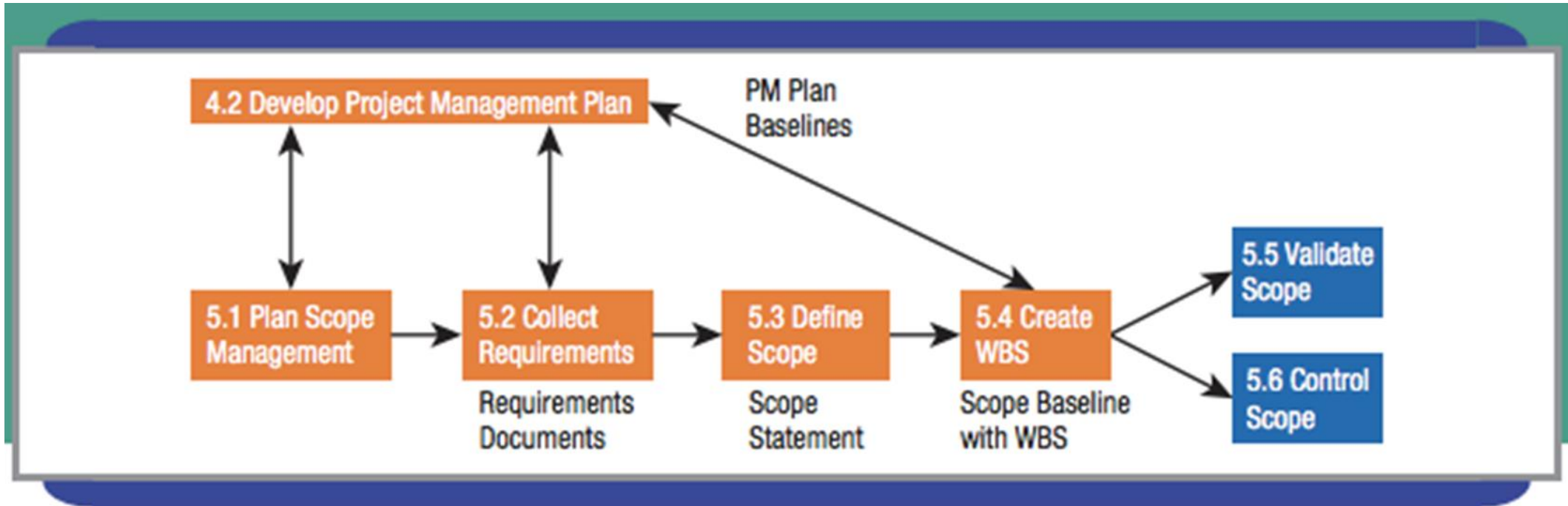


Scope Planning

Chapter 7 Scope Planning



Web Intelligence Solutions from Teradata

“An effective scope management approach fosters open communications and sound decision making to ensure all parties get the business value expected from the project”

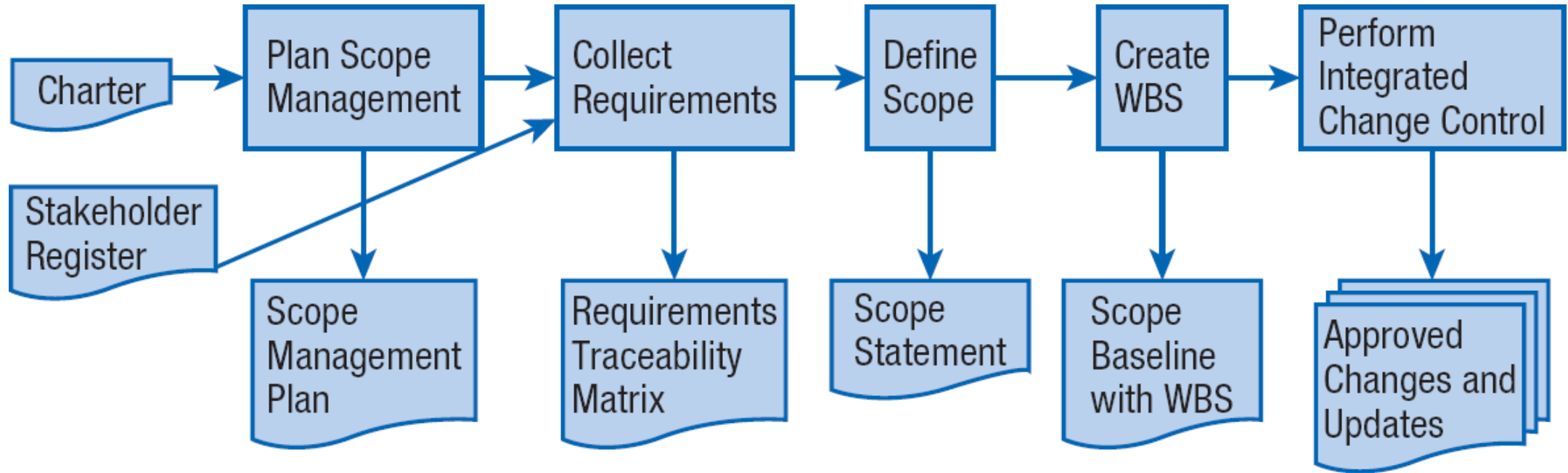
Mike Van Horn, Teradata

Scope Planning Processes

- Plan Scope Management
- Collect project requirements
- Define project scope
- Create work breakdown structure (WBS)
- Establish change control

Flow of Scope Planning

SCOPE PLANNING FLOW



Plan Scope Management

Plan scope management – the process of developing a plan that includes the total scope of what needs to be done and what is excluded from the project; implementation and validation of the scope; and how to control deviations from the scope statement.

Total scope = product scope + project scope

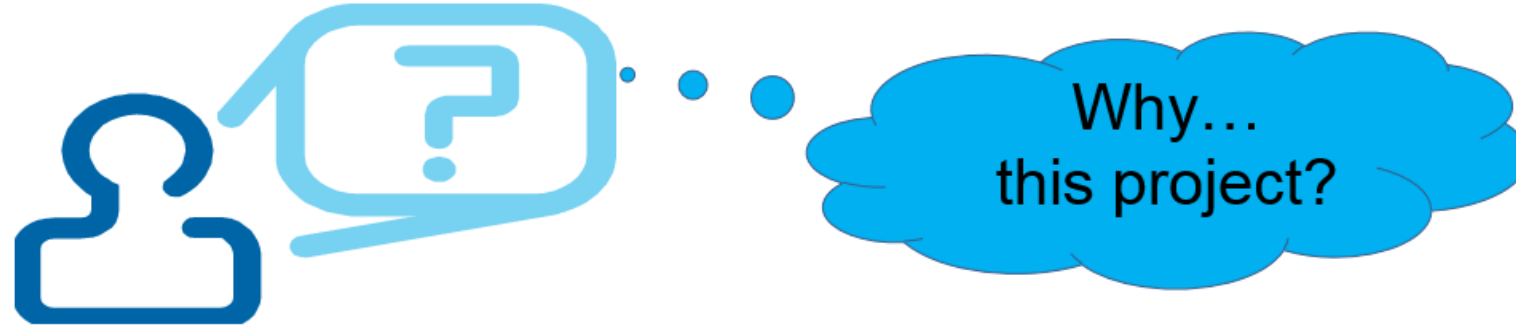
Product scope – outputs the team will deliver to its customers

Project scope – the work needed to be performed in order to deliver the project's outputs

Collect Requirements

Make sure the project team is absolutely clear on the project objectives!

Requirement– a condition or capability needed by a user to solve a problem or achieve an objective that satisfies a standard, specification, or any other formally-documented need.



Collect requirements – a systematic effort to understand and analyze stakeholder needs to define and document these needs and requirements with a focus on meeting project objectives.

Gather Stakeholder Input & Needs (1 of 3)

- Use voice of the customer techniques (VOC)
 - Ask questions
 - Place yourself in the customer's situation
- State customer desires in operational terms

Gather Stakeholder Input & Needs (2 of 3)

Common methods for obtaining & documenting requirements:

- Meetings with Stakeholders
- Interviews
- Focus Groups
- Questionnaires
- Surveys
- Observations
- Prototypes
- Industry Standards
- Reference Documents
- Market Analysis
- Competitive Analysis
- Client Requests
- Standard Specifications

Gather Stakeholder Input & Needs (3 of 3)

Seek a high-level description:

What do we not understand about the feature?

What is the business reason for the feature?

What is the impact of not providing this feature?

What action items need to be accomplished if we do this?

What impact will this have on other features of the project or elsewhere?

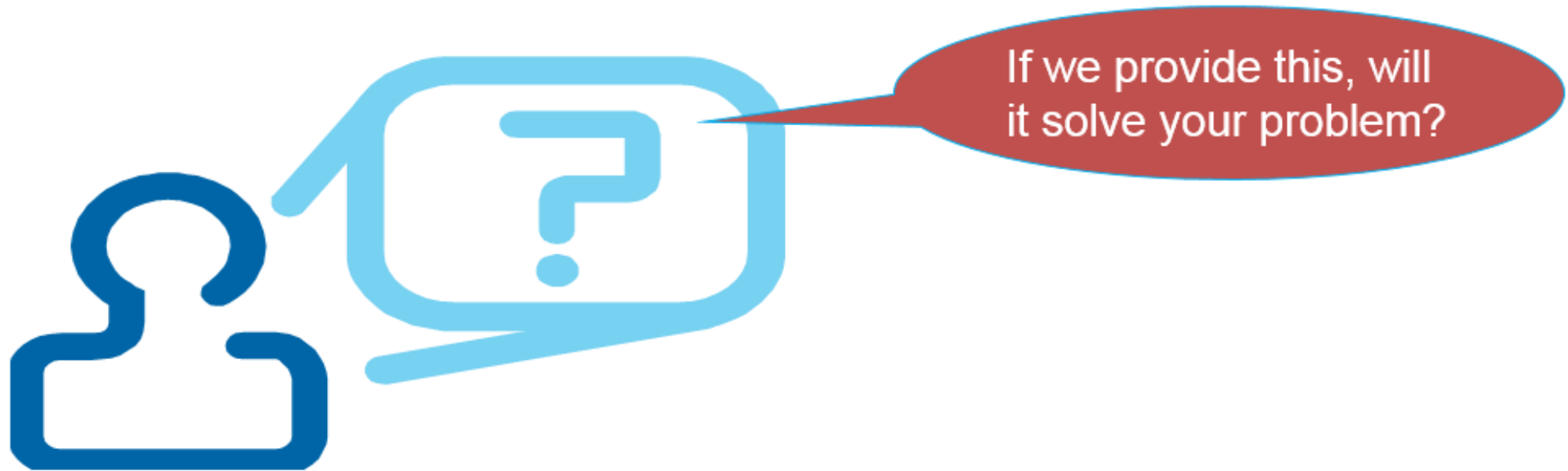
Define Scope

Define scope – the process of translation stakeholder needs and requirements into detailed specifications of the project outcomes & products

- Reasons to Define Scope
- How to Define Scope
 - List deliverables and acceptance criteria
 - Establish project boundaries
 - Create a project work statement

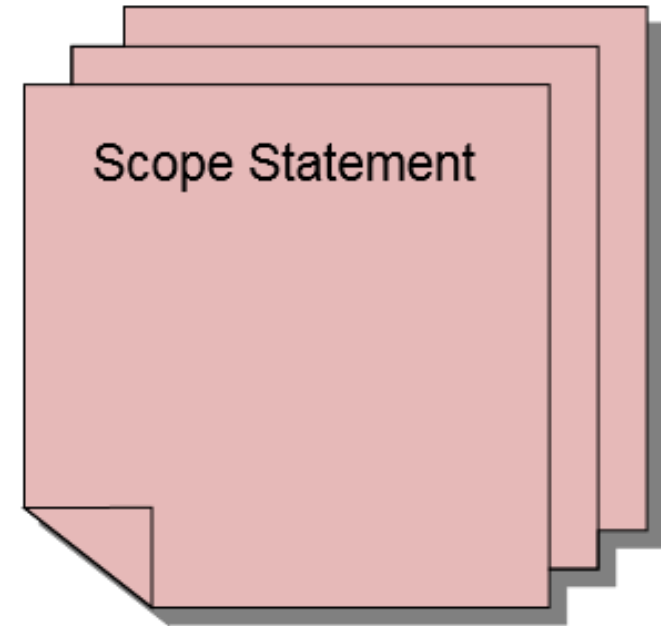
Reasons to Define Scope

- All other planning is based on the project scope
- Needed to preventing scope creep



How to Define Scope

- List project deliverables
 - Determine acceptance criteria
- Establish project boundaries
 - In scope versus Out of scope
 - Understand constraints
- Create a Scope Definition



Scope Statement (1 of 2)

ALTERNATIVE BREAKS PROJECT SCOPE STATEMENT

Scope Description: This project will educate groups of 12 students on social justice issues, send them out to perform direct service on the issues, and provide reflective opportunities throughout the process. **Key deliverables with acceptance criteria (product scope):**

KEY DELIVERABLES	ACCEPTANCE CRITERIA
Project plan	Secured housing, Agreement with organization
Fundraising	Adequate money
Education	Syllabus
Reorientation	Digital archives
Trip itself	Return safely, pre- and post-evaluation

Scope Statement (2 of 2)

Exclusions: No alcohol, drugs, or romances; ratio number of trips to student population

Constraints: Van holds only 12 people—11 students and one faculty or staff; number of highly qualified site leaders

Assumptions: Service builds active citizens; international trips add more value than expense; a trip is better with a staff or faculty member.

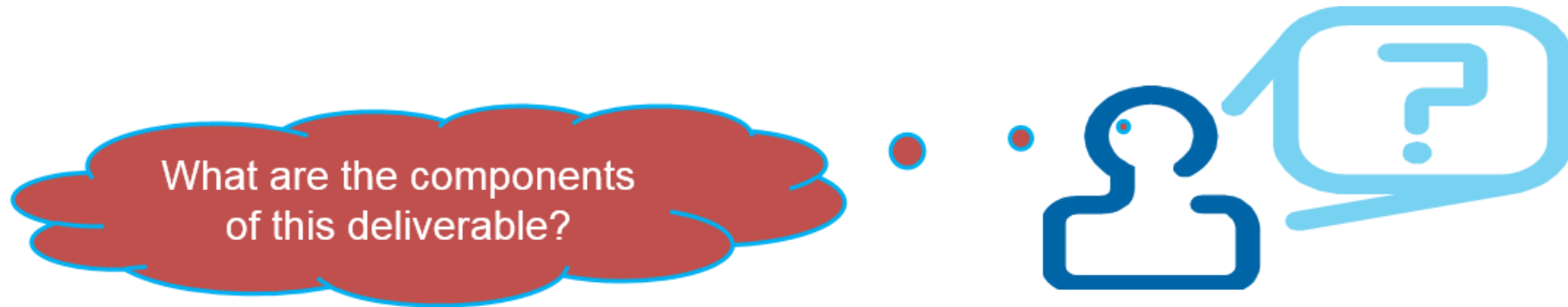
Source: Chris Bridges.

Work Breakdown Structure (WBS)

- What is the WBS?
- Why use a WBS?
- WBS Formats
- Work Packages
- How to Construct a WBS

What is the WBS?

- Tool to progressively divide project deliverables into smaller pieces
- Identifies all deliverables
- A framework for further planning, execution, and control



Define activity – a project planning process which identifies and determines specific actions to develop and deliver the project outcomes, such as products, services or results

Why use a WBS?

- Ensures all parts of project are considered
- Adds discipline and visibility to project planning
- Basis for planning schedule, resources, cost, quality, & risk
- Useful in determining where and why problems occur
- Helpful in project communications

WBS Formats

- Indented outline
- Organizational chart
- Free format

WBS - Indented Outline Format

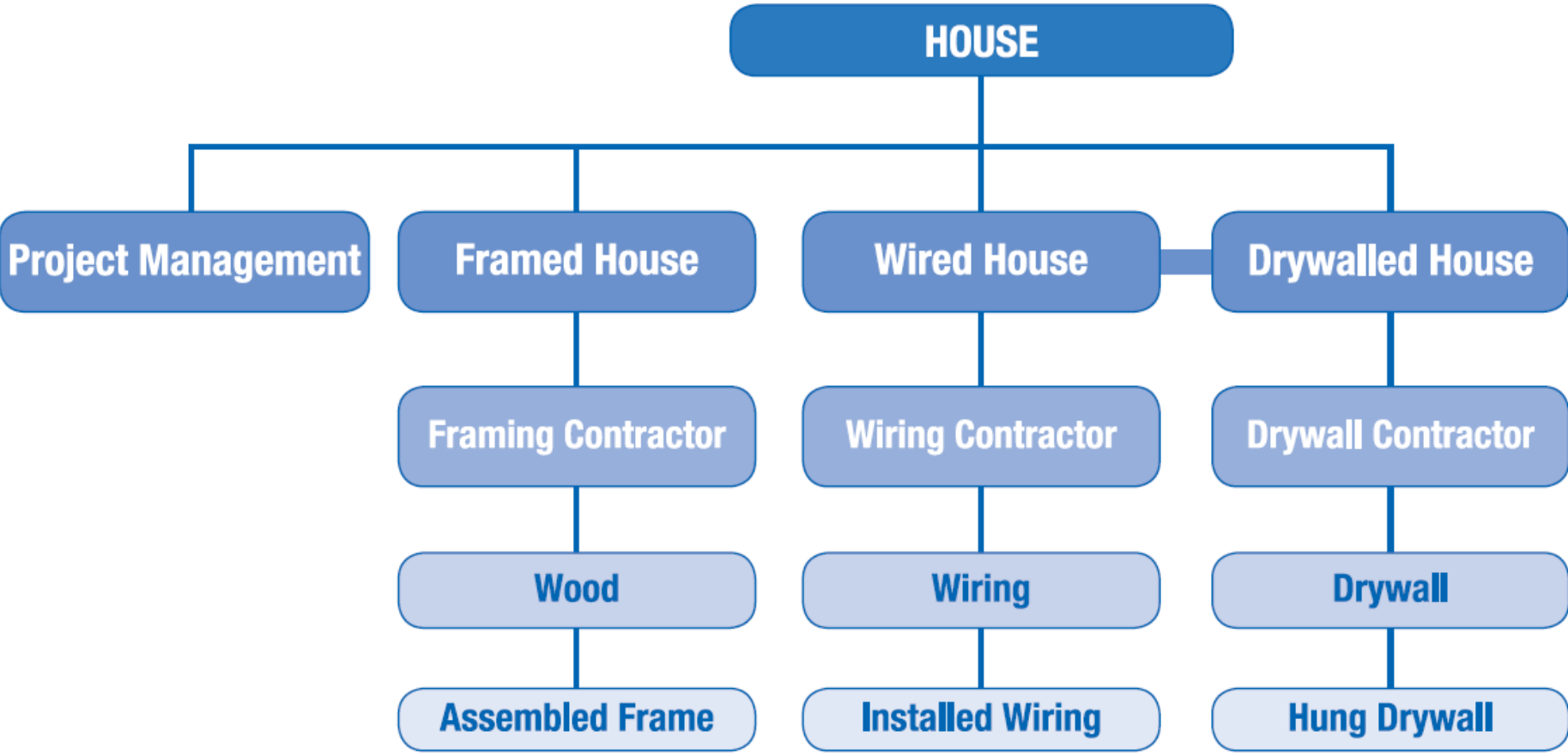
HOUSE WBS IN INDENTED OUTLINE FORMAT

HOUSE

- Project Management
- Framed House
 - Framing Contractor
 - Wood
 - Assembled Frame
- Wired House
 - Wiring Contractor
 - Wiring
 - Installed Wiring
- Drywalled House
 - Drywall Contractor
 - Drywall
 - Hung Drywall

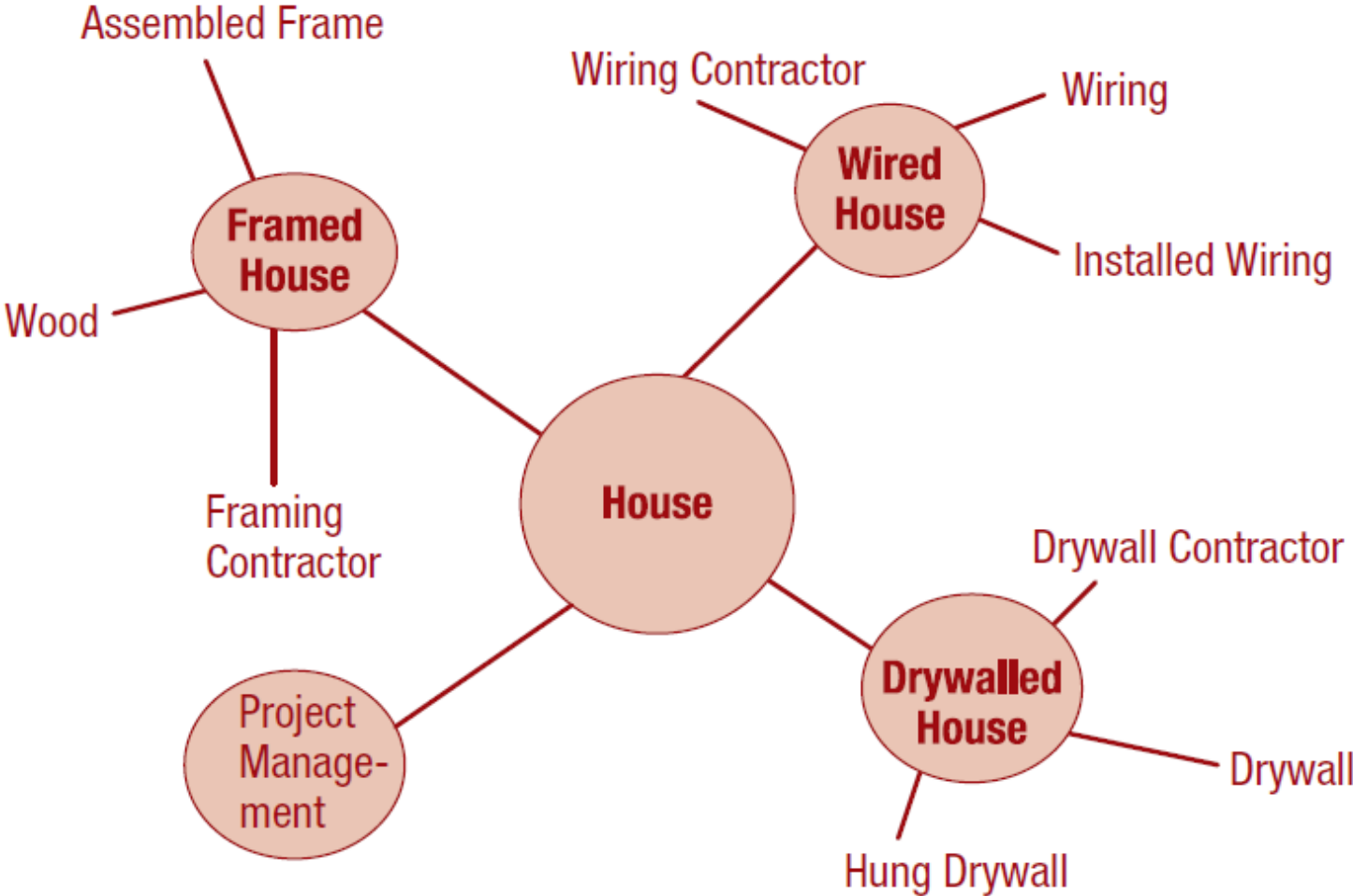
Useful when typing WBS
into scheduling software

WBS in Org Chart Format



- Familiar
- Easy to understand
- Flexible

WBS in Free Format



- Completely flexible
- Especially useful when project's structure is not initially clear

Work Packages (1 of 3)

- Lowest level of WBS
- Basis for subsequent planning & control

Work activities
are defined

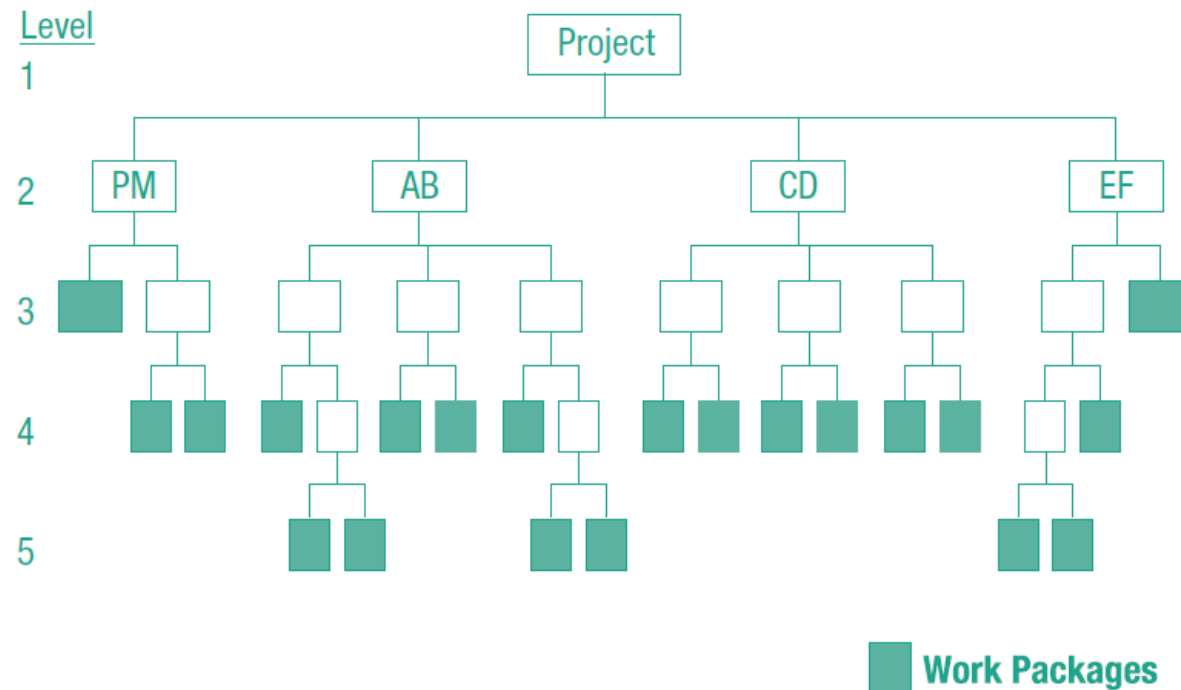
Schedule is
formed

Resources are
aligned

Control features
are developed

Work Packages (2 of 3)

WBS DEPICTING WORK PACKAGES



Source: Kevin P. Grant, UTSA.

Work package – deliverable at the lowest level of the WBS, for which cost and duration can be estimated & managed

Work Packages (3 of 3)

State succinctly in very few words (use adjectives, not verbs!)

WBS component – “an entry in the WBS that can be at any level.” **PMBOK® Guide**

WBS dictionary – document that provides detailed information about every work package, including deliverable details; activity; scheduling information; predecessor & successor activities; person responsible; resources required; & risks.

Work Package Detail

Project: Expansion to Full Scale Production		Work Package: Assembly Hardware Test	
Description: Plan, conduct, evaluate, and report results of tests to ensure proper function of the assembly hardware.		Deliverable(s): Test results summary. Input(s): Assembly hardware prototype	
Activities	Resource	Expected Duration	Cost
Prepare test plan	Production Analyst	8h	\$ 720
Conduct test	Production Analyst	16h	1,440
Evaluate test results	Production Analyst	6h	540
Prepare test results summary	Production Analyst	8h	720
			\$3,420

Source: Kevin P. Grant, UTSA.

How to construct a WBS

- Include appropriate subject matter experts (SMEs)
- Use a top-down approach
- Consider WBS from a previous project as a starting point
- Use brainstorming

Steps in WBS Construction

1. Identify major deliverables
2. Decompose deliverables
3. Continue until deliverables are the right size
4. Review

Identify Major Deliverables

- Begin with Scope Statement
- Organize in systematic manner such as by project phase
- Facilitates rolling wave planning—planning near term work in detail and future work at a higher level
- Rolling wave planning → quick start
- Helps avoid:
 - *Analysis paralysis* - never starting anything because the plan is not complete
 - *Ready, fire, aim* – not planning at all

WBS Organization Examples

PROJECT PHASE	DESIGN COMPONENTS/DELIVERABLES	WORK FUNCTION/ SUBPROJECT
Project Management	Project Management	Project Management
Contract	Kitchen	Carpentry
Foundation	Bedrooms	Plumbing
Framed House	Bathrooms	Electrical
...

Decompose Deliverables

- Brainstorm list of interim and final deliverables (use Post It[®] Notes)
- Assemble deliverables on large work space
- Organize deliverables into related groups

Decomposition – breaking down into smaller and smaller pieces

Continue Until Deliverables Are the Right Size

PARTIAL WBS OF CAR DEVELOPMENT PROJECT

Car Development Project

Project Management

Product Design

Product Goals

Concept Design

Modeling Design

Vehicle Integration

Engineering Feasibility

Detailed Engineering Design

Performance Development

Regulatory Certification

Process Development

Prototype

Production Materials Procurement

General Materials Procurement

Trial Manufacture

When to stop decomposing? Judgment call... Ideally, work packages are:

- Small enough to control
- Not so small as to micro-manage

Review

- Ensure completeness
 - Consider parent-child concept
 - Have between 3 and 9 child elements for each parent
- Assign a unique name & number to each component

Establish Change Control (1 of 2)

- Projects are conducted in an atmosphere of uncertainty
- Plans must be made to ensure all potential changes are considered, accepted or rejected, and that their impact is factored into revised plans

Change control system – a system of managing and controlling changes and modifications to the project plan and project deliverables

Baseline – the approved project plan, mostly consisting of scope, schedule, & cost; should not be altered without going through integrated change control system

Establish Change Control (2 of 2)

- Document potential changes to a project with a change request
- Every change to a project must be formally proposed

Change request – a written request or formal proposal to change any project planning component, such as a document, project deliverable, or the baseline (scope, cost, and time).

Change Request Form

CHANGE REQUEST FORM		
ORIGINATOR:		PROJECT #:
<hr/>		
Date		
Description of Change:		
Why needed:		
Impact on project scope:		
Impact on deadline dates:		
Impact on budget:		
Impact on quality:		
Impact on risk:		
Impact on team:		
Date approved:		
Project manager	Sponsor	Customer
<hr/>	<hr/>	<hr/>

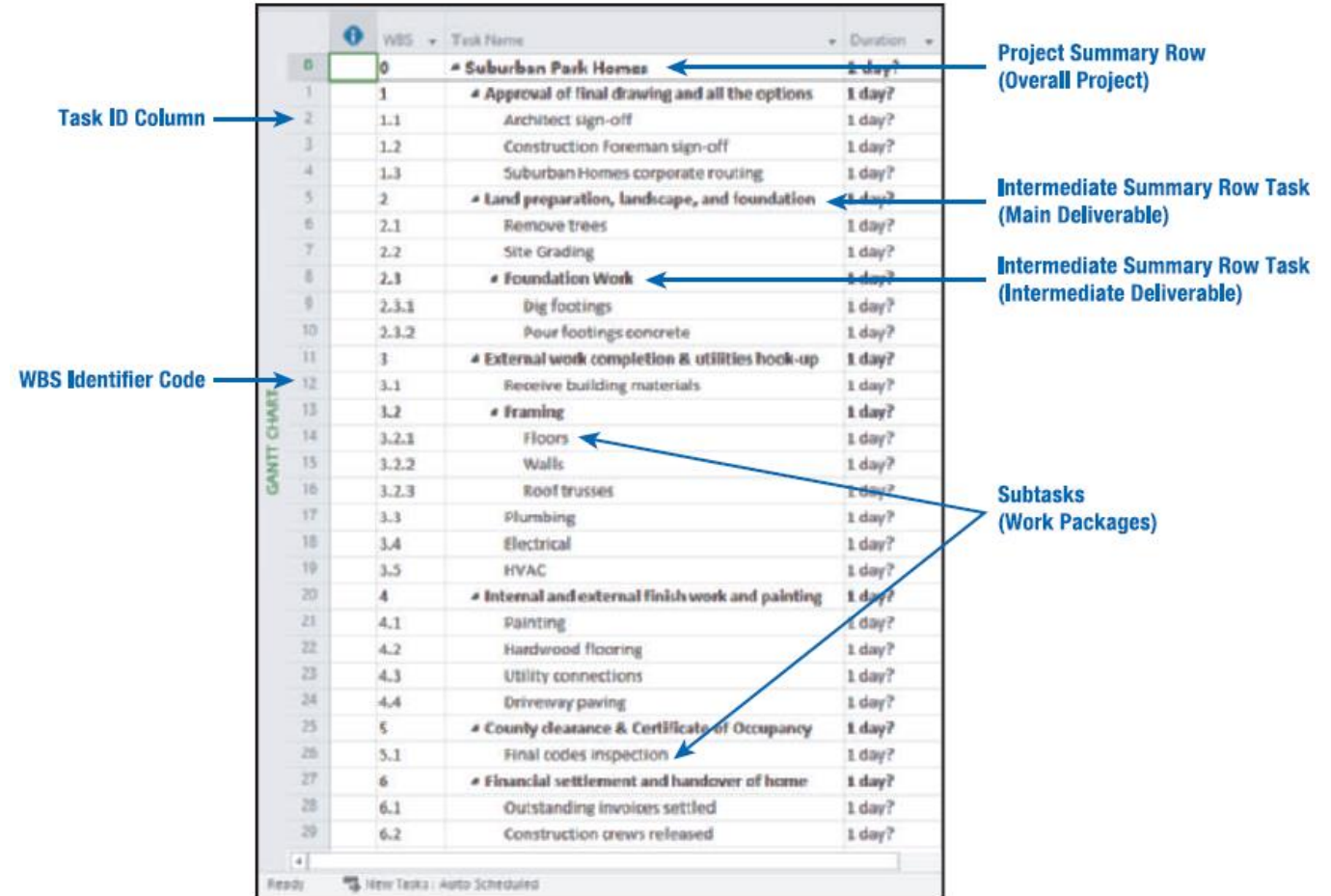
Using MS Project for Work Breakdown Structures (WBS)

- Set Up the WBS
 1. *Understand WBS definitions & displays.*
 2. *Enter project deliverables & work package elements.*
 3. *Create the outline of your WBS.*
 4. *Insert a WBS code identification column.*
 5. *Hide (or show) the desired amount of detail in WBS.*

Step 1. Understand WBS displays and definitions

- Summary tasks are displayed:
 - Tables as an outline
 - Gantt view

EXHIBIT 7.15: GANTT CHART VIEW THREE-LEVEL WBS




Source: Microsoft product screenshots reprinted with permission from Microsoft Corporation.

Step 2. Enter WBS Elements (Tasks) (1 of 2)

EXHIBIT 7.16: ENTER SUMMARIES (DELIVERABLES)

Source: Microsoft product screenshots reprinted with permission from Microsoft Corporation.



The screenshot displays a Gantt chart interface for a project named 'Suburban Park Homes'. The chart lists 30 tasks, each with a duration. The tasks are numbered 1 through 30. The durations are: 1 day? (tasks 1, 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 26, 28, 29), 0 days (tasks 5, 11, 20, 25, 27), and 1 day? (tasks 28, 29, 30). The interface includes a 'Task Mode' dropdown menu and a 'Duration' column. The status bar at the bottom indicates 'Ready' and 'New Tasks | Auto Scheduled'.

Task ID	Task Name	Duration
0	Suburban Park Homes	1 day?
1	Approval of final drawing and all the options	0 days
2	Architect sign-off	1 day?
3	Construction Foreman sign-off	1 day?
4	Suburban Homes corporate routing	1 day?
5	Land preparation, landscape, and foundation	0 days
6	Remove trees	1 day?
7	Site Grading	1 day?
8	Foundation Work	1 day?
9	Dig footings	1 day?
10	Pour footings concrete	1 day?
11	External work completion & utilities hook-up	0 days
12	Receive building materials	1 day?
13	Framing	1 day?
14	Floors	1 day?
15	Walls	1 day?
16	Roof trusses	1 day?
17	Plumbing	1 day?
18	Electrical	1 day?
19	HVAC	1 day?
20	Internal and external finish work and painting	0 days
21	Painting	1 day?
22	Hardwood flooring	1 day?
23	Utility connections	1 day?
24	Driveway paving	1 day?
25	County clearance & Certificate of Occupancy	0 days
26	Final codes inspection	1 day?
27	Financial settlement and handover of home	0 days
28	Outstanding invoices settled	1 day?
29	Construction crews released	1 day?
30	Homeowner documentation	1 day?

Step 2. Enter WBS Elements (Tasks) (2 of 2)

1. *Click on Task Name field to select the row below where you want the new row to be.*
2. *On Task tab, Insert group, click Insert Task.*
3. *In the Task Name field, enter the name of the added WBS element.*
4. *Enter any additional task(s).*

Step 3. Create the outline of your (WBS)

1. Click Task Name field of the row to be indented.
2. On Task tab, Schedule group, click Indent Task.
3. To decrease an indent level with the Outdent control: On the Task tab, Schedule group, click Outdent Task. Any lower-level items will also be outdented.

EXHIBIT 7.17: INDENT AND OUTDENT CONTROLS ON THE TASK TAB



Source: Microsoft product screenshots reprinted with permission from Microsoft Corporation.

Step 4. Insert Row Number Column

- Project will automatically number summaries
- Right-click Task Name heading
- Insert – Column –WBS

Ready to Insert WBS Column

EXHIBIT 7.18: READY TO INSERT SELECTED WBS COLUMN

Source: Microsoft product screenshots reprinted with permission from Microsoft Corporation.

Choose "WBS" From The Dropdown List

The screenshot displays the Microsoft Project interface. On the left, a Gantt chart shows task bars for 31 tasks. The main area is a task list with columns for Task ID, Task Name, and Type. The 'Type' column has a dropdown menu open, showing a list of options including 'Successors Summary', 'SV', 'SV%', 'Task Calendar', 'Task Calendar GUID', 'Task Mode', 'TCP', 'TeamStatus Pending', 'Text1' through 'Text30', 'Total Slack', 'Type', 'Unique ID', 'Unique ID Predecessors', 'Unique ID Successors', 'Update Needed', 'VAC', 'Warning', 'WBS', 'WBS Predecessors', 'WBS Successors', 'Work', 'Work Contour', and 'Work Variance'. The 'WBS' option is highlighted. An arrow from the text 'Choose "WBS" From The Dropdown List' points to this option. The right pane shows a task named 'Suburban Park Homes' with a list of sub-tasks including 'Approval of final drawing and all the option', 'Architect sign-off', 'Construction Foreman sign-off', 'Suburban Homes corporate routing', 'Land preparation, landscape, and foundation', 'Remove trees', 'Site Grading', 'Foundation Work', 'Dig footings', 'Pour footings concrete', 'External work completion & utilities hook-u', 'Receive building materials', 'Framing', 'Floors', 'Walls', 'Roof trusses', 'Plumbing', 'Electrical', 'HVAC', 'Internal and external finish work and paint', 'Painting', 'Hardwood flooring', 'Utility connections', 'Driveway paving', 'County clearance & Certificate of Occupancy', 'Final codes inspection', 'Financial settlement and handover of home', 'Outstanding invoices settled', 'Construction crews released', and 'Homeowner documentation'.

EXHIBIT 7.19: WBS Column Inserted

	WBS	Task Name	Duration
0	0	Suburban Park Homes	1 day?
1	1	Approval of final drawing and all the options	1 day?
2	1.1	Architect sign-off	1 day?
3	1.2	Construction Foreman sign-off	1 day?
4	1.3	Suburban Homes corporate routing	1 day?
5	2	Land preparation, landscape, and foundation	1 day?
6	2.1	Remove trees	1 day?
7	2.2	Site Grading	1 day?
8	2.3	Foundation Work	1 day?
9	2.3.1	Dig footings	1 day?
10	2.3.2	Pour footings concrete	1 day?
11	3	External work completion & utilities hook-up	1 day?
12	3.1	Receive building materials	1 day?
13	3.2	Framing	1 day?
14	3.2.1	Floors	1 day?
15	3.2.2	Walls	1 day?
16	3.2.3	Roof trusses	1 day?
17	3.3	Plumbing	1 day?
18	3.4	Electrical	1 day?
19	3.5	HVAC	1 day?
20	4	Internal and external finish work and painting	1 day?
21	4.1	Painting	1 day?
22	4.2	Hardwood flooring	1 day?
23	4.3	Utility connections	1 day?
24	4.4	Driveway paving	1 day?
25	5	County clearance & Certificate of Occupancy	1 day?
26	5.1	Final codes inspection	1 day?
27	6	Financial settlement and handover of home	1 day?
28	6.1	Outstanding invoices settled	1 day?
29	6.2	Construction crews released	1 day?
30	6.3	Homeowner documentation	1 day?

Source: Microsoft product screenshots reprinted with permission from Microsoft Corporation.

Step 5. Hide (or Show) Underlying Detail

EXHIBIT 7.20: HIDE OR SHOW UNDERLYING DETAIL

Summary Task Detail Hidden

Summary Task Detail Shown

WBS	Task Name	Duration
0	Suburban Park Homes	1 day?
1	Approval of final drawing and all the options	1 day?
2	1.1 Architect sign-off	1 day?
3	1.2 Construction Foreman sign-off	1 day?
4	1.3 Suburban Homes corporate routing	1 day?
5	Land preparation, landscape, and foundation	1 day?
11	External work completion & utilities hook-up	1 day?
12	3.1 Receive building materials	1 day?
13	3.2 Framing	1 day?
17	3.3 Plumbing	1 day?
18	3.4 Electrical	1 day?
19	3.5 HVAC	1 day?
20	Internal and external finish work and painting	1 day?
21	4.1 Painting	1 day?
22	4.2 Hardwood flooring	1 day?
23	4.3 Utility connections	1 day?
24	4.4 Driveway paving	1 day?
25	County clearance & Certificate of Occupancy	1 day?
26	5.1 Final codes inspection	1 day?
27	Financial settlement and handover of home	1 day?
28	6.1 Outstanding invoices settled	1 day?
29	6.2 Construction crews released	1 day?
30	6.3 Homeowner documentation	1 day?

Select summary row whose detail is to be hidden/displayed

Click on the Hide (-) subtasks button or Show subtasks button (+)

Summary

- Use scope planning to determine deliverables and acceptance criteria.
- Organize scope into a work breakdown structure (WBS).
- Decompose the project into smaller and smaller pieces.
- Assign WBS components.
- Create WBS by hand or use MS Project to create WBS.

PMBOK Exams

- When in doubt, work backwards from your desired solution
 - What would it take to make this project/product successful?
 - Collect Requirements—get input from stakeholders, end-users, & SMEs
- Break down project deliverables into smaller and smaller pieces with a WBS
 - Remember, these are *things* (nouns), not activities (verbs)
 - Lowest level (work packages) should be small enough to monitor

Work Breakdown Structure Template

PM IN ACTION

- Management and Technical activities for banks in South Africa
- First level decomposition is physical (“powerhouse,” “factory,” etc.)
- Second level decompositions varied—based on function or product
- Developed from a client’s (rather than the project team’s) perspective

Casa de Paz Development Project

- The Promotion and Community Relations Working Group are creating a product backlog
- They ask “what are the three to five most important things to be created?”
- For each, what details must be accomplished for it to be a minimum viable product?