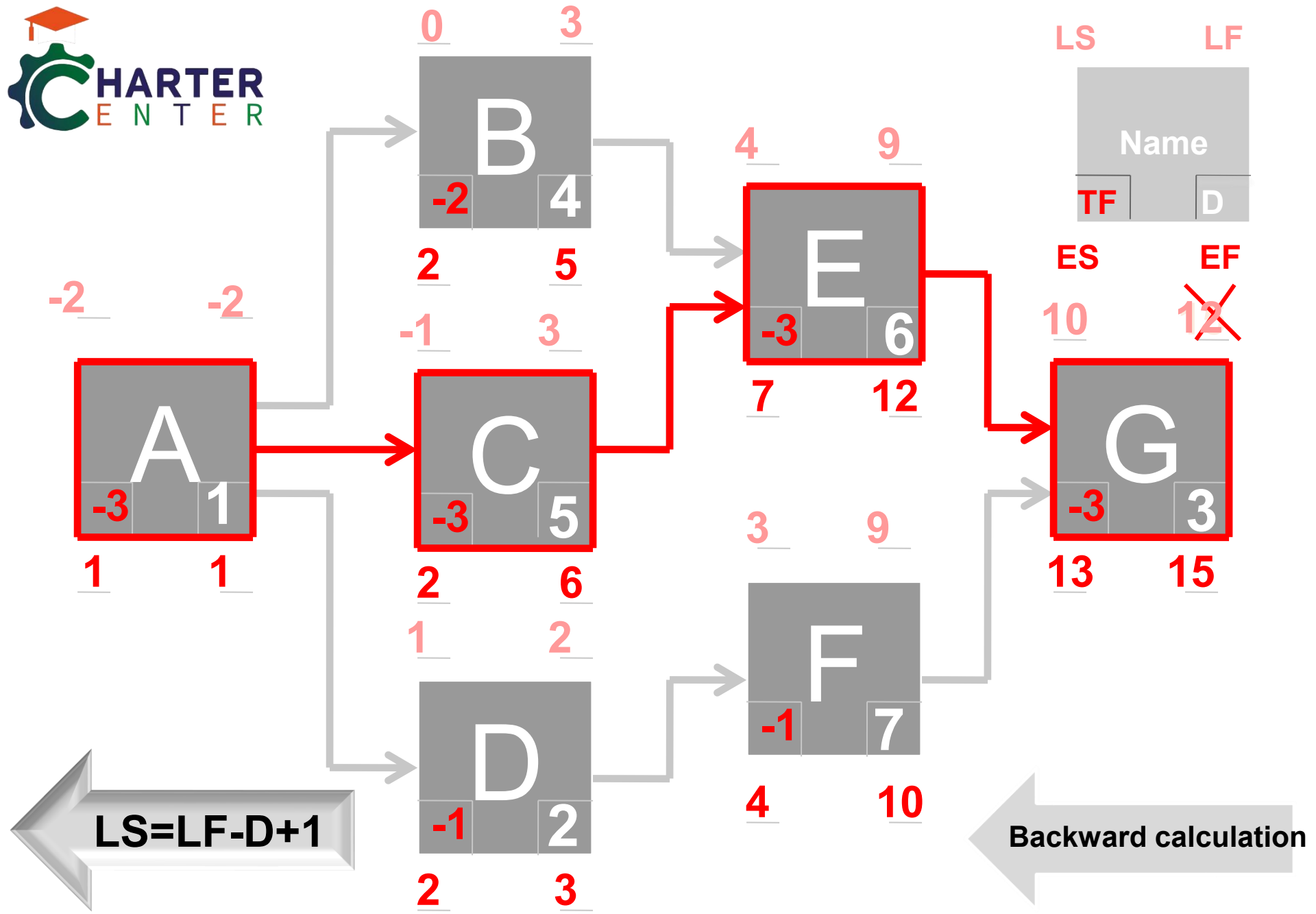
LS=LF-D+1
Backward calculation


CHARTER CENTER
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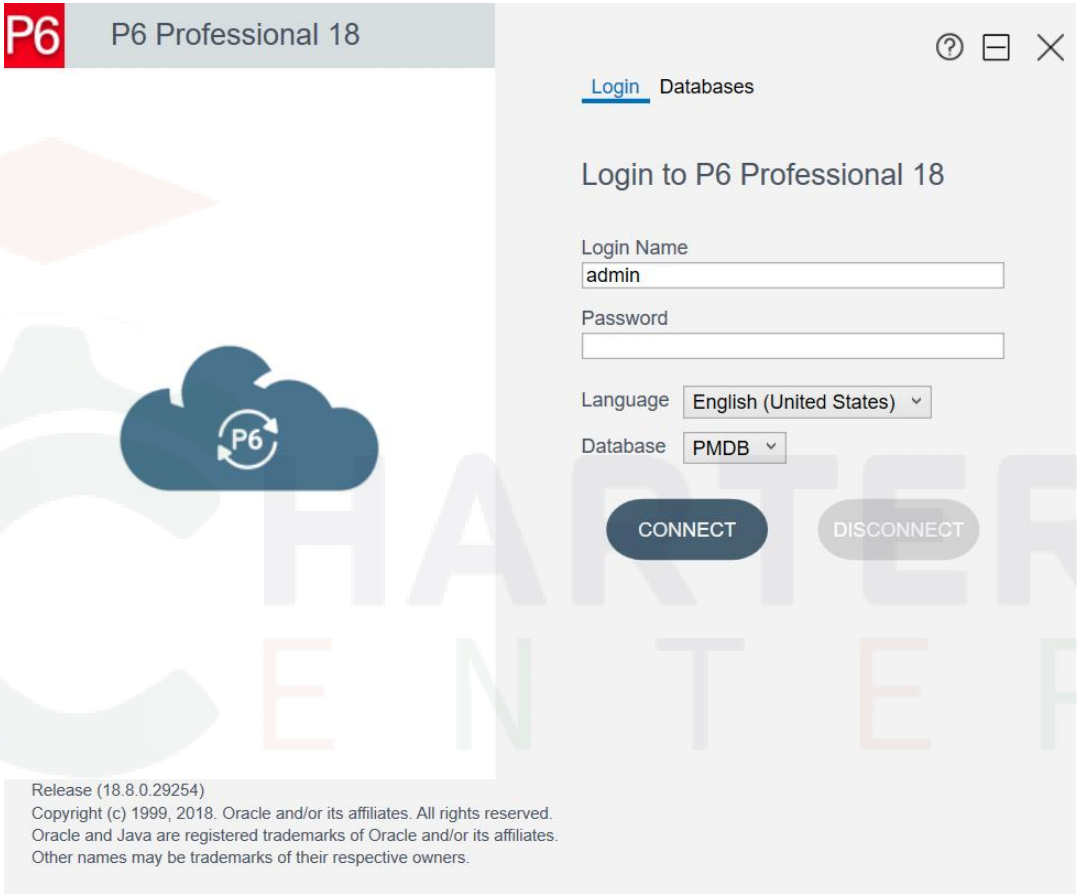
7
12
F
-1
7
3
9
4
10
G
-3
3
10
12
13
15
LS=LF-D+1
Backward calculation

What's is the Critical Path?

- Riskiest path in a project
- Path with longest duration
- Path with smallest total float
- Path with the most important activities

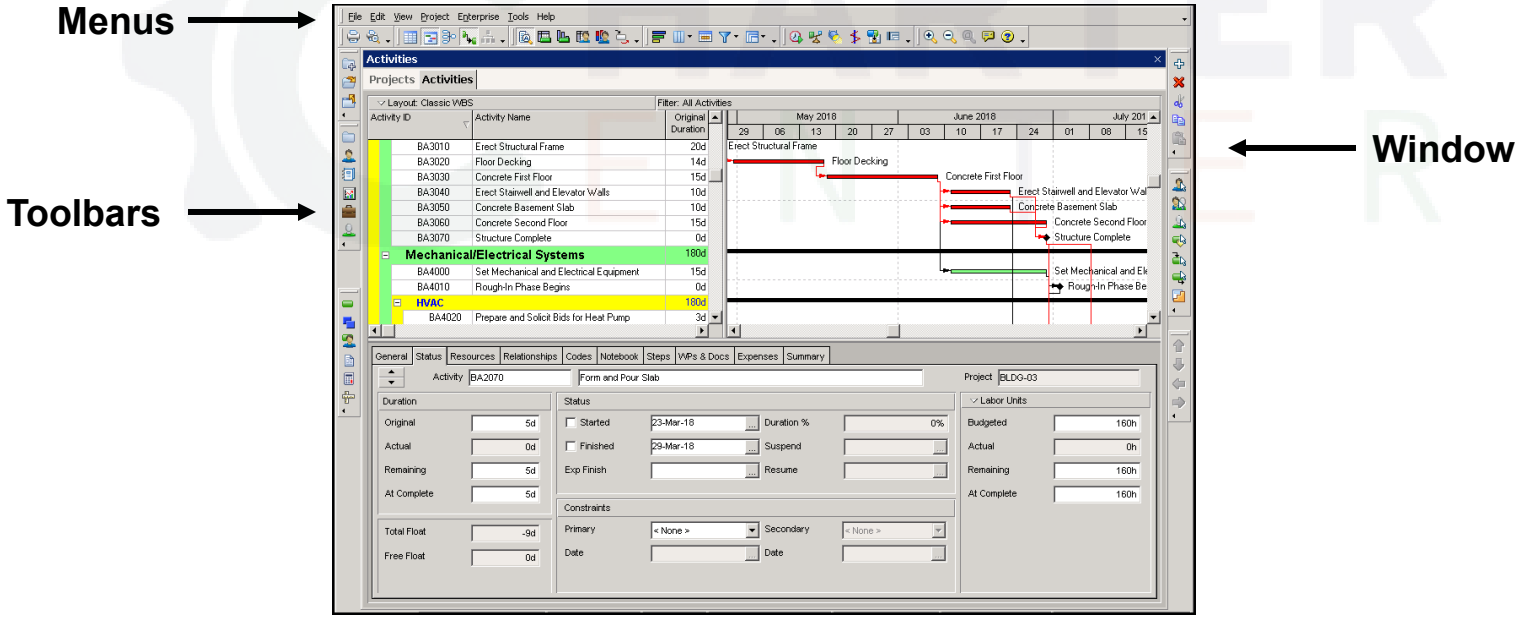
P6 Professional

- When you open P6 Professional R20.12 form **Start** this screen will Appear to ask for Primavera login Name and Password as usual same (admin-admin)



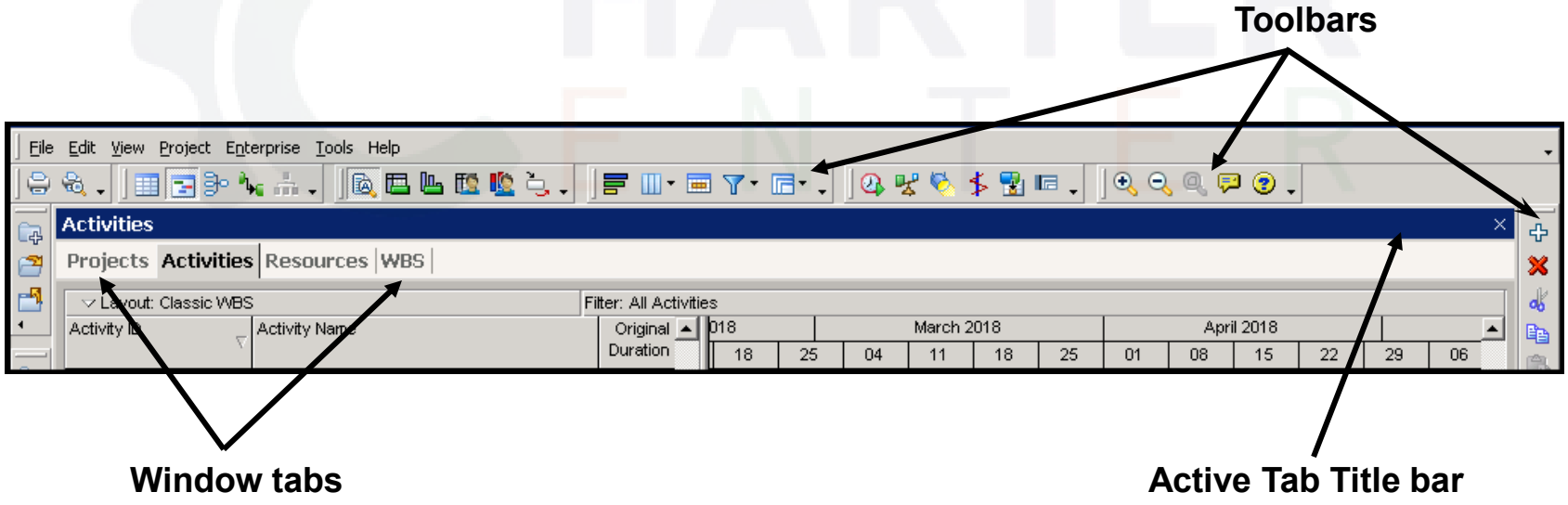
Windows and Menus

- P6 Professional is organized into 11 windows, each focusing on an aspect of project management.
  - Examples: Projects, Resources, WBS, Activities, Expenses
- Launched from menus or toolbars.



Tabs and Toolbars

- Multiple windows can be open at one time.
  - Windows displayed on tabs.
  - Active Tab Title bar indicates the active window.

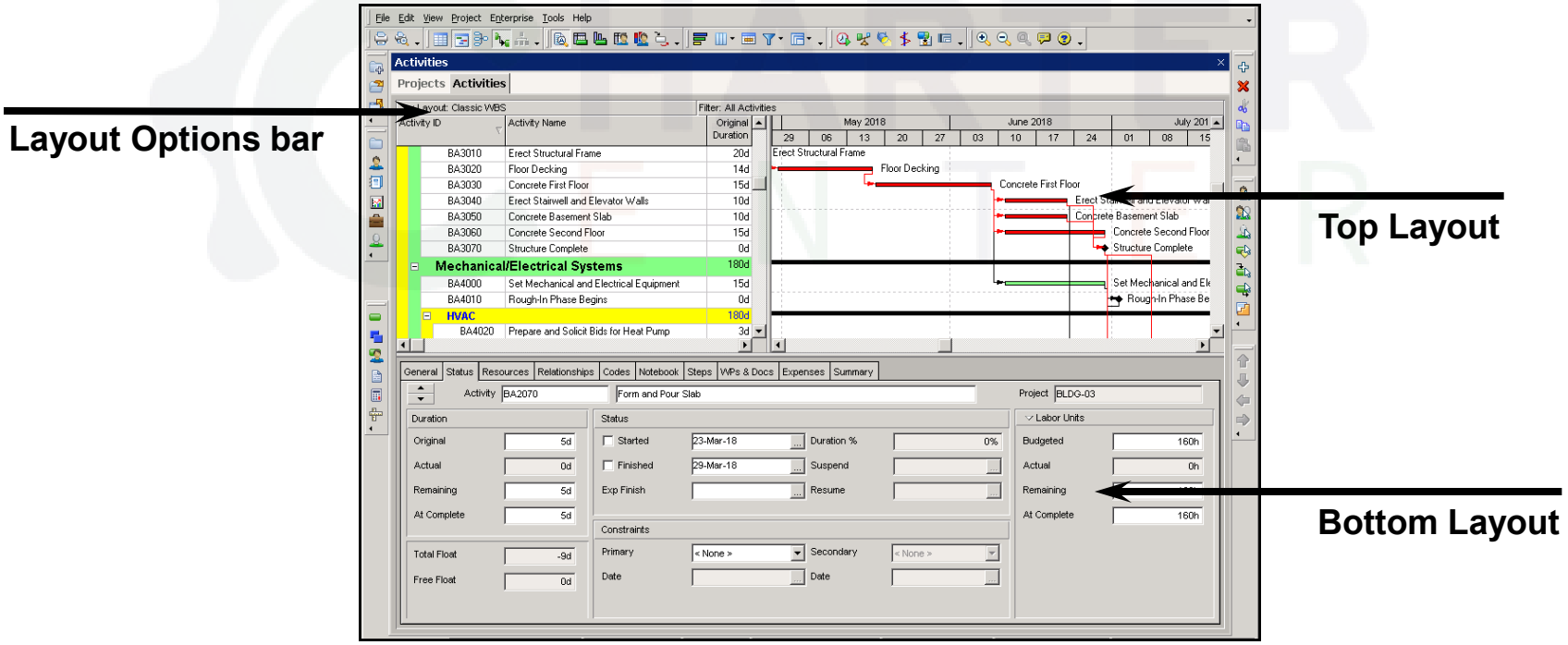


Commonly Used Toolbar

	Enterprise Projects Resources Reports Tracking Project Portfolios Roles		**Tools** Schedule Level Resources Progress Spotlight Progress Line Update Progress Disable Auto-Reorganization		**Edit** Add/Insert Delete Cut Copy Paste
	Project Activities WBS Resource Assignments WPs & Docs Expenses Maintain Baselines		**Assign** Resources Resources by Role Roles Activity Codes Predecessors Successors Steps		**Layout** Bars Columns Time Scale Filter By Group and Sort by

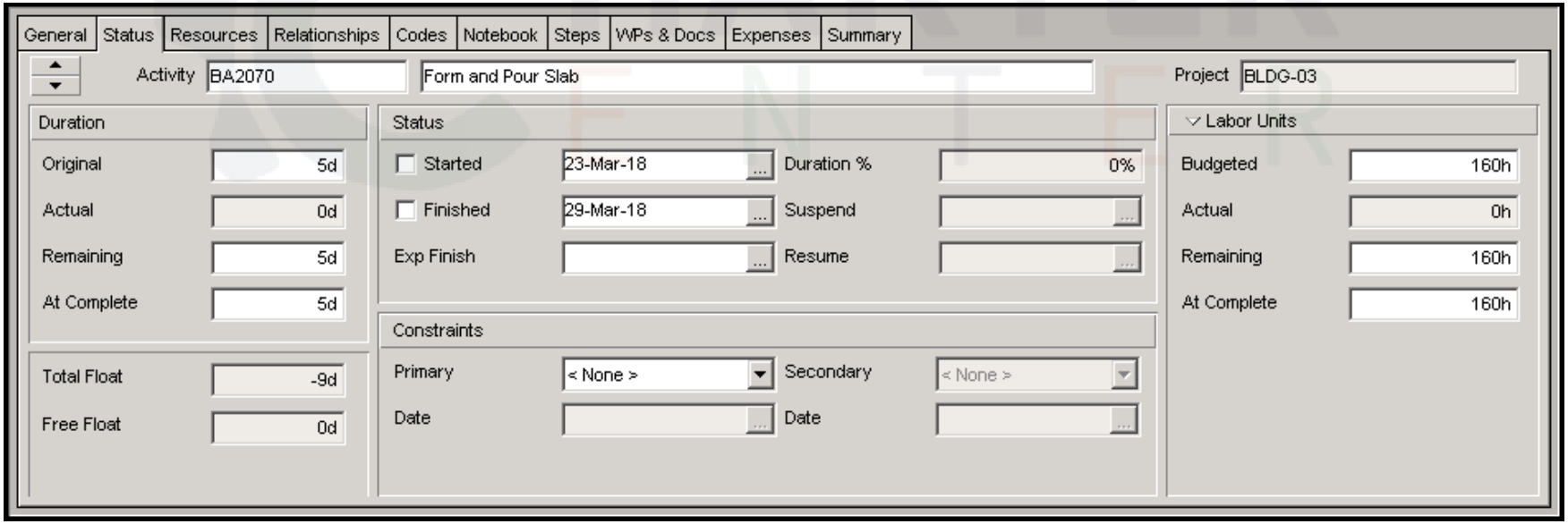
Layouts

- Customized view of information.
  - Available in Projects, WBS, Activities, and Tracking views.
- Consists of top layout and bottom layout.
- Key layout functions on Layout Options bar.



Details

- Displays detailed information about selected item.
- Available in all windows, except Tracking.
- Always in bottom layout.
- Organized into tabs.
  - Tabs can be customized in some windows.



Creating a Project

There are three ways to create a project:

- **Create new** – Best suited for new endeavors or for implementation of new processes / policies.
- **Import** – Add data from P6, spreadsheet applications or Microsoft Project.
- **Copy/paste** – Duplicate existing project or elements of existing project.

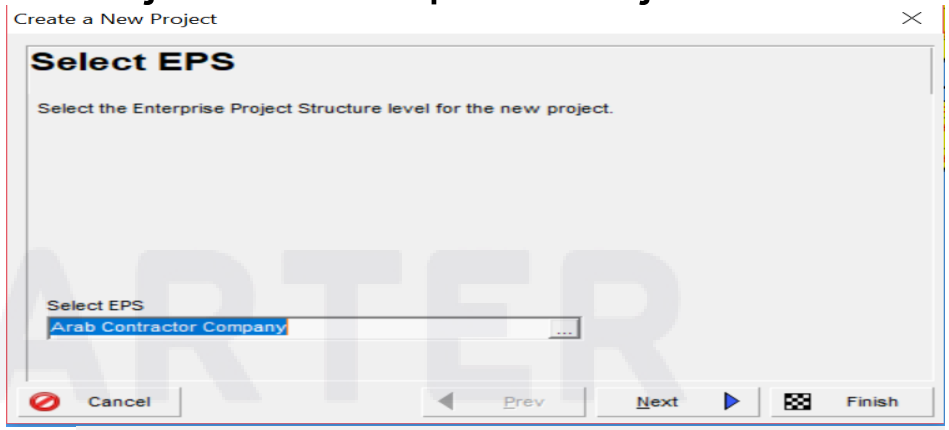
Required Information for Creating a Project

When creating a new project, certain information is required:

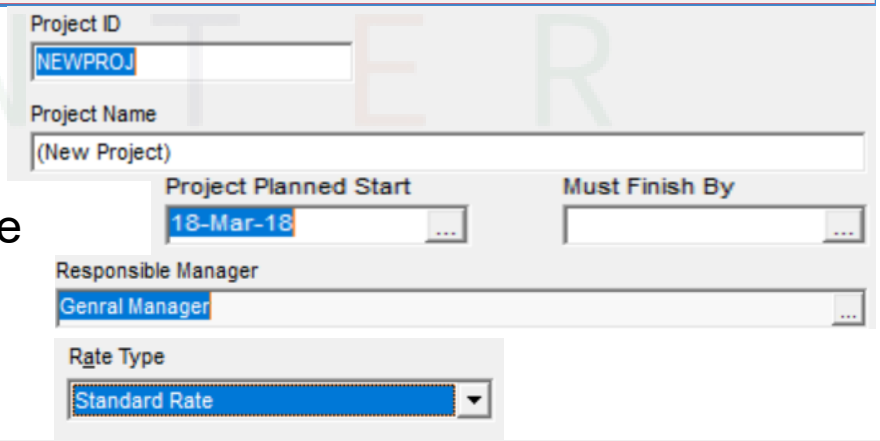
- Project ID
- Project Name
- EPS location
- Responsible Manager
- Planned Start date

Required Information for Creating a Project

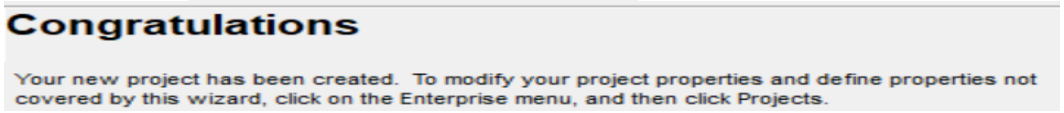
- Form Menu File (+new) this screen will Appear to ask for (EPS) Select where there location of the Project in Enterprise Project Structure the NEXT



- P6 ask about Project Id &Name



- P6 ask about Project Start &Finish Date
- P6 ask about Responsible Manager
- P6 ask about Assignment Rate type
- P6 ask to Finish



Calendars

- Specify work time and nonwork time.
- Used for scheduling and leveling resources.
- An unlimited number of calendars can be created.
- All activities must have an assigned calendar.

Calendar Pools

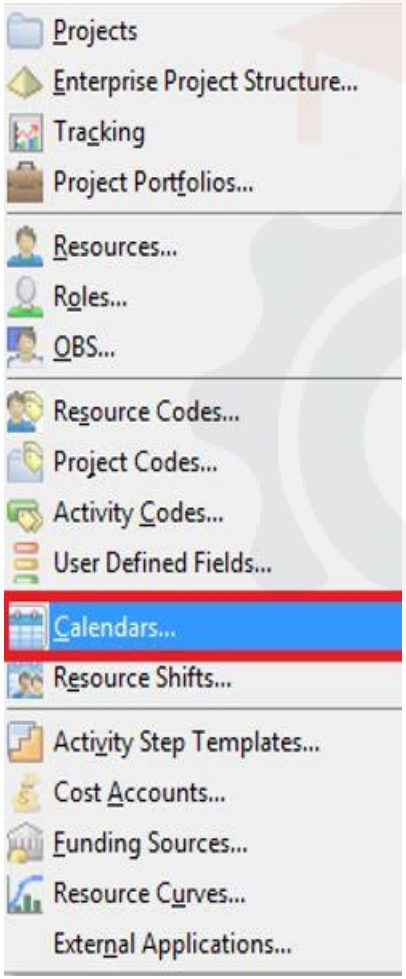
- There are three calendar pools:
  - Global
  - Project
  - Resource
- Determines whether the calendar is available to:
  - All projects, resources, and activities.
  - One project and its activities.
  - Resources only.

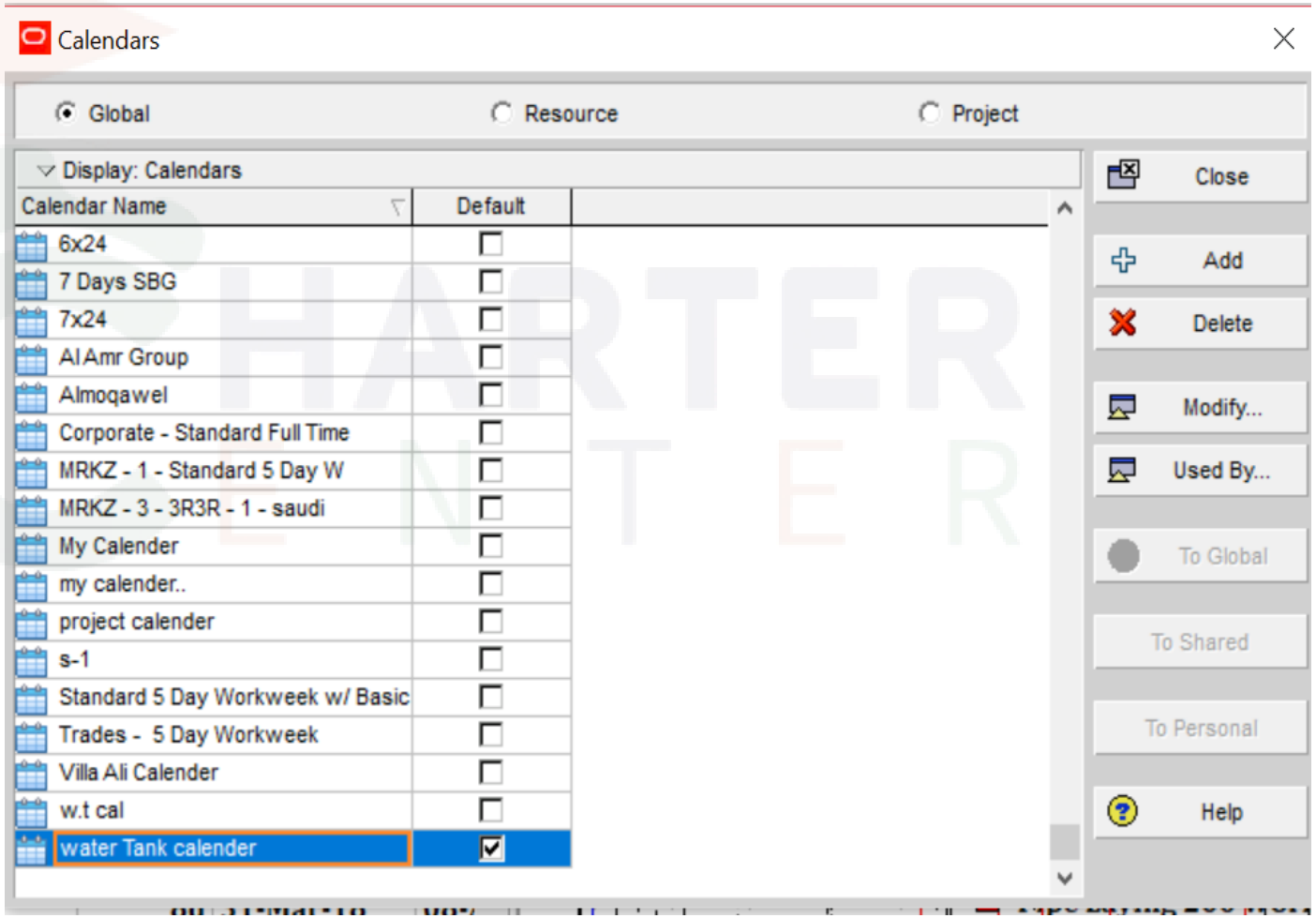
Calendar Pools

- Global
  - Calendars that can be used by all projects and resources.
  - Example: 5-day workweek, 8 hours/day (usually with holidays and non-work days from the organization's calendar).
- Project
  - Project-specific calendars.
  - Example: 6-day workweek calendar to accelerate project.
- Resource
  - Resource calendar can be assigned to resource only – not to an activity.
  - Example: Personal vacation days for an individual resource.

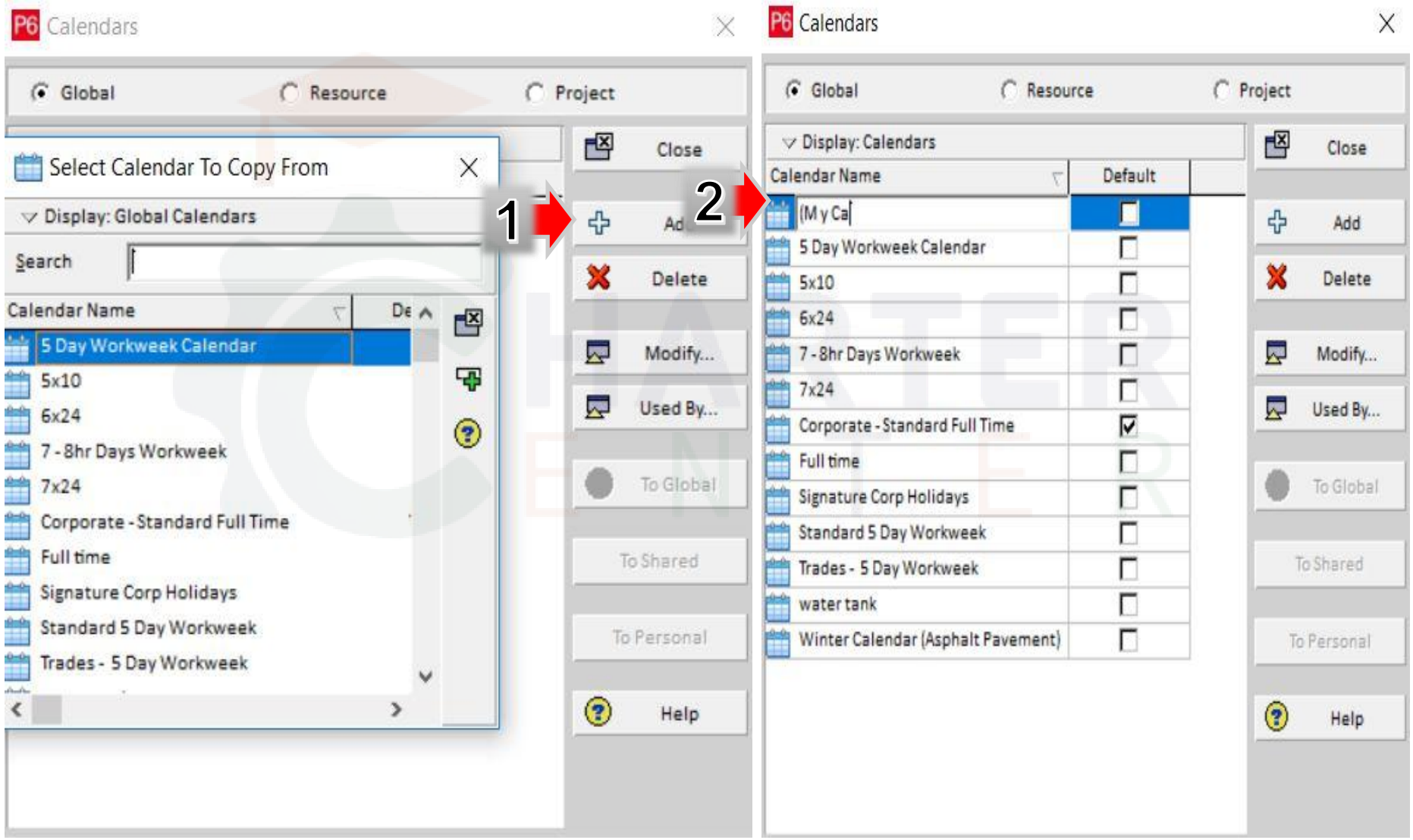
Calendar

- Form **Enterprise** Menu Select **Calendars**

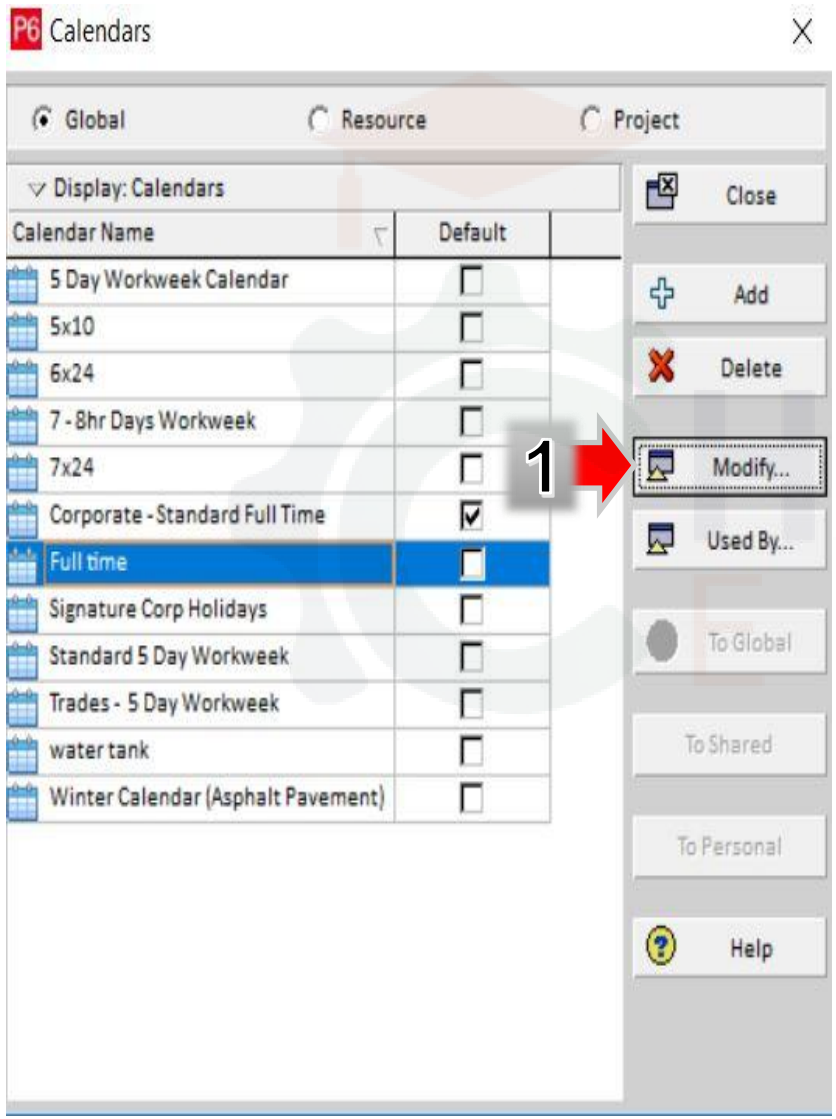


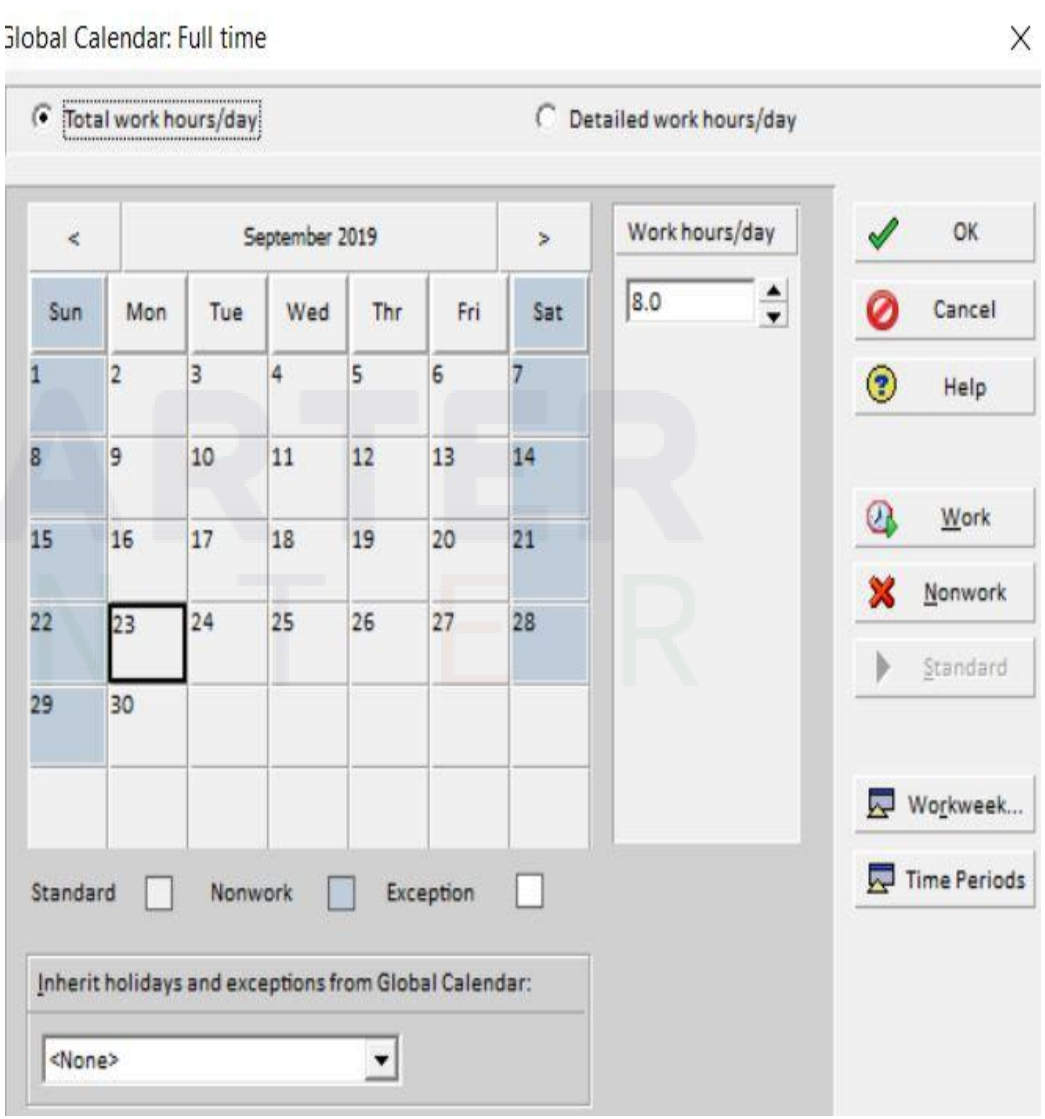


Add Project calendars

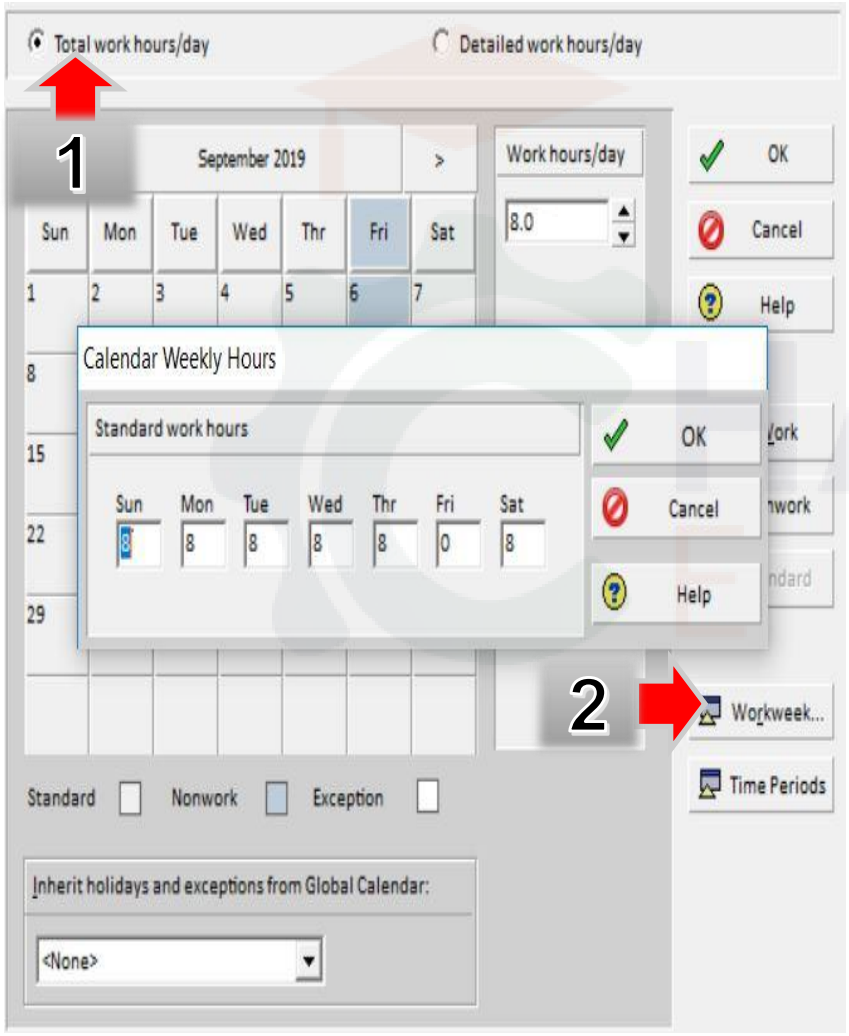


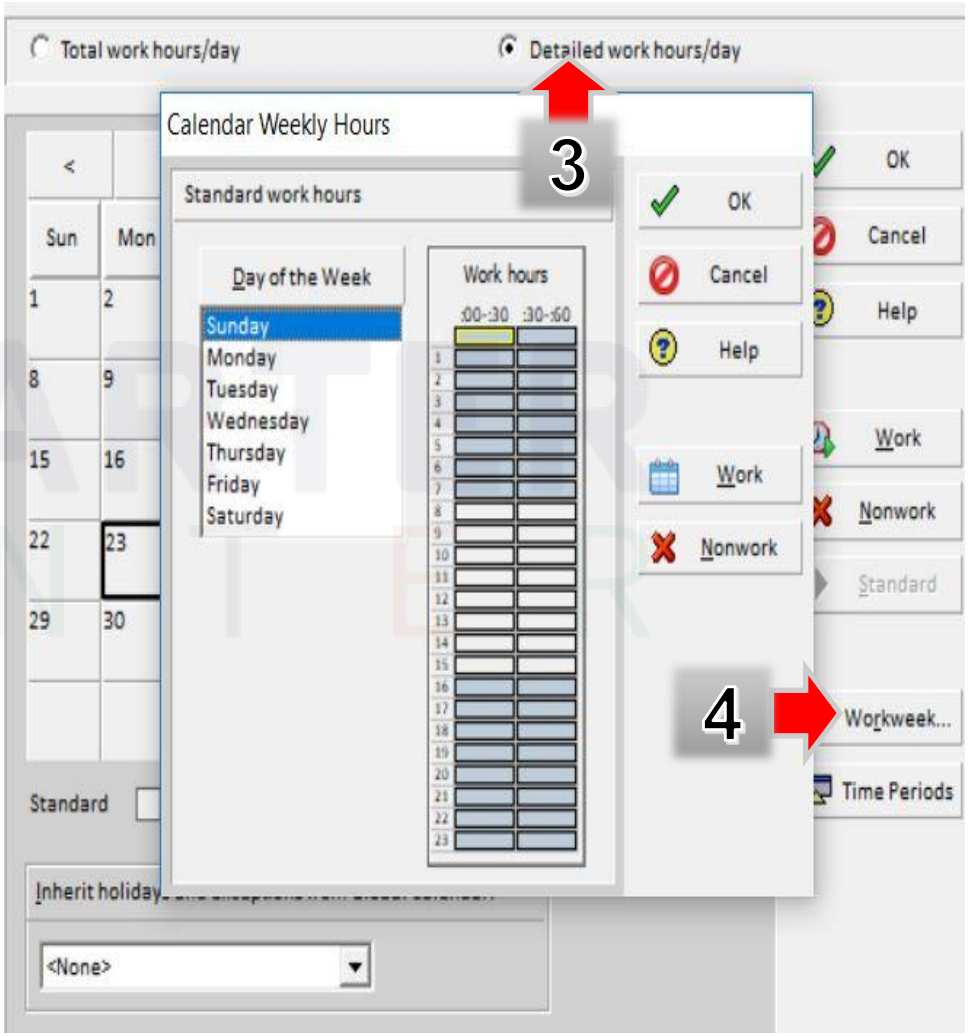
Modify calendars



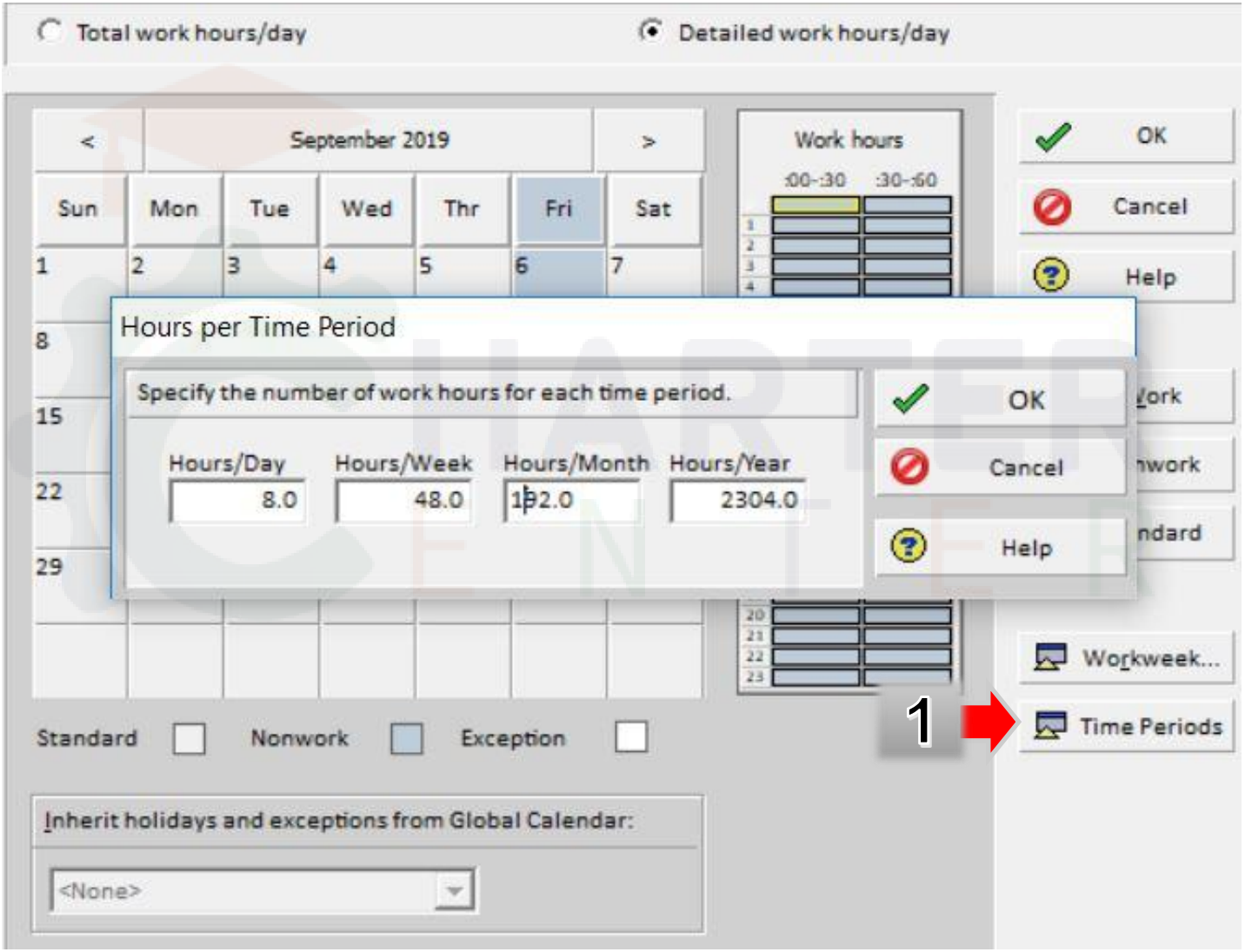


Total work/day-Detailed hours/day

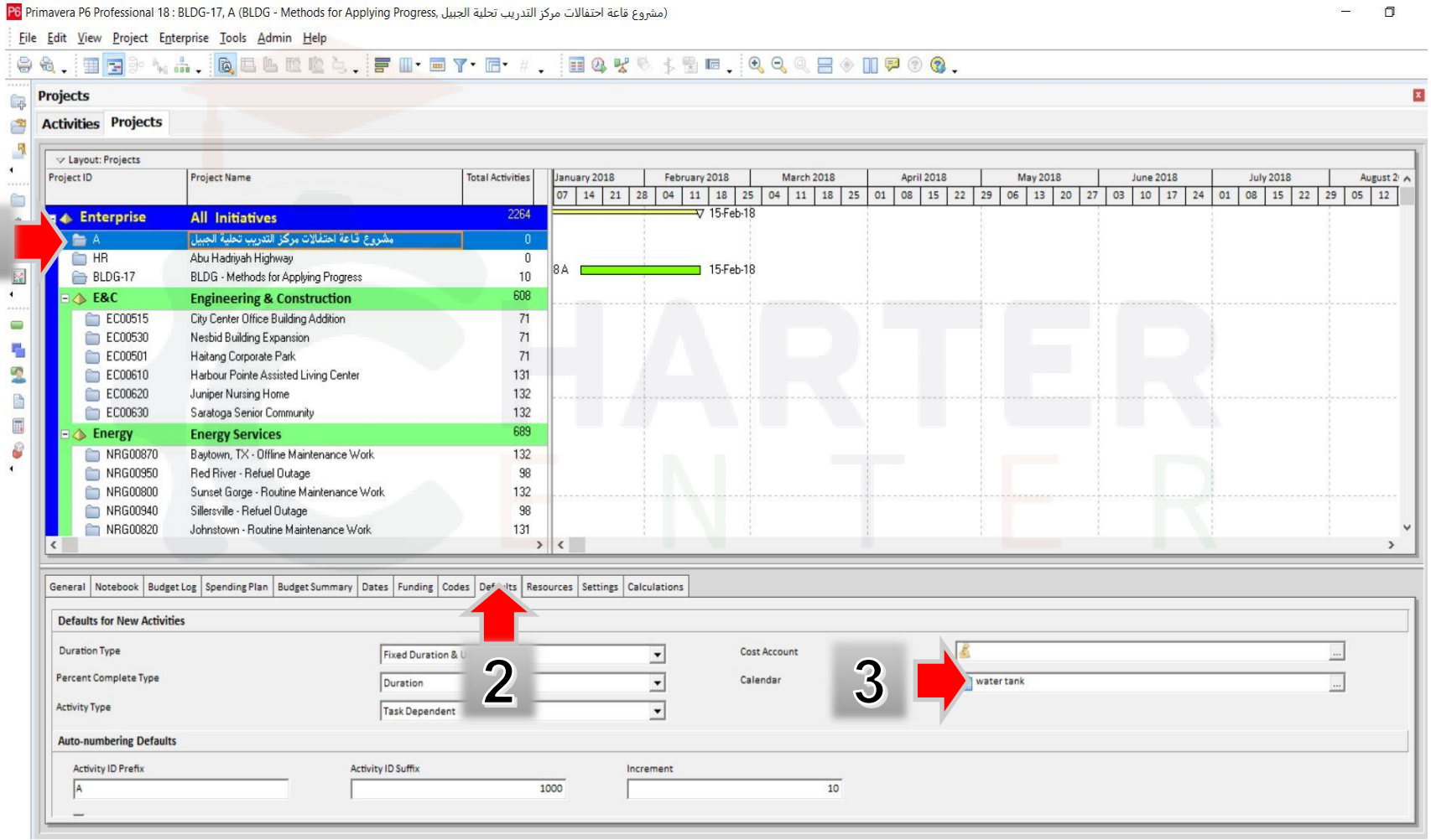




Time Periods



Assign Project calendars



Resource Calendars

There are two types of resource calendars:

- Shared:
  - Share among multiple resources.
  - Can convert to personal calendar.
- Personal:
  - Assign to single resource.
  - Calendar is deleted if resource is deleted.
  - Resource can edit personal resource calendar.

Work Time Types

A calendar can include four types of work time:

- Standard day
  - Work hours in day match calendar's work week.
- Nonwork
  - Zero working hours in day.
- Exception
  - Work hours in day do not match calendar's work week.
  - Example: Weekend work hours for a resource normally on a 5-day workweek.
- Nonwork Exception
  - A full day of nonwork time not covered by the standard work week (e.g., vacation).

Calendars and Activity Types

Activity Type determines which calendar is used when a project is scheduled.

- **Task Dependent:** Resource assignments are scheduled according to the calendar assigned to the activity.
- **Resource Dependent:** Resource assignments are scheduled according to the calendar assigned to the resource.

Question

Which of the following statements is true?

1. A successor activity depends on the start or finish of another activity.
2. Lag specifies a delay between an activity and its successor.
3. Lag can be positive or negative.
4. 1 and 2
5. 1 and 2 and 3

Objectives

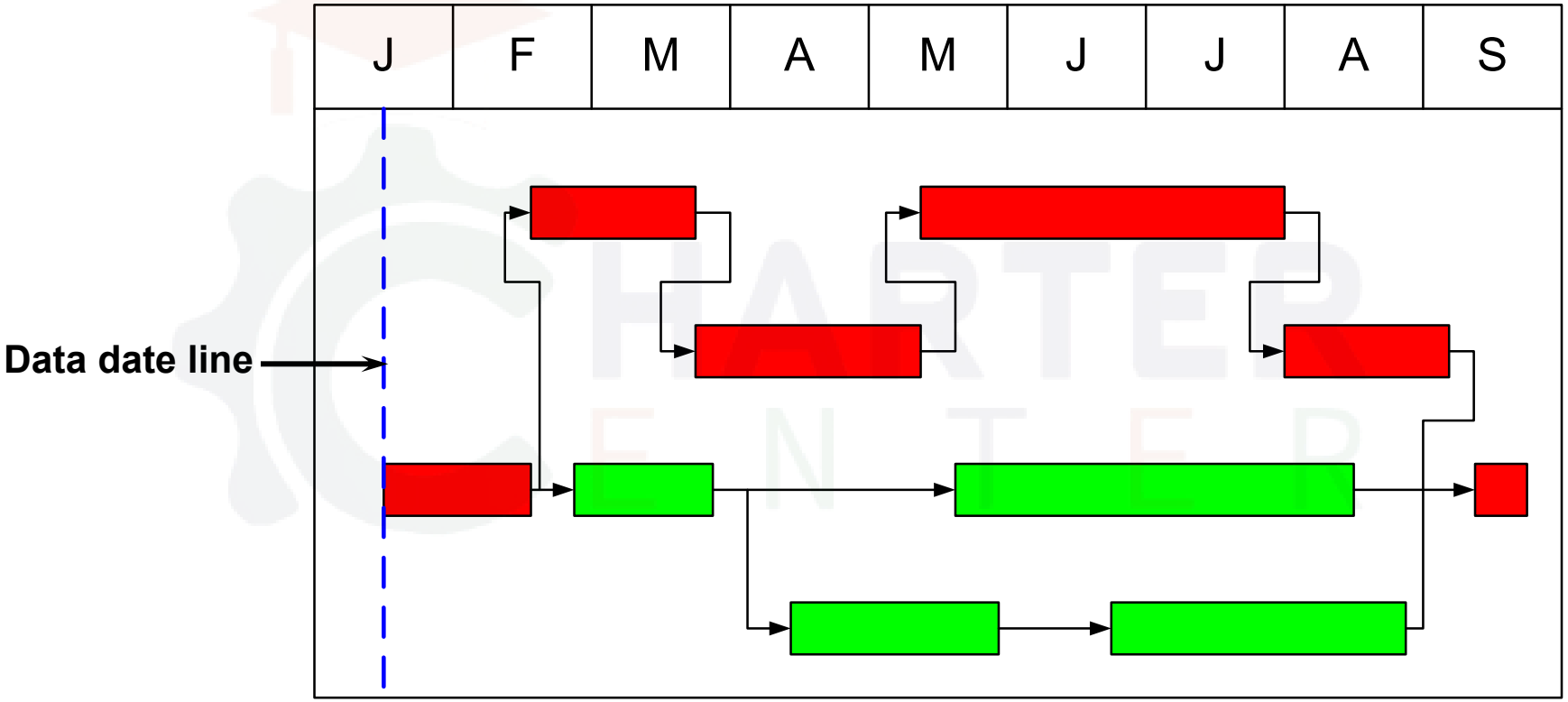
After completing this lesson, you should be able to:

- Estimate Durations.
- Describe the Tools &Techniques for Estimate.

Data Date

- The date that is used as the starting point to schedule all remaining work.
- During the Planning phase, the data date should match the project Start date.

Data Date



Objectives

After completing this lesson, you should be able to:

- Describe available constraint types.
- Apply Must Finish By constraint to a project.
- Apply a Start On or After constraint to an activity.
- Add a Notebook topic to a constrained activity.

Constraints

- Date restrictions used to reflect project requirements that cannot be built into the network logic.
- More accurately reflect real-world aspects of a project.
- Provide added control of a project.
- Apply to the entire project or to individual activities.
  - Commonly used project-level constraint: Must Finish By
  - Commonly used activity-level constraint: Start On or After
- No more than 10 percent of a project's activities should be constrained.

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.
- Establishes the date from which late dates are calculated in the backward pass.
- Affects the Total Float of the entire project.

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 activity's early start date to the constraint date.
- Affects the early dates of the activity's successors.

Additional Start Constraints

- **Start On** — Forces an activity to start on the constraint date:
  - Shifts both early and late start dates to the constraint date.
  - Used to specify dates submitted by contractors or vendors.
- **Start On or Before** — Forces an activity to start no later than the constraint date:
  - Shifts the late start to the constrained date.
  - Affects the late dates of its predecessors.
  - Used to place a deadline on the start of the activity.

Additional Finish Constraints

- **Finish On** — Forces an activity to finish on the constraint date:
  - Shifts both early and late finish dates to the constraint date.
  - Used to satisfy intermediate project deadlines.
- **Finish On or Before** — Forces an 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.
  - Used to set intermediate completion points in the project.
- **Finish On or After** — Forces an activity to finish no earlier than the constraint date:
  - Shifts the early finish to the constrained date.
  - Affects the early dates of its successors.

Additional Constraints

- **As Late as Possible** — Delays activity as late as possible without delaying successors:
  - Shifts early dates as late as possible.
  - Also called a zero free float constraint.
- **Mandatory Start and Finish** — 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.

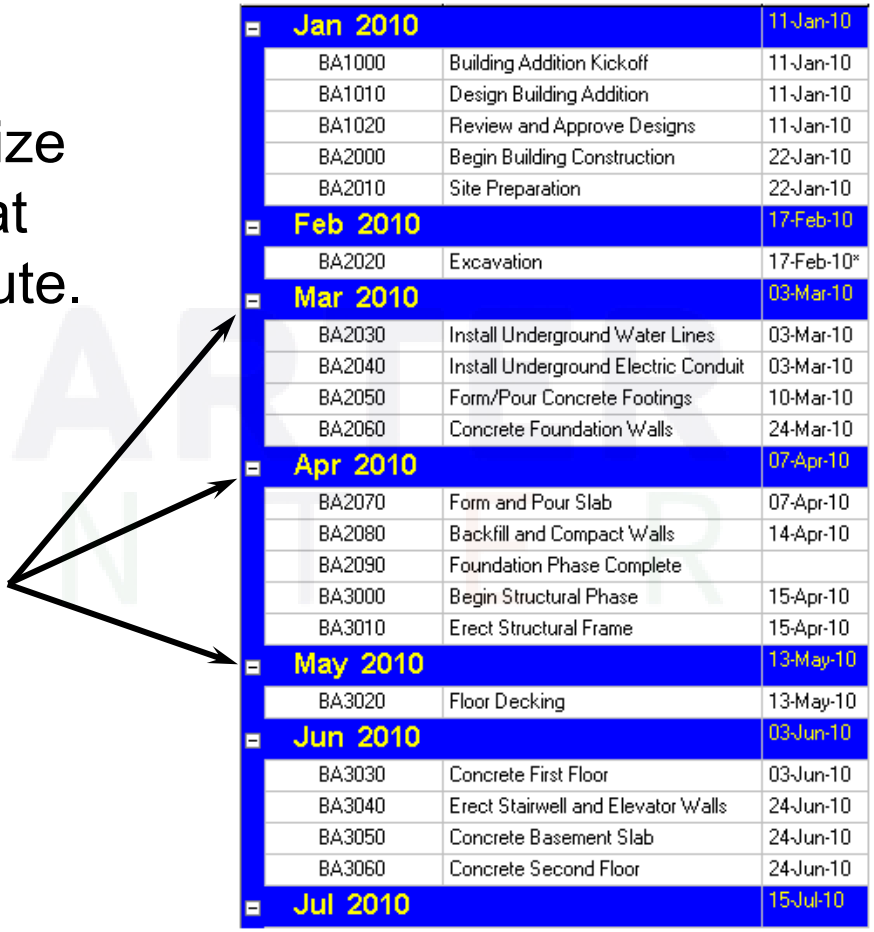
Objectives

After completing this lesson, you should be able to:

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

Grouping

- A flexible way to organize data into categories that share a common attribute.
- Can be used to create customized layouts.
- Organized by grouping bands.



Jan 2010		11-Jan-10
BA1000	Building Addition Kickoff	11-Jan-10
BA1010	Design Building Addition	11-Jan-10
BA1020	Review and Approve Designs	11-Jan-10
BA2000	Begin Building Construction	22-Jan-10
BA2010	Site Preparation	22-Jan-10
Feb 2010		17-Feb-10
BA2020	Excavation	17-Feb-10*
Mar 2010		03-Mar-10
BA2030	Install Underground Water Lines	03-Mar-10
BA2040	Install Underground Electric Conduit	03-Mar-10
BA2050	Form/Pour Concrete Footings	10-Mar-10
BA2060	Concrete Foundation Walls	24-Mar-10
Apr 2010		07-Apr-10
BA2070	Form and Pour Slab	07-Apr-10
BA2080	Backfill and Compact Walls	14-Apr-10
BA2090	Foundation Phase Complete	
BA3000	Begin Structural Phase	15-Apr-10
BA3010	Erect Structural Frame	15-Apr-10
May 2010		13-May-10
BA3020	Floor Decking	13-May-10
Jun 2010		03-Jun-10
BA3030	Concrete First Floor	03-Jun-10
BA3040	Erect Stairwell and Elevator Walls	24-Jun-10
BA3050	Concrete Basement Slab	24-Jun-10
BA3060	Concrete Second Floor	24-Jun-10
Jul 2010		15-Jul-10

Grouping

Jan 2010		27d
BA2010	Site Preparation	18d
BA1010	Design Building Addition	12d
BA1020	Review and Approve Designs	9d
BA2000	Begin Building Construction	0d
BA1000	Building Addition Kickoff	0d
Feb 2010		10d
BA2020	Excavation	10d
Mar 2010		25d
BA2060	Concrete Foundation Walls	10d
BA2050	Form/Pour Concrete Footings	10d
BA2040	Install Underground Electric Conduit	5d
BA2030	Install Underground Water Lines	5d
Apr 2010		26d
BA3010	Erect Structural Frame	20d
BA2070	Form and Pour Slab	5d
BA2080	Backfill and Compact Walls	1d
BA3000	Begin Structural Phase	0d
BA2090	Foundation Phase Complete	0d
May 2010		14d
BA3020	Floor Decking	14d
Jun 2010		30d
BA3060	Concrete Second Floor	15d
BA3030	Concrete First Floor	15d
BA3050	Concrete Basement Slab	10d
BA3040	Erect Stairwell and Elevator Walls	10d
Jul 2010		17d
BA5080	Insulation and Built-up Roofing	10d
BA5070	Brick Exterior Walls	7d
BA3070	Structure Complete	0d
BA5060	Close-In Phase Begins	0d
Aug 2010		18d

- Activities can be grouped:
  - By hierarchical fields (WBS, activity codes, project codes).
  - By data fields (dates, costs, Total Float, other numeric data).
- Can be used to:
  - Quickly view subtotal data in grouping bands.
  - View summary bars in the Gantt Chart.
  - Summarize data for reporting purposes.

Sorting

- Determines the sequence in which activities are listed within grouping bands.
- Based on data item, you can sort:
  - Alphabetically
  - Numerically
  - Chronologically
- Click on column header to quickly sort ascending, descending

Jan 2010	11-Jan-10
BA1000	11-Jan-10
BA1010	11-Jan-10
BA1020	11-Jan-10
BA-ADMIN	11-Jan-10
BA2000	22-Jan-10
BA2010	22-Jan-10
BA6040	22-Jan-10
BA5000	25-Jan-10*
BA1030	28-Jan-10
BA5010	28-Jan-10
Feb 2010	02-Feb-10
BA1040	02-Feb-10
BA6050	03-Feb-10
BA4020	16-Feb-10
BA6060	16-Feb-10
BA2020	17-Feb-10*
BA4030	19-Feb-10
BA4040	23-Feb-10
BA5020	24-Feb-10
BA6070	24-Feb-10
BA4050	24-Feb-10
Mar 2010	01-Mar-10

Sorted by Start date Ascending

Jan 2010	11-Jan-10
BA5010	28-Jan-10
BA1030	28-Jan-10
BA5000	25-Jan-10*
BA6040	22-Jan-10
BA2010	22-Jan-10
BA2000	22-Jan-10
BA-ADMIN	11-Jan-10
BA1020	11-Jan-10
BA1010	11-Jan-10
BA1000	11-Jan-10
Feb 2010	02-Feb-10
BA4050	24-Feb-10
BA6070	24-Feb-10
BA5020	24-Feb-10
BA4040	23-Feb-10
BA4030	19-Feb-10
BA2020	17-Feb-10*
BA6060	16-Feb-10
BA4020	16-Feb-10
BA6050	03-Feb-10
BA1040	02-Feb-10
Mar 2010	01-Mar-10

Sorted by Start date Descending

Filtering

- Determines which activities are displayed in a layout.
- Enables you to create customized layouts that:
  - Limit the number of activities displayed.
  - Help you focus on a particular group of activities (critical activities, for example).

Jan 2010		-12d
BA-ADMIN	Project Administration	-12d
BA1000	Building Addition Kickoff	-12d
BA1010	Design Building Addition	-12d
BA1020	Review and Approve Designs	-12d
BA1030	Assemble Technical Data for Heat Pump	21d
BA2000	Begin Building Construction	-12d
BA2010	Site Preparation	-12d
BA5000	Assemble Brick Samples	21d
BA5010	Review and Approve Brick Samples	30d
BA6040	Assemble and Submit Flooring Samples	1d
Feb 2010		27d

Filter

Jan 2010		-12d
BA1000	Building Addition Kickoff	-12d
BA1010	Design Building Addition	-12d
BA1020	Review and Approve Designs	-12d
BA2000	Begin Building Construction	-12d
BA2010	Site Preparation	-12d
Feb 2010		-12d

Question

True or False: Grouping, sorting, and filtering can all be included in the same layout.

CHARTER CENTER

SECTION III

Assigning Resources and Baselining

Understanding Roles and Resources

Assigning Roles and Resources

Optimizing the Project Plan

Baselining the Project Plan

Importing and Exporting Data

12

Understanding Roles and Resources

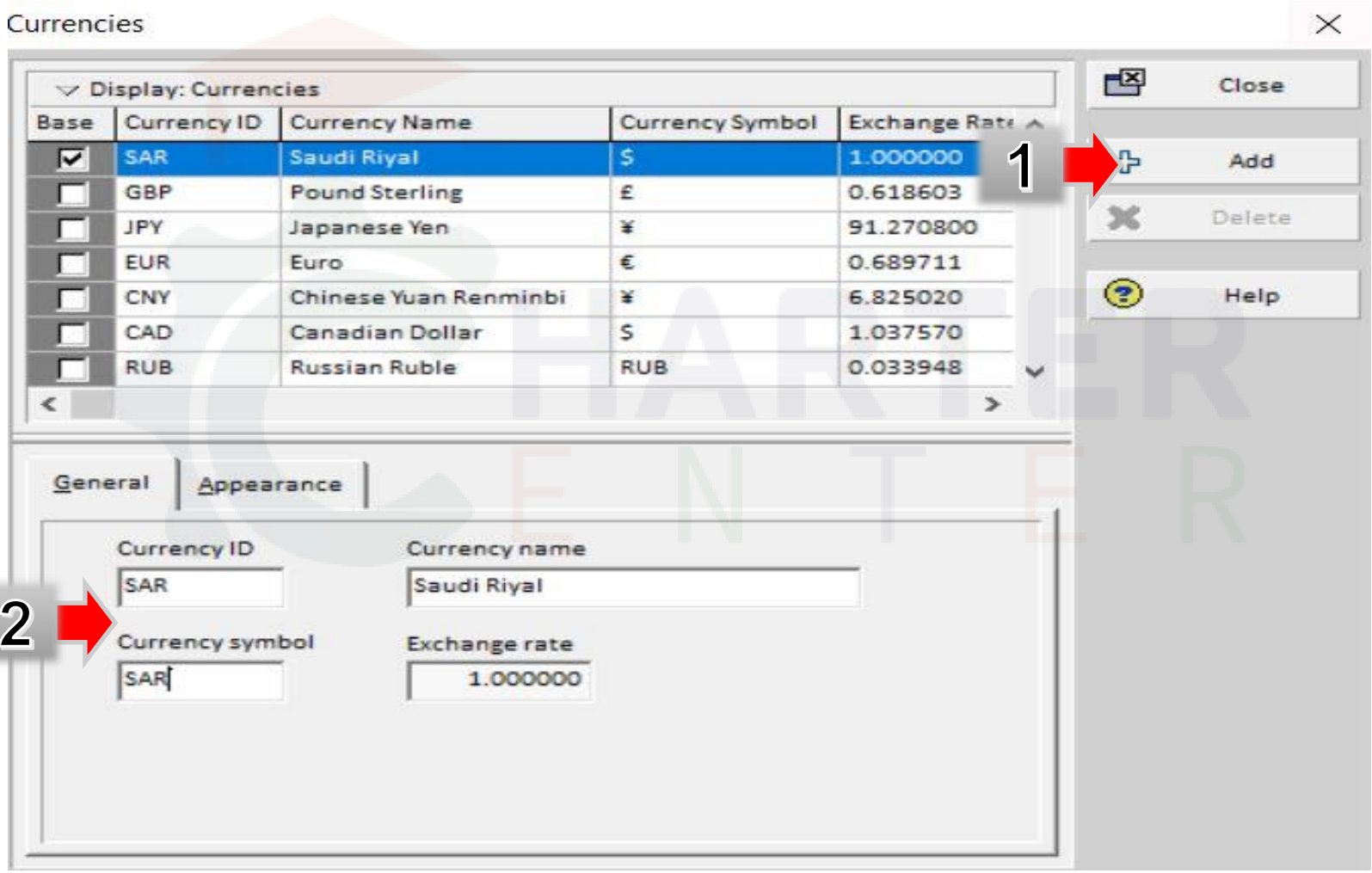
Objectives

After completing this lesson, you should be able to:

- Define Currencies.
- Define Unite of Measure.
- Describe resources.
- Identify the differences between labor, nonlabor, and material resources.
- View the resource dictionary.

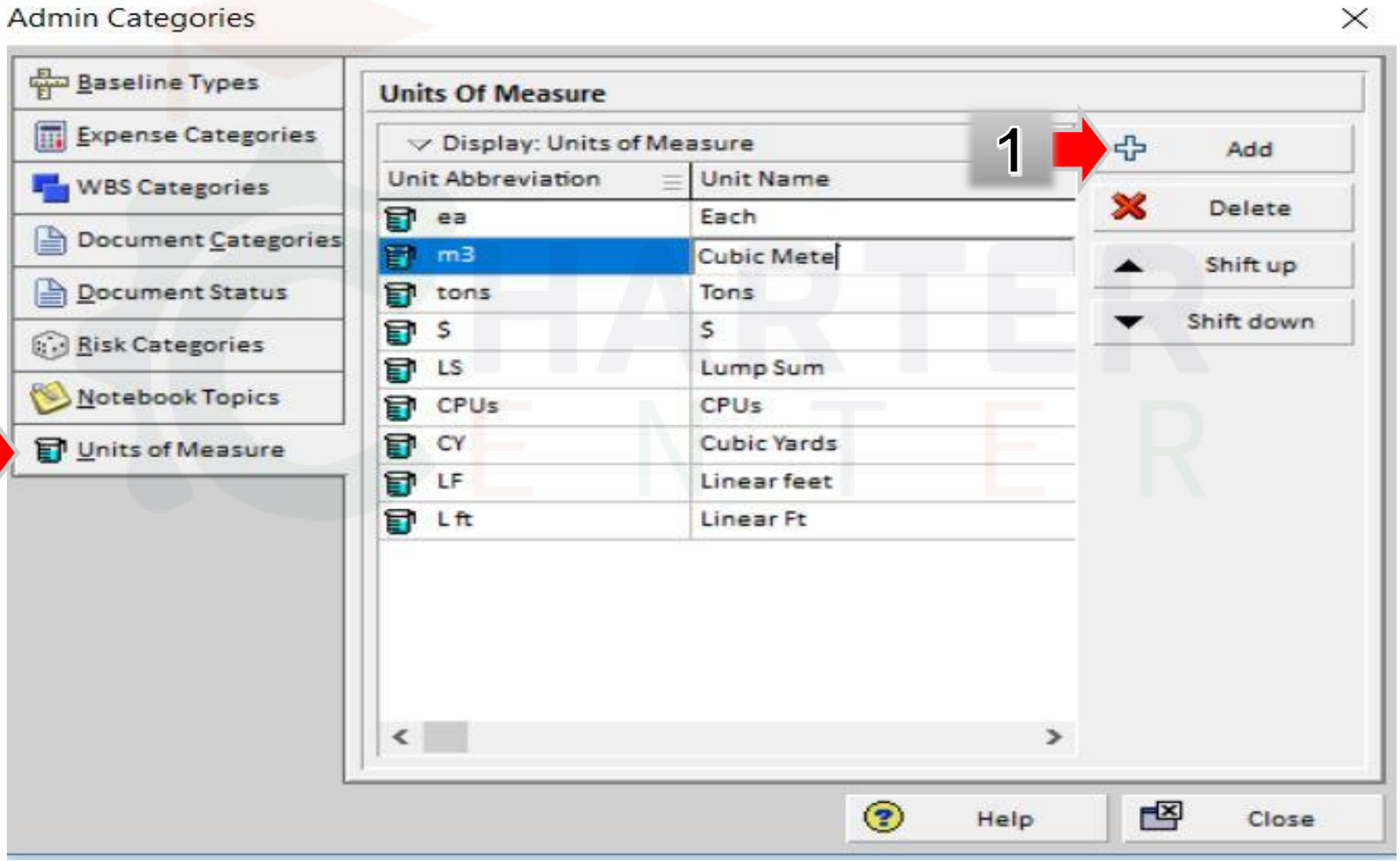
Currencies

- Form **Admin** Menu Select **Currencies.**



Currencies

- Form **Admin** Menu Select **Admin Categories**



Roles and Resources

Role: A job title or skill needed to complete an activity.

Resource: The specific individual used to complete the activity.

Project Manager

Tim Harris

Roles and Resources

- Both are enterprise data – available for use across all projects.
  - Both are usually defined by the application administrator.
- Roles are associated with resources according to their function.
  - Each resource can also be assigned one primary role, which defines the resource's core skill or responsibility in the organization.
- Roles can be placeholders in activity assignments until specific resources are assigned to do the work.

Roles and Resources

Resource: Paul Kim

Roles: Civil Engineer, Cost Engineer, Planning Engineer

Primary Role: Civil Engineer

Relationship Between Roles and Resources

ROLES → / ↓ RESOURCES	Project Mgr	Civil Engineer	Plan Engineer	Cost Engineer
Tim Harris	★			
Oliver Rock		✓		★
Paul Kim		★	✓	✓

★ PRIMARY ROLE

✓ ROLE

Resource Types

Labor (people)

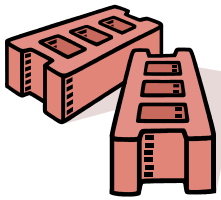
- Resources and roles
- Measured in units of time.
- Generally re-used between activities/projects.
- Recorded in terms of price/unit (for example, $50/hour).

Nonlabor (equipment)

- Measured in units of time.
- Recorded in terms of price/unit (for example, $500/hour).

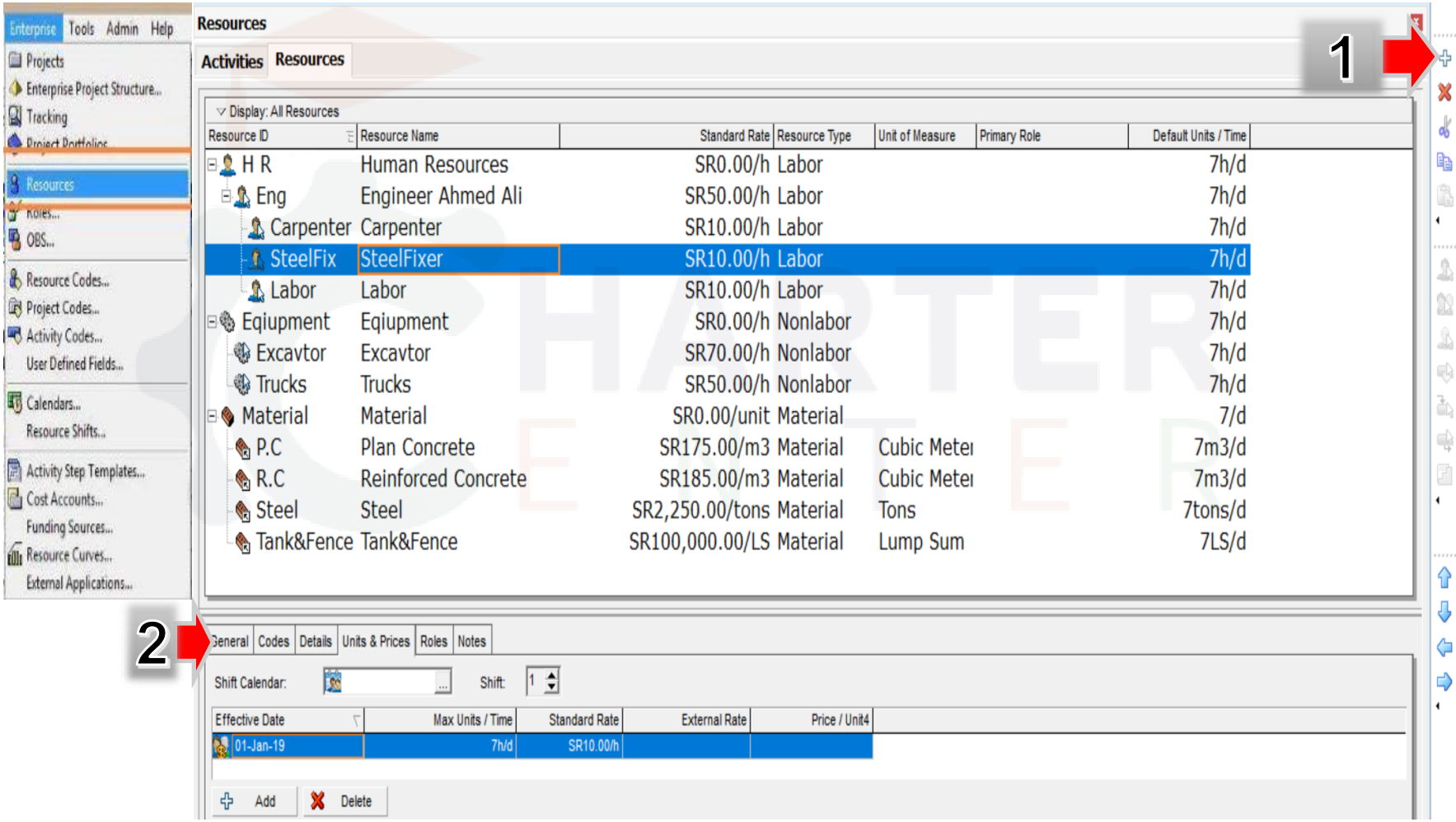
Material (consumables)

- Measured in units *other* than time (for example, $5/sq.ft.).



Define Resource

- Form **Enterprise** Menu Select **Resource.**



13

Assigning Roles and Resources

Objectives

After completing this lesson, you should be able to:

- Assign roles to an activity.
- Assign rates on roles.
- Assign resources to an activity by role and directly from the resource dictionary.
- Adjust Budgeted Units/Time for a resource.
- Assign expenses to activities.

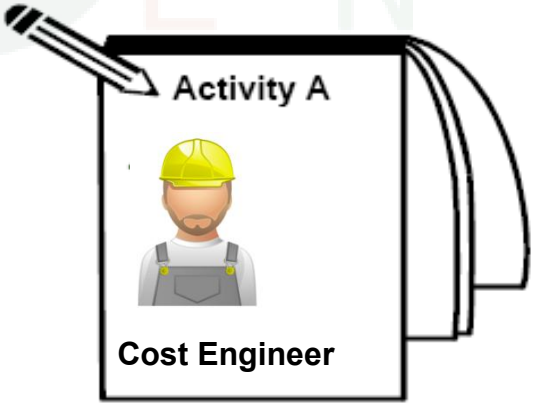
Assigning Roles

Step 1
Roles Dictionary

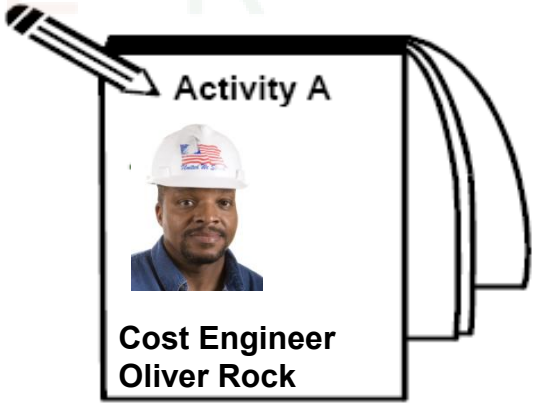
Project Manager

Cost Engineer

Step 2
Assign Role to Activity



Step 3
Replace Role with Resource



Assigning Resources

Assign by role:

- At least one role must be assigned to an activity.
- Replace role assignment with a specific resource.
- Replace single role assignments individually or multiple role assignments simultaneously.

Assign directly from the resource dictionary:

- Labor resources without role assignments.
- Required method when assigning nonlabor and material resources.

Steps for Resource Management

1. Define resource in the resource dictionary.

Resource: Oliver Rock

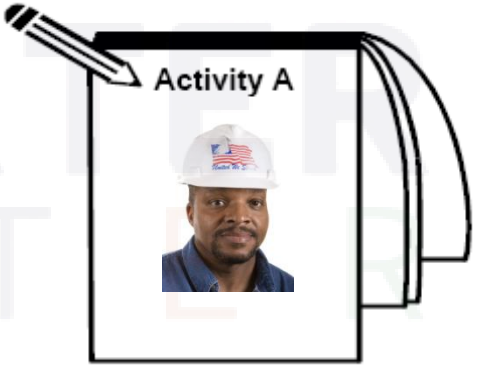
Roles: Cost Engineer, Purchasing

Primary Role: Cost Engineer

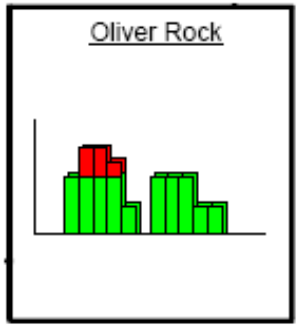
Max Units/Time: 8h/d

Rates: Commercial $32/h
GSA $29/h
Internal $26/h

2. Assign resource to activities.



3. Analyze resources and costs.



Question

Which of the following is a benefit of assigning roles to activities?

1. Roles can act as placeholders until specific resources are assigned.
2. Roles can help project managers and resource managers identify appropriate resources for specific activities.
3. Roles can provide cost estimates and determine preliminary budget requirements during project planning.
4. All of the above

14

Optimizing the Project Plan

Objectives

After completing this lesson, you should be able to:

- Analyze schedule dates.
- Shorten a project schedule.
- Analyze resource availability.
- Resolve resource overallocation.
- Analyze project costs.

Project Constraints

Successful projects must balance multiple constraints:

- Scope
- Quality
- Schedule
- Budget
- Resources
- Risk

Analyzing Schedule Dates

- Finish date – Most important date in the schedule:
  - Compare the scheduled Finish date to the Must Finish By date.
  - If the scheduled Finish date is later than the Must Finish By date, the project must be shortened.
  - Finish date is calculated; it cannot be edited.
- Project deliverables should also be scheduled to finish by the dates imposed by project sponsors.
  - Identify milestone dates and ensure that the schedule meets them.

Shortening the Project

- Focus on critical activities.
- Refine duration estimates.
  - Break down long activities.
  - Assign additional resources to reduce duration.
- Use relationships to overlap activities.
- Apply/modify constraints.
- Change calendar assignments.
  - Put critical activities on a longer workweek.
  - Add exceptions to non-work time.

Analyzing Resource Allocation

- Determine which resources are overallocated.
- Identify activities contributing to resource overallocation.
- Remove overallocation from appropriate resources.
  - Replace the overallocated resource with another available resource.
  - Increase the resource's workweek.
  - Increase the hours/day that the resource works.
  - Assign additional resources to the activity.

Analyzing the Budget

- Review budgeted costs for individual activities, WBS elements, and the entire project.
- Confirm that costs are within budget.

15

Baselining the Project Plan

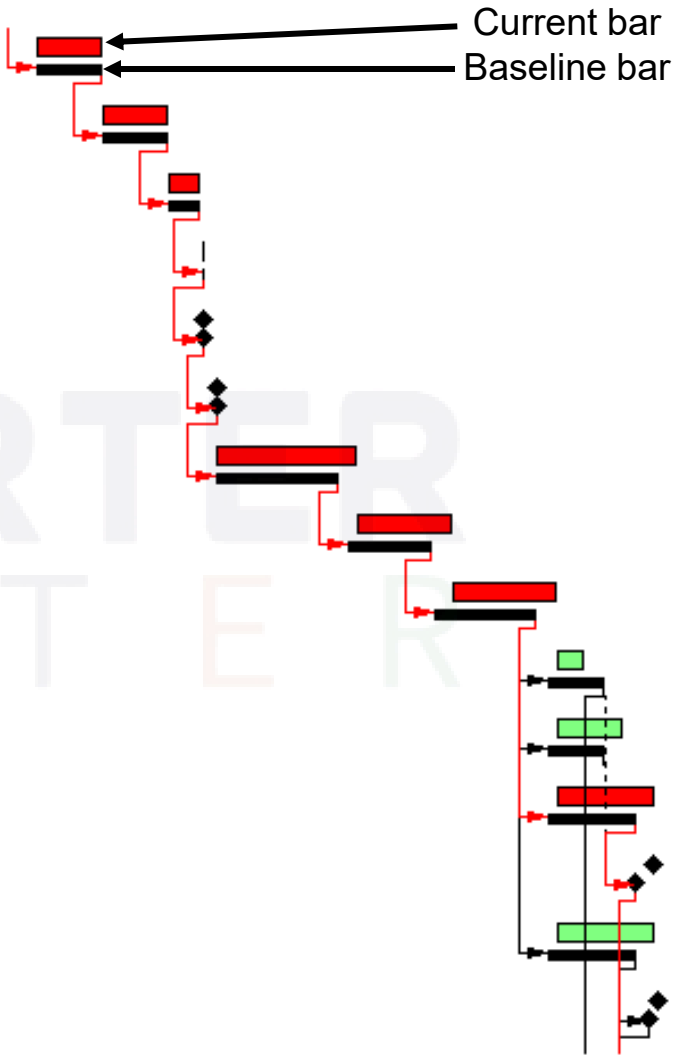
Objectives

After completing this lesson, you should be able to:

- Create a baseline plan.
- Display baseline bars on the Gantt chart.
- Modify the bars on the Gantt chart.

What is a Baseline?

- A copy of the project plan used as a basis for comparison when evaluating the progress of an updated project.
  - Create a baseline before updating a schedule for the first time.
- Provides a target against which to track a project's cost, schedule, and resource performance.



16

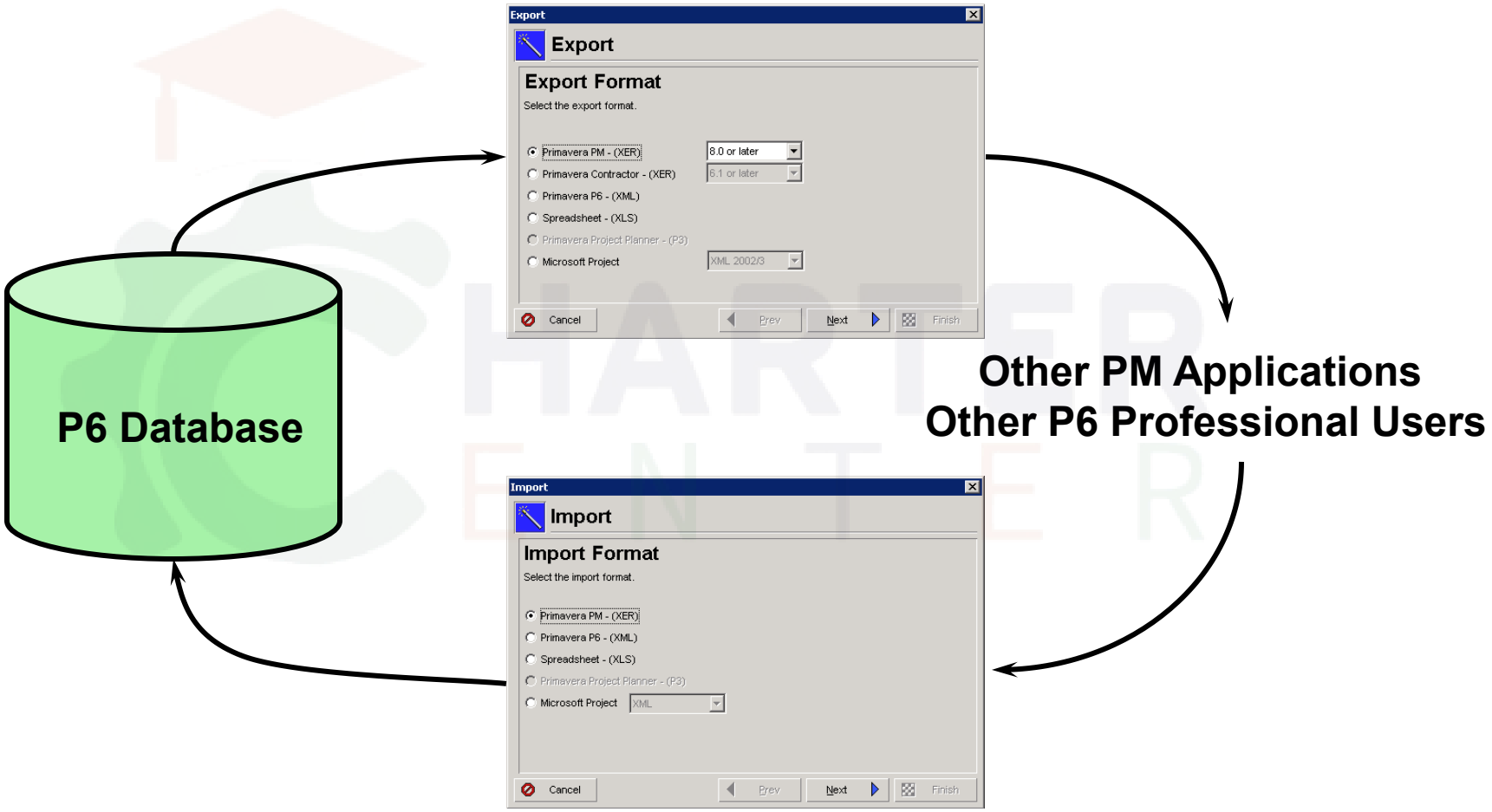
Importing and Exporting Data

Objectives

After completing this lesson, you should be able to:

- Describe the process of importing and exporting data.
- Export a project.
- Import a project.

Import / Export Wizards



Reasons to Import/Export Project Data

- Share project information with:
  - Other P6 EPPM users.
  - Users of other project management tools.
  - Your organization's human resource and accounting departments.
- Archive projects or create backups.
  - Single or multiple projects can be imported/exported at one time.
  - The Export wizard enables you to choose the format and data type (activities, resources, expenses, or complete projects) that you want to export.

Import/Export Formats

Primavera PM (XER)

- P6's proprietary format.
- Independent of database type used (Oracle or MS SQL).

Primavera PM (XML)

- Share project information between P6 EPPM databases.
- Compatible with Microsoft Project 2002 or later.

Spreadsheet (XLS)

- Compatible with Excel and other spreadsheet applications.

Primavera Project Planner (P3)

- Share project information with Oracle Primavera Project Planner version 3.x.

Microsoft Project (MPX, XML)

- Integrate with Microsoft Project and other third-party tools.

CHARTER CENTER

SECTION IV

Project Execution and Control

Methods of Applying Progress

Executing the Project Plan

Reflection Projects

Analyzing the Updated Project

Reporting Performance

17

Methods of Applying Progress

Objectives

After completing this lesson, you should be able to:

- Describe methods for applying progress to a project.

Updating a Project

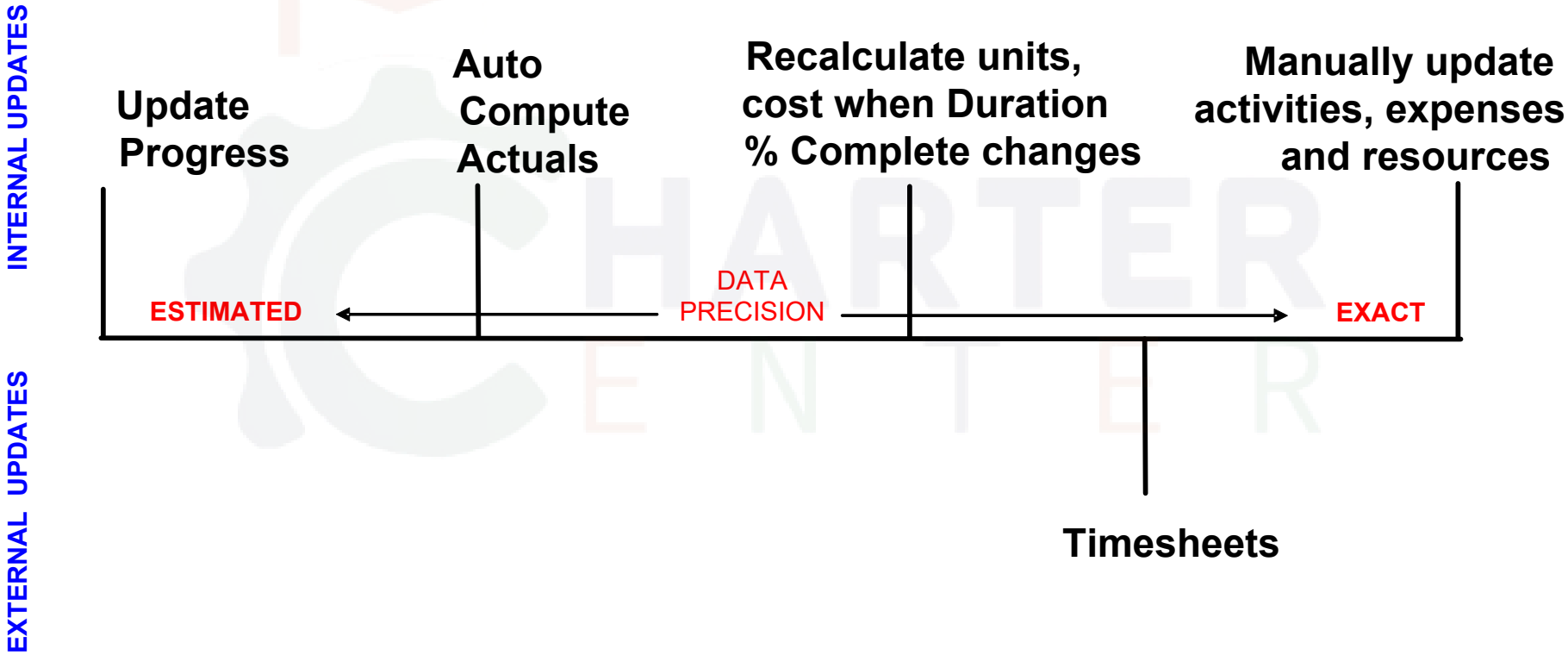
- After a project has started, actual project data should be updated regularly.
- Updates can be monthly, weekly, daily, or hourly depending on project length and the precision of project control.
- A variety of methods can be used for updating the project.
- A single method need not be used exclusively. Multiple updating methods can be used within a single project.

Updating a Project

Consider these factors when deciding on a method:

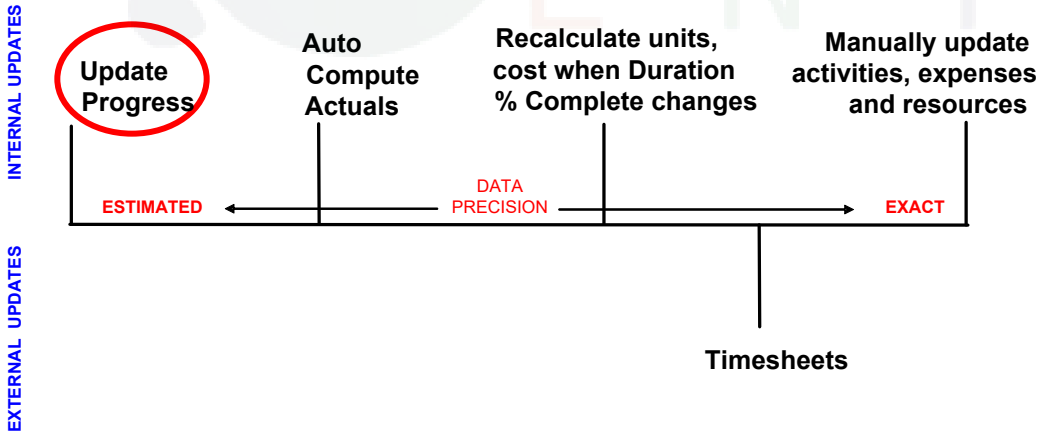
- Data precision: The degree to which project data is exact (based on manual data entry) or estimated (based on automated calculations).
  - Is project data entered manually?
  - Is project data automatically calculated and applied?
- Internal or external: The extent to which individuals other than the project manager are empowered to update project data.
  - Do other persons – resources, for example – update project data?

Spectrum of Updating Methods



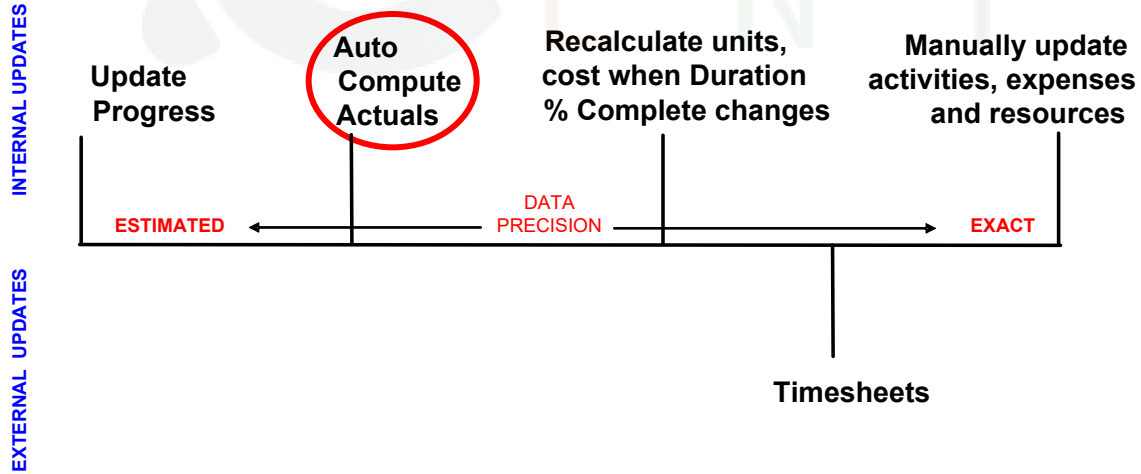
Update Progress

- Updates activity dates, expenses, and resource utilization according to project plan
- Internal update
- Data precision: Estimated



Auto Compute Actuals

- Updates activity dates, expenses, and resource utilization according to project plan – however, enables you to select which elements are computed automatically
- Internal update
- Data precision: Estimated

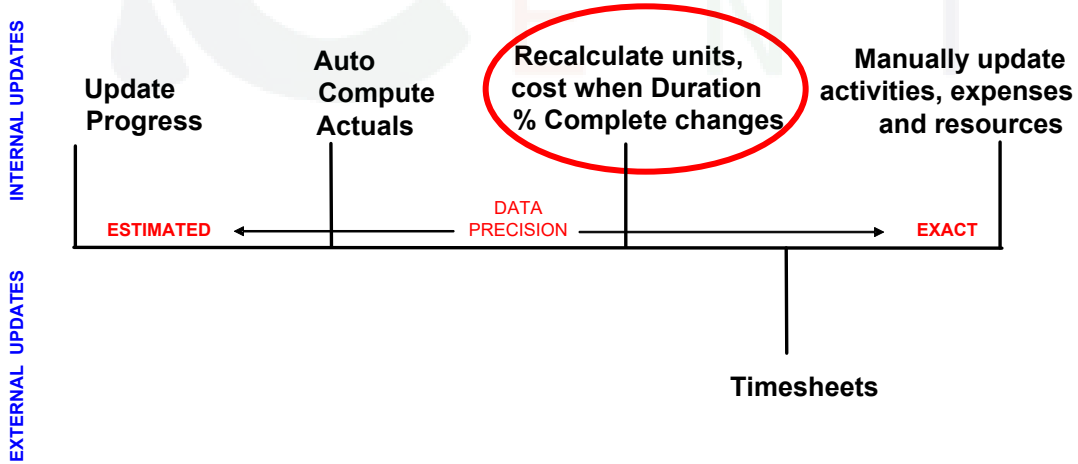


Auto Compute Actuals

- Values are computed based on element you select for auto compute:
  - If activity is selected, resources and expenses also automatically updated.
  - If just resource or expense is selected, only those elements are automatically updated.
- Doesn't affect successor activities outside of status period until project is scheduled.

Recalculate Units, Cost When Duration % Complete Changes

- Project-level setting computes units based on Duration % Complete
- Internal update
- Data precision: Units and costs estimated based on exact Duration % Complete

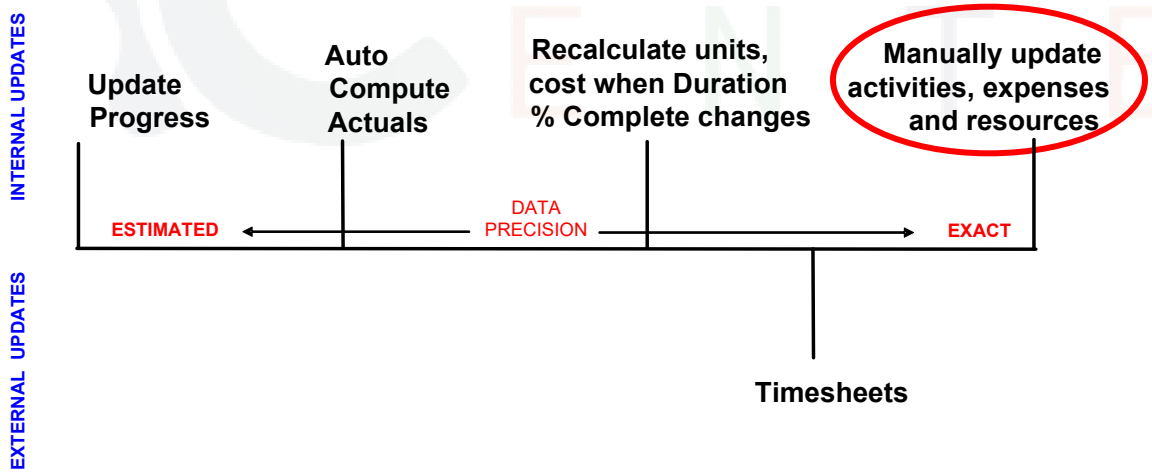


Recalculate Units, Cost When Duration % Complete Changes

- Based on Budgeted Units/Time, application calculates Actual Units and subtracts from Budgeted Units
- Example: 10-day activity with 80 Budgeted Units (8 h/d)
  - 2 days progress (Duration % Complete = 20%)
  - Actual Units automatically recalculated to 16h
  - Remaining Units automatically recalculated to 64h

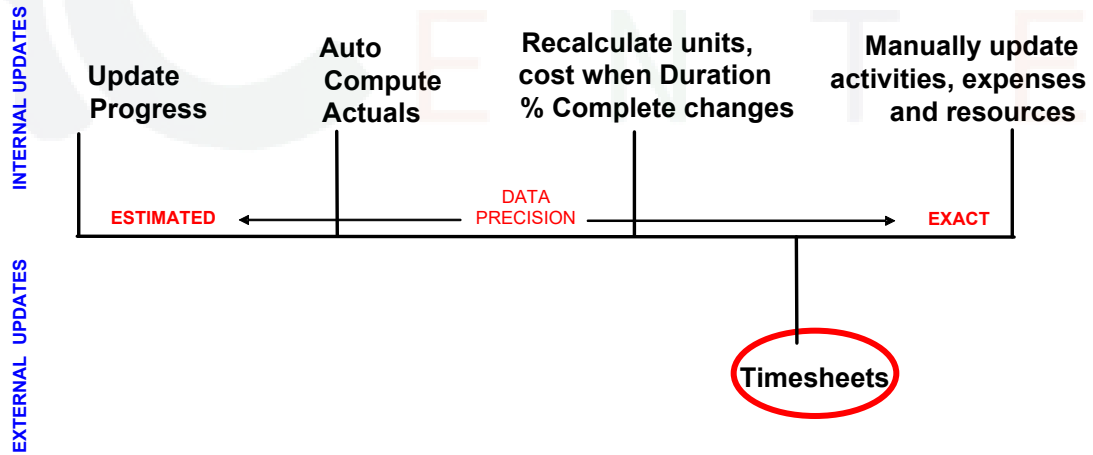
Manually Update Activities, Expenses, and Resources

- Manually enter values for each element.
- Internal update
- Data precision: Exact



Timesheets

- Resources record hours worked.
- Manager approves / rejects timesheets and then applies actuals
- External update
- Data precision: Exact



Timesheets

- Resources record hours worked against activities.
- Primary resource also can mark activities started or finished and update Remaining Duration.
- After approving / rejecting timesheets, manager applies actuals.
  - Only statused activities are recalculated.
  - Does not affect activities not in the status period.
  - Activities within the status period that are not progressed are pushed out to new data date.

Delegating Status Updates

Project updates can be delegated to external resources, such as subcontractors. Methods include:

- Reflection project
  - Reflection project is updated by subcontractor, resource, or individual designated as Activity Owner.
  - Can status activities, update resource assignments
  - Project manager has ability to view and then approve/reject updates before merging reflection project into source project.
  - Available in P6 Professional only.
- Import updated project
  - Copy of project updated by another individual and then imported.

Questions

- Which update method(s) do you use?
- What are advantages and disadvantages?

18

Executing the Project Plan

Objectives

After completing this lesson, you should be able to:

- Use Progress Spotlight.
- Update the status of completed activities and activities in progress.
- Reschedule the project.

Updating a Project

Once a project has started, actual activity information should be updated at regular intervals.

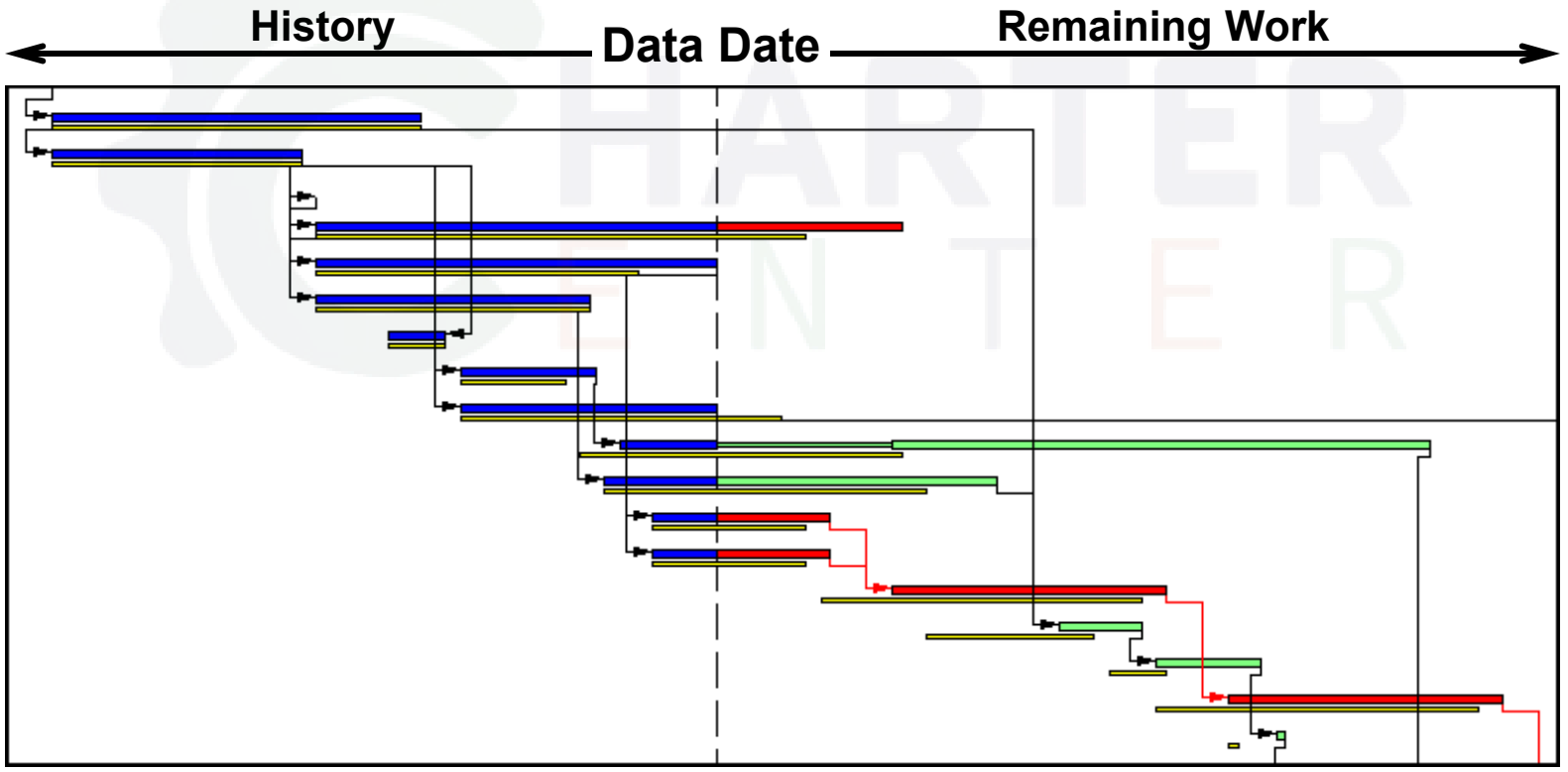
- Schedule dates and durations

- Resource usage

- Expenses

Data Date

The data date is the date up to which actual performance data is reported and the date from which future work is scheduled. The data date always starts at the beginning of the day.



The Updating Process

Standard project update procedures should be established, including how data is collected and how often it is updated.

- Create a baseline plan (optional).
- Identify the new data date.
- Enter activity progress.
- Report resource use and costs to date.
- Use Suspend and Resume dates as necessary.
- Reschedule using the new data date.

19

Reflection Projects

Objectives

After completing this lesson, you should be able to:

- Create a reflection project.
- Merge changes from reflection project into source project.

Reflection Projects

A copy of a project used for updating or to conduct what-if analysis.

- Team members or other P6 Professional users can update status of activities in which they are designated Activity Owner.
- Review and decide which changes to merge into the source project.
- What-If status.
- Baselines in the source project are copied to the reflection project.
  - Enables you to convert reflection project into active project with baseline data in place.

20

Analyzing the Updated Project

Objectives

After completing this lesson, you should be able to:

- Analyze schedule dates, resource availability/allocation, and project costs.
- Identify areas where the project is falling behind schedule or exceeding planned costs.
- Make changes necessary to address variances.
- Understand the importance of analyzing a project after every status update.

Steps for Analyzing the Updated Project

1. Perform a baseline analysis.
   - Compare current plan to baseline plan to analyze variances.
   - Compare calculated Finish and Must Finish By dates.
2. Make changes to restore important schedule milestones.
   - Focus on critical activities.
3. Perform a resource usage analysis.
   - Identify availability or allocation issues.
   - Adjust resource assignments to resolve issues.
4. Perform cost analysis.
   - Compare Total Cost to the Original Budget.

Questions to Determine How to Adjust a Schedule

- Can the Finish date of the project slip?
- Can the scope of the activity/project decrease?
- Were the planned hours over- or under-estimated?
- Can any relationships between activities be changed?
- Can additional resources be assigned?
- Can resources work overtime?

Shortening the Project

- Focus on critical activities.
- Refine duration estimates.
  - Break down long activities.
  - Assign additional resources to reduce duration.
- Use relationships to overlap activities.
- Apply/modify constraints.
- Change calendar assignments.
  - Put critical activities on a longer workweek.
  - Add exceptions to non-work time.

21

Reporting Performance

Objectives

After completing this lesson, you should be able to:

- Describe reporting methods.
- Run a schedule report.
- Create a resource report with the Report wizard.
- Create a time distributed report.
- Create a report using the current layout.

Methods for Reporting Performance

- Reports from layouts
- Reports from Report wizard
- Reports from Report editor

SECTION VI

Appendices

Creating Output

Managing Documents

Creating Output

Objectives

After completing this lesson, you should be able to:

- Customize the appearance of headers and footers.
- Insert and format the curtain and text attachment tools.
- Format the appearance of the data date.

Output Controls

P6 Professional offers functionality to enhance onscreen display and printed material:

- Formatting layouts for print
  - Headers, footers
  - Graphics
- Gantt chart
  - Curtain tool
  - Text tool
  - Customized data date line

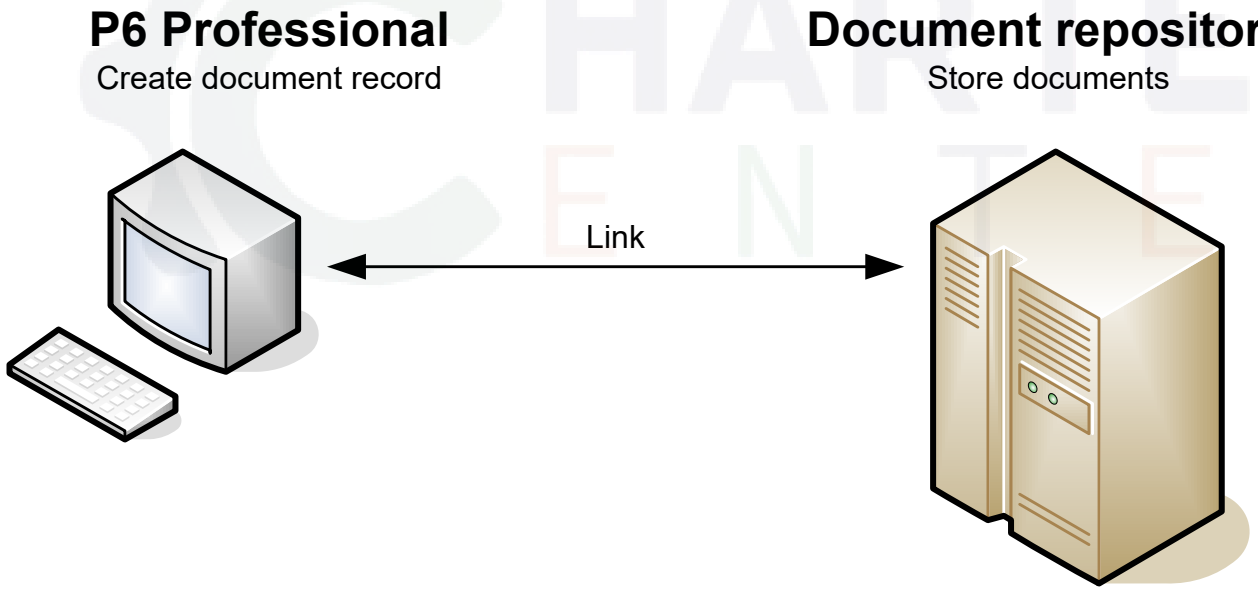
Project Documents

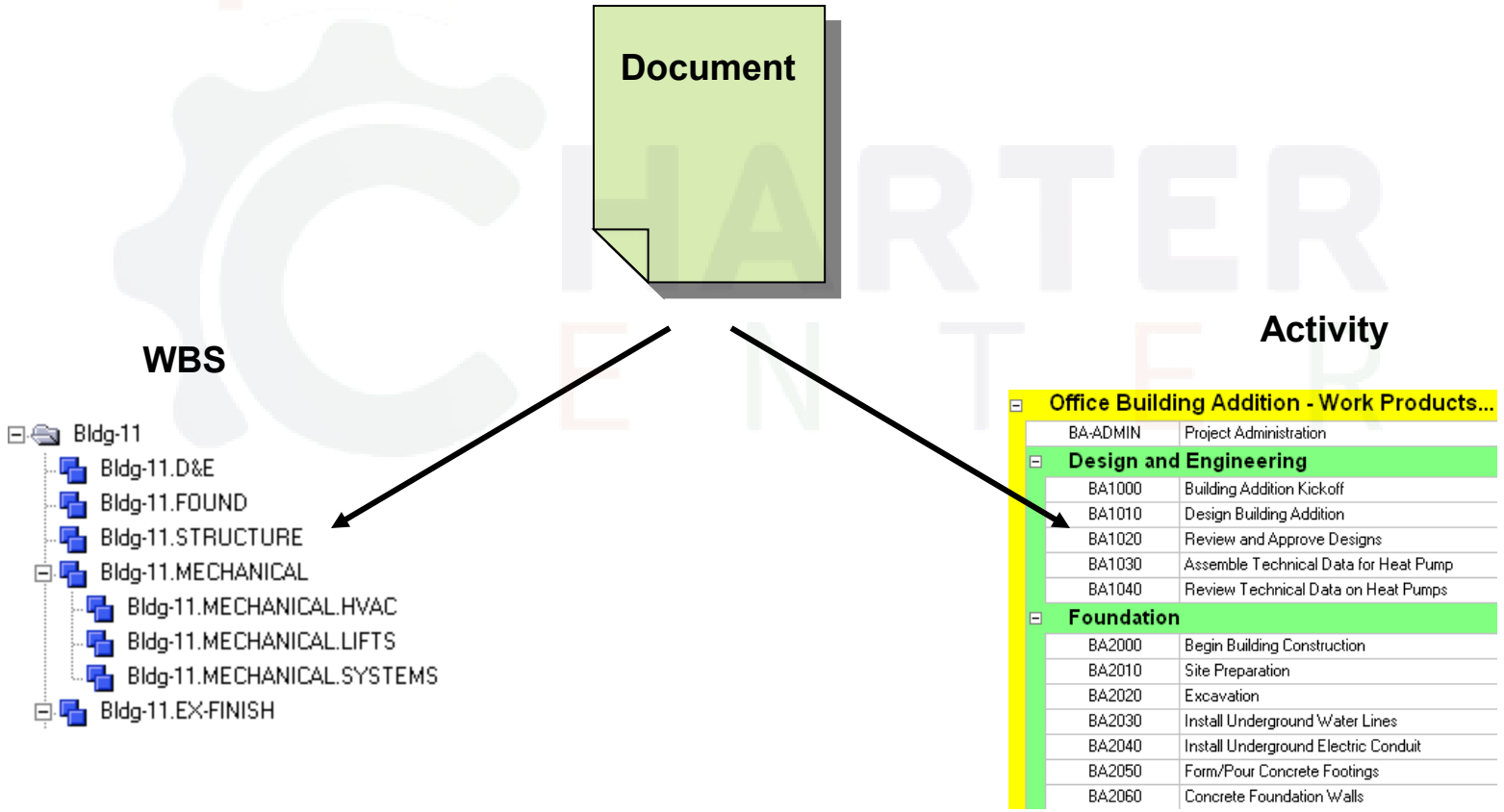
Project documents can be classified as either a work product or a reference document:

- **Work product** – A document that is a project or activity deliverable and will be turned over to the project's end user or customer.
- **Reference document** – A document that can be referenced by a project participant for the purpose of providing standards or guidelines for performing work.

Linking Documents

Documents are not stored in the P6 Professional database. Instead, create a document record and then link to the document source.



Assigning Documents

Project document can be assigned to a WBS element or activity.