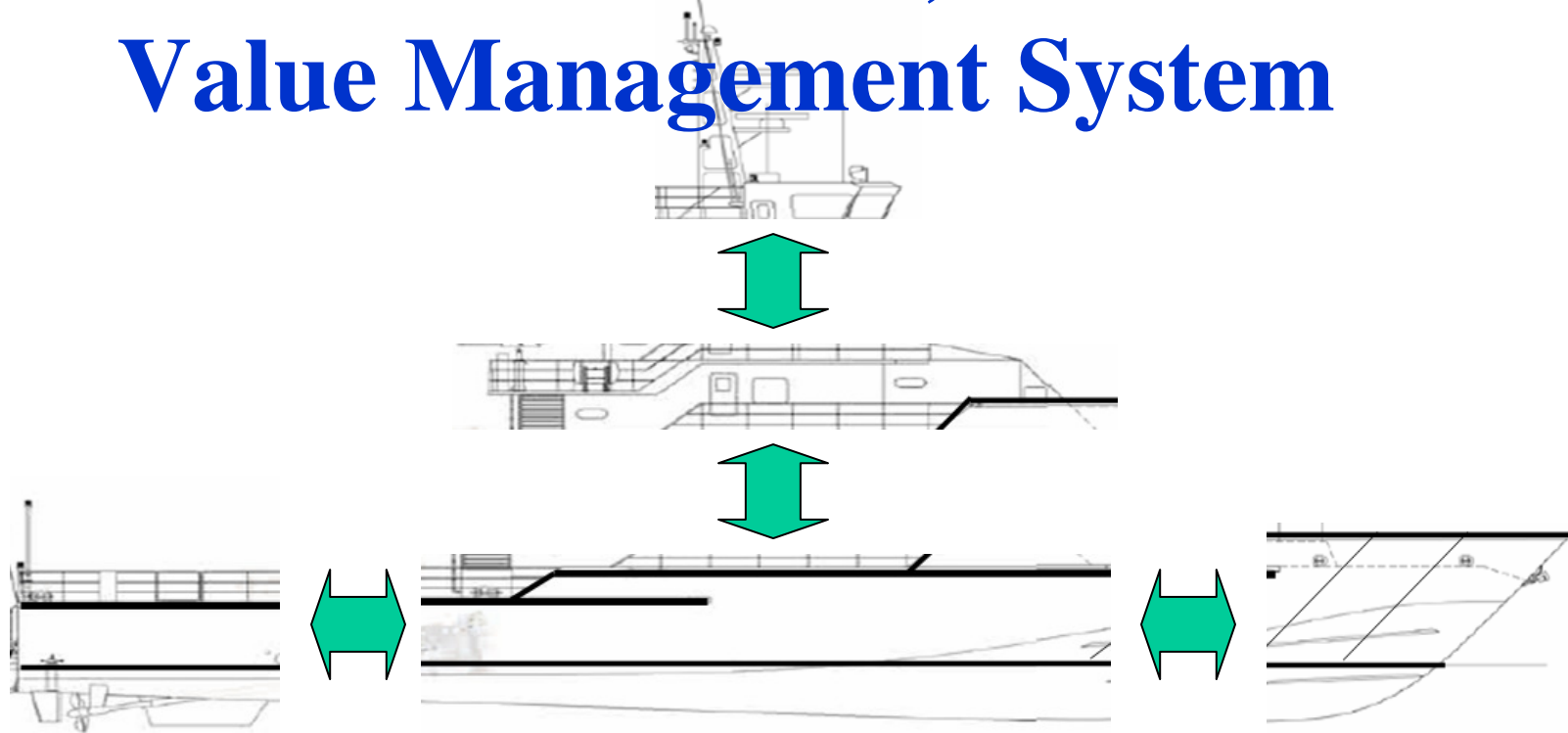


PLANNING & MANAGING PRODUCTION

With *PERCEPTION*, an Earned Value Management System



This tutorial explains how to

- 1. Link *PERCEPTION* cost estimates (estimate cost items) to a project Master Plan,**
- 2. Generate preliminary work orders complete with budgets and schedules, and**
- 3. Generate preliminary requisitions complete with budgets and order dates.**
- 4. Produce Earned Value Baselines**
- 5. Produce preliminary Manpower Requirements**

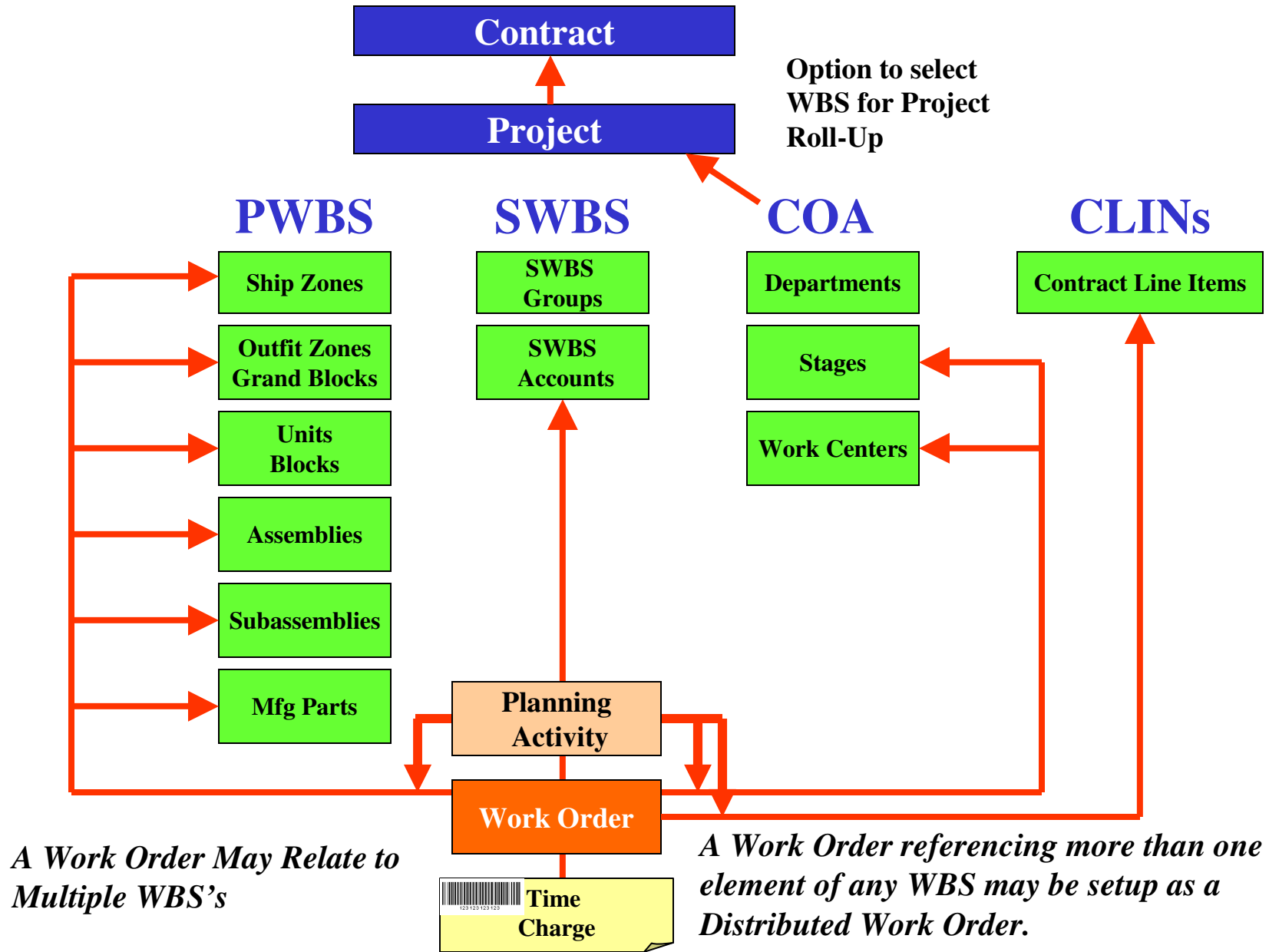


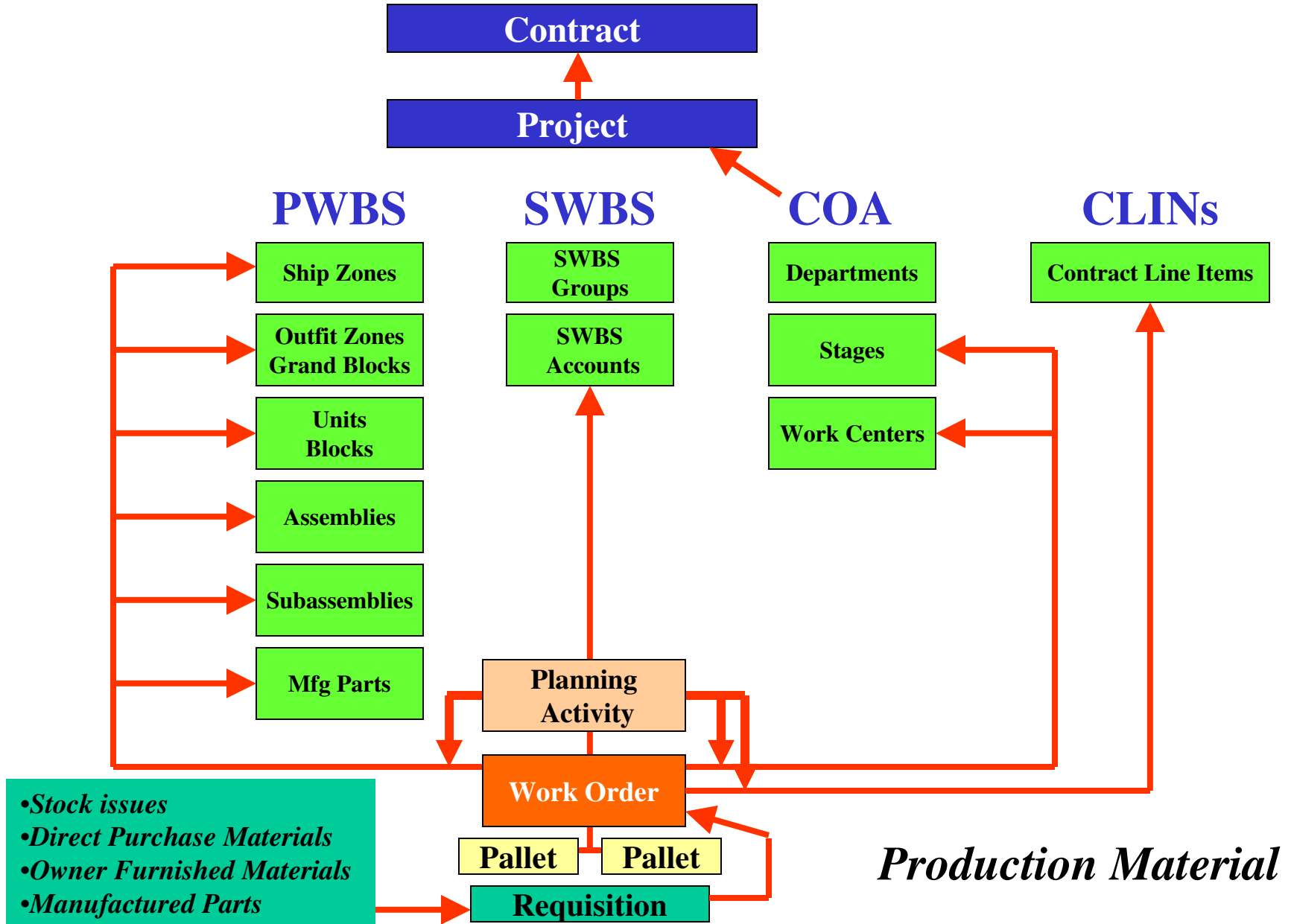
PERCEPTION offers many features and functions for developing a cost estimate at any level of detail. ***PERCEPTION*** cost estimates may be generated using the extensive libraries that can be stored on the database or by using the various specialized ship-type cost models.

PERCEPTION requires the user to develop the cost estimate by a breakdown of individual cost items. These estimate cost items must reference the project's work breakdown structure (WBS) that summarizes the estimated labor and material costs and the estimated labor hours. The estimate, then, can be used to form the basis for ***PERCEPTION***'s Earned Value Management System (EVMS) functions to measure and forecast cost and schedule performance.

As the project unfolds, ***PERCEPTION*** produces EVMS performance reports for the project WBS, which can focus on traditional ship's work breakdown structures (SWBS); on shipbuilding interim product work breakdown structures (PWBS); and on the various shipyard manufacturing and assembly processes (work centers).



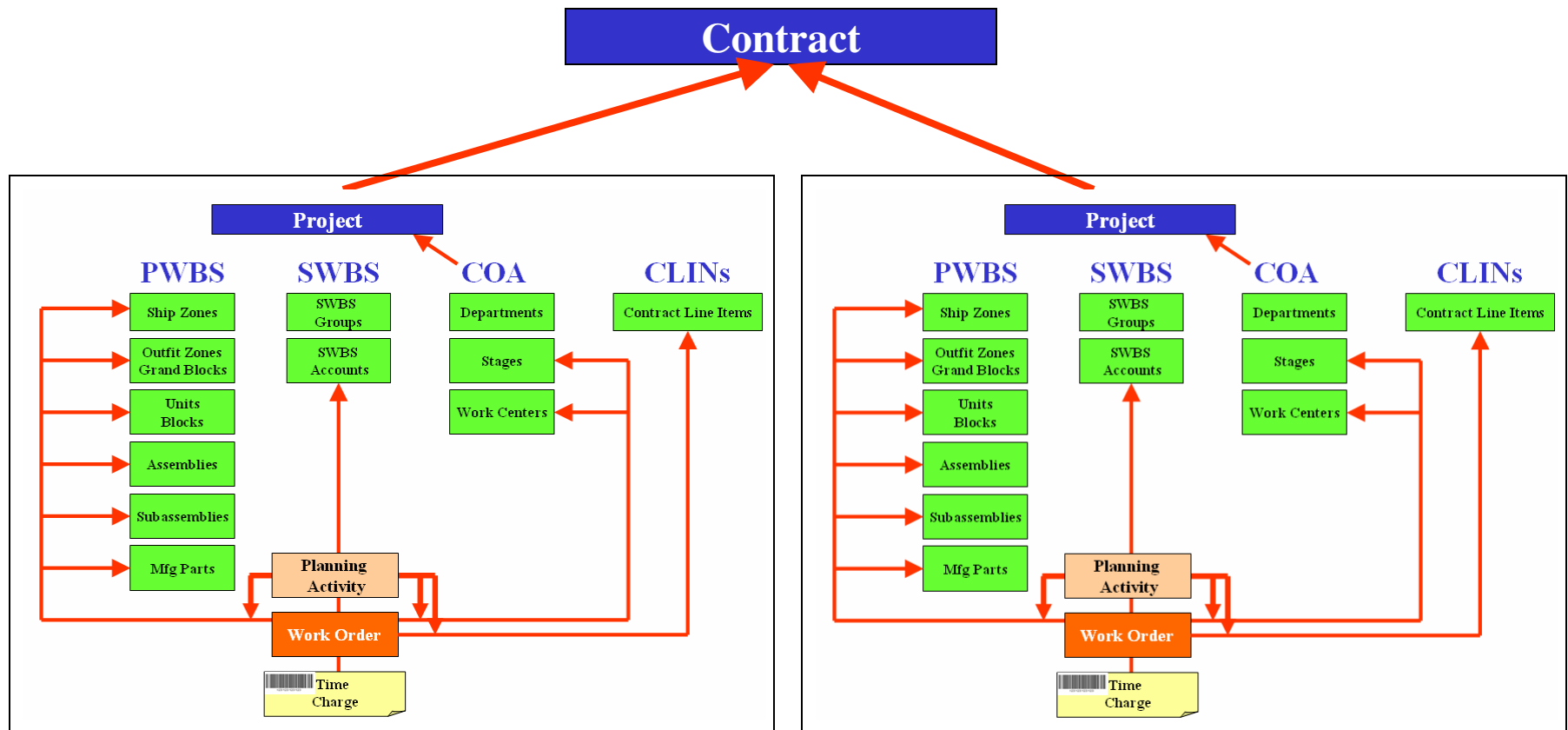


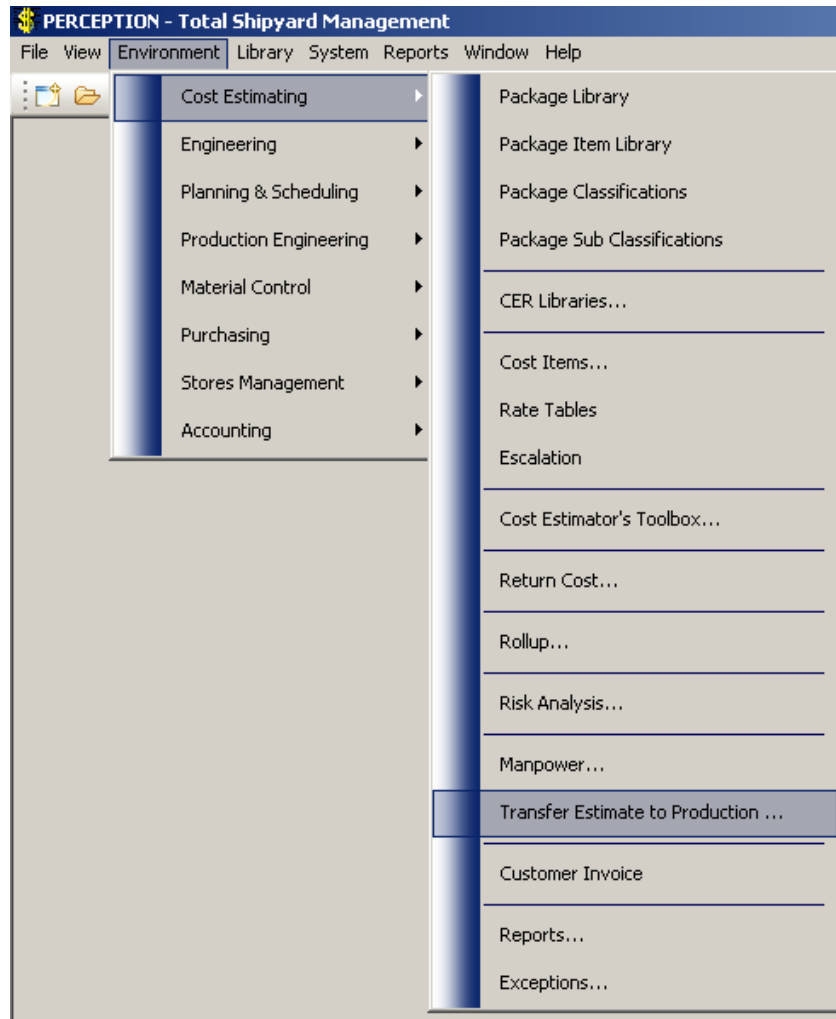


Production Material



Multi-Ship Program Management Cost & Schedule Consolidation





**From the
Main
Menu,.....**

Create Production Details from Estimate Cost Items



Transfer Estimate To Production

Contract and Project Retrieval Options

List Only Open Contracts
 List Both Open & Closed Contracts

Contract: SAMPLES

Project: 46mPB

Management Reserves

Labor Hours: 10.00%

Material Dollars: 5.00%

Set Budgets On WBS

SWBS
 PWBS
 COA

Create Planning Details

Planning Activities
 Requisitions
 Work Orders

Transfer Cancel Help

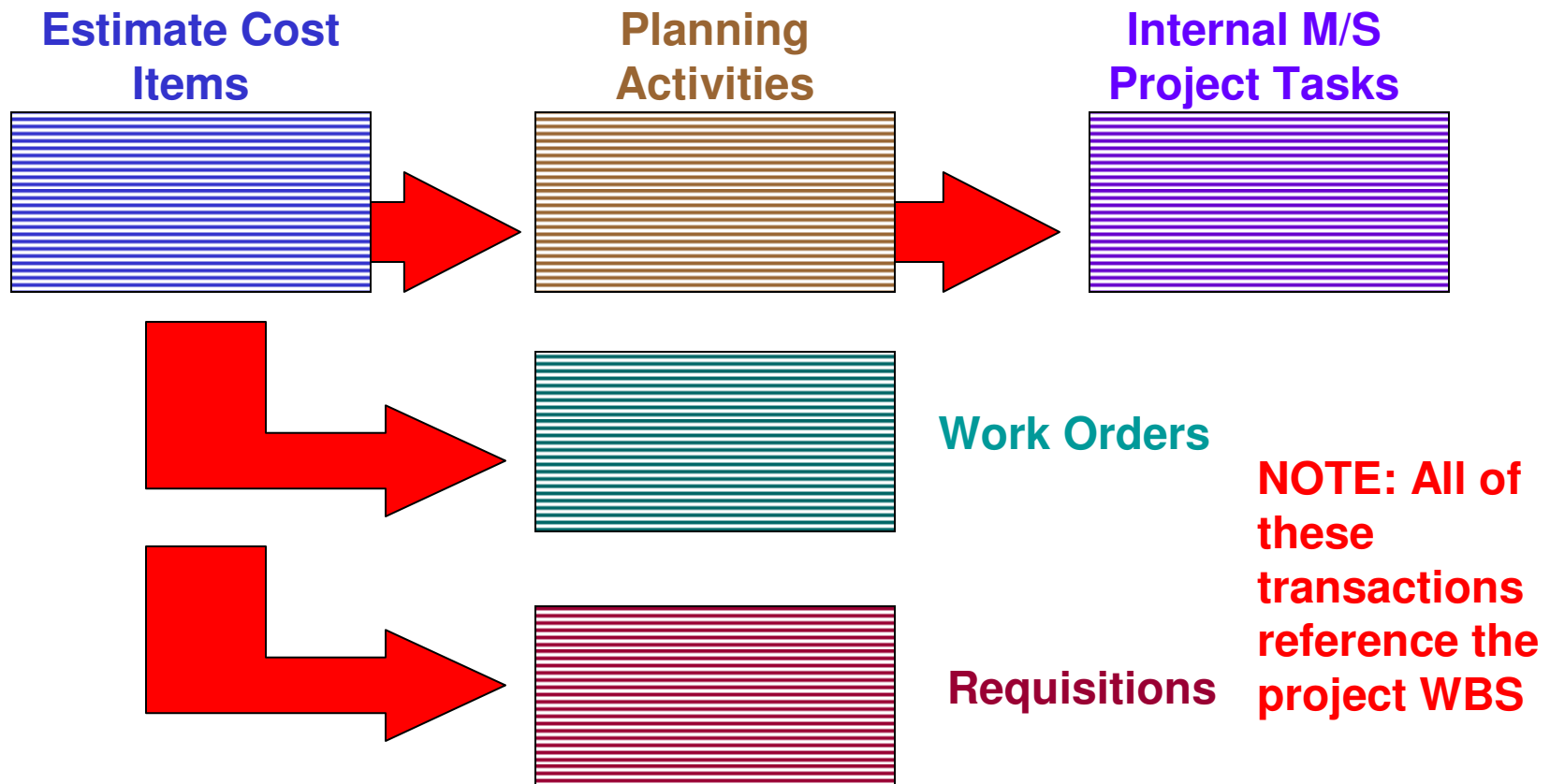
Select the estimate project, select option to create Planning Activities, then click on the Transfer button.

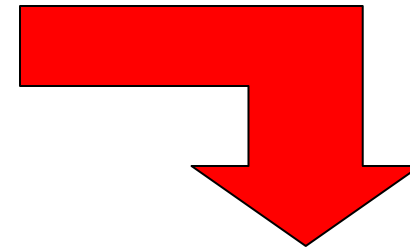
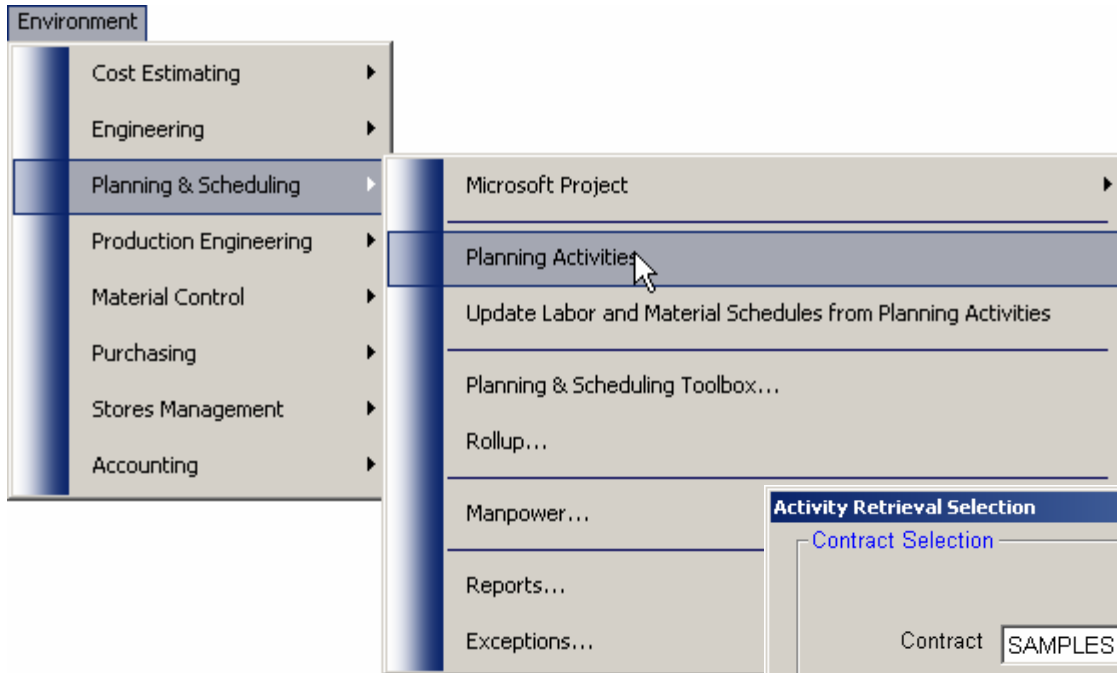
Note the options for specifying budgets and management reserves from the estimates.

Preliminary Work Orders and Material Requisitions also can be created directly from the estimates.



From the estimate Cost Items, *PERCEPTION* instructed to generate the project Planning Activities, Work Orders & Requisitions. Simultaneously, the Planning Activities automatically create schedule tasks in the internal Microsoft *Project* database.





Activity Retrieval Selection

Contract Selection

List Only Open Contracts
 List Both Open & Closed Contracts

Contract: SAMPLES To: SAMPLES

Project: 46mPB 46mPB

Activity Center: 0 / / / / / / / / Activity: 0 / / / / / / / /

SWBS **PWBS**

Group: 0 / / / / / / / / Zone: 0 / / / / / / / /

Account: 0 / / / / / / / / Unit/Block: 0 / / / / / / / /

Planned Start: 01/01/1950 01/01/2050

Retrievy Options **Critical Path Options**

Reset Retrieval Reset To Globals Append Path No Path Both

OK Cancel

From the Main Menu select the Planning Activity Worksheet to view what has been created



\$ Planning Activities Information for the Planning Environment								
	Contract	Project	Center	Activity	Description	Group	Account	Zone
1	SAMPLES	46mPB	0	ID127				
2	SAMPLES	46mPB	0	ID131				
3	SAMPLES	46mPB	0	ID136				
4	SAMPLES	46mPB	0	ID141				
5	SAMPLES	46mPB	0	ID146				
6	SAMPLES	46mPB	0	ID151				
7	SAMPLES	46mPB	0	ID156				
8	SAMPLES	46mPB	0	ID161				
9	SAMPLES	46mPB	0	ID178				
10	SAMPLES	46mPB	SY	200.1	Install Main Engines	2	200	MACHYSP
11	SAMPLES	46mPB	SY	200.2	Diesel HS Geared Drive w/ FPP	2	200	
12	SAMPLES	46mPB	SY	300.1	Install Generators	3	300	MACHYSP
13	SAMPLES	46mPB	SY	300.2	Install Electrical Switch Boards & Par	3	300	MACHYSP
14	SAMPLES	46mPB	SY	300.3	Pull, Clip, Terminate & Tag Electric C	3	300	SW
15	SAMPLES	46mPB	SY	300.4	Install Lighting Systems	3	300	SW
16	SAMPLES	46mPB	SY	310.1	Electrical Labor - Stern	3	310	
17	SAMPLES	46mPB	SY	310.2	Electrical Labor - Machinery Space	3	310	
18	SAMPLES	46mPB	SY	310.3	Electrical Labor - Deck House (Not in	3	310	
19	SAMPLES	46mPB	SY	310.4	Electrical Labor - Habitation Areas	3	310	
20	SAMPLES	46mPB	SY	310.5	Electrical Labor - Forepeak	3	310	
21	SAMPLES	46mPB	SY	310.6	Electrical Labor - Forebody Deck	3	310	
22	SAMPLES	46mPB	SY	314.1	Ship Service Generator	3	314	
23	SAMPLES	46mPB	SY	314.3	Emergency Diesel Generator	3	314	
24	SAMPLES	46mPB	SY	400.1	Install Bridge, Communications, Cont	4	400	BRIDGE
25	SAMPLES	46mPB	SY	408.1	Electronics Installation Labor Hours	4	408	
26	SAMPLES	46mPB	SY	500.1	Pre-Outfit Aft Hull Section	5	500	H-AFT
27	SAMPLES	46mPB	SY	500.2	Pre-Outfit Fwd Hull Section	5	500	H-FWD
28	SAMPLES	46mPB	SY	500.3	Pre-Outfit Main Deck	5	500	MAINDK
29	SAMPLES	46mPB	SY	500.4	Pre-Outfit Upper Deck	5	500	UPPRDK

The activities that are identified by "IDnnn" are required for an active link between Microsoft Project and PERCEPTION Planning Activities.

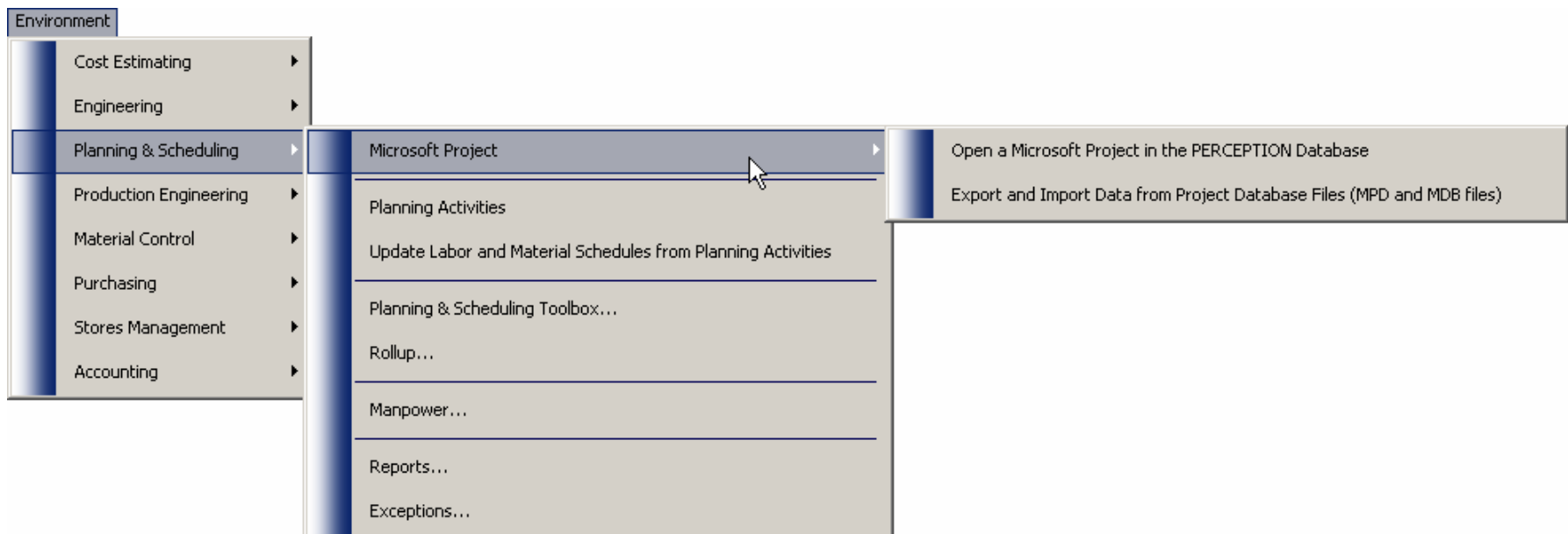
Listing of Planning Activities Created from Estimate Cost Items

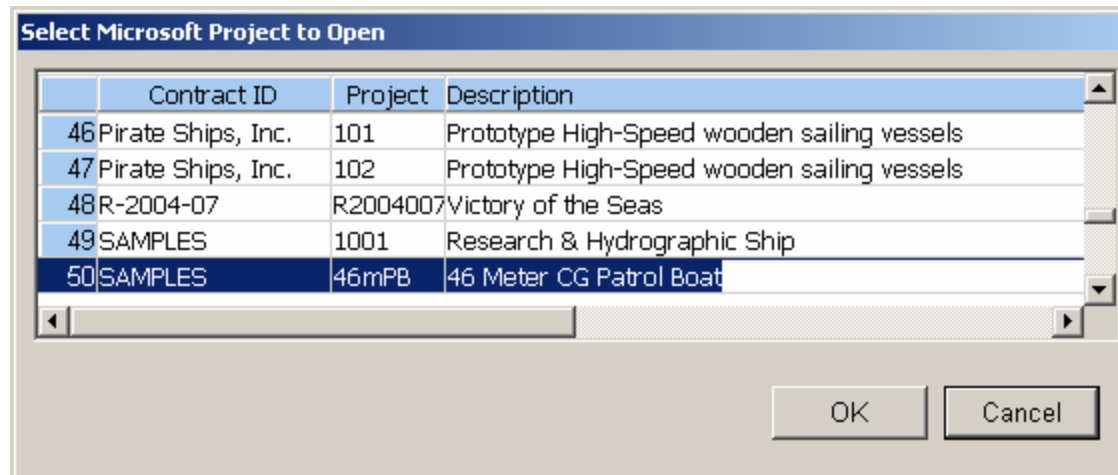


When Planning Activities are created in *PERCEPTION*, *PERCEPTION* also automatically creates Microsoft *Project* Tasks on the *PERCEPTION* Database.



Open Microsoft *Project* in the *PERCEPTION* Database from the *PERCEPTION* Main Menu





Select the Microsoft *Project* Database File to Process



Gantt Chart	Description	Duration	Jan 14, '07							Jan 21, '07							Jan 28, '07							Feb 04, '07							Feb 11, '07						
			S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F
			[Gantt bars representing 21-day durations for each task]																																		
1	Hull - Plating	21 days	[Gantt bar]																																		
2	Main Deck	21 days	[Gantt bar]																																		
3	Transverse Frames	21 days	[Gantt bar]																																		
4	Longitudinal Frames	21 days	[Gantt bar]																																		
5	Transverse Bulkheads - Stiffened	21 days	[Gantt bar]																																		
6	Longitudinal Bulkheads - Stiffened	21 days	[Gantt bar]																																		
7	Trunks and Enclosures	21 days	[Gantt bar]																																		
8	Inner Bottoms	21 days	[Gantt bar]																																		
9	Castings	21 days	[Gantt bar]																																		
10	Sea Chest	21 days	[Gantt bar]																																		
11	Stanchions	21 days	[Gantt bar]																																		
12	Deckhouse/Superstructure/Bridge	21 days	[Gantt bar]																																		
13	Stacks and Macks	21 days	[Gantt bar]																																		
14	Foundations - Machinery	21 days	[Gantt bar]																																		
15	Masts & Spars	21 days	[Gantt bar]																																		
16	Ramps	21 days	[Gantt bar]																																		
17	Diesel HS Geared Drive w/ FPP	21 days	[Gantt bar]																																		
18	Electrical Labor - Stern	21 days	[Gantt bar]																																		
19	Ship Service Generator	21 days	[Gantt bar]																																		
20	Emergency Diesel Generator	21 days	[Gantt bar]																																		
21	Electronics Installation Labor Hours	21 days	[Gantt bar]																																		
22	Engine Room Ventilation	21 days	[Gantt bar]																																		
23	Conventional HP HVAC, Accommodate	21 days	[Gantt bar]																																		
24	HVAC & Refrigeration Machinery	21 days	[Gantt bar]																																		
25	Diesel Fuel System - Fill, Transfer & I	21 days	[Gantt bar]																																		
26	Lube Oil System - Pump & Purify	21 days	[Gantt bar]																																		

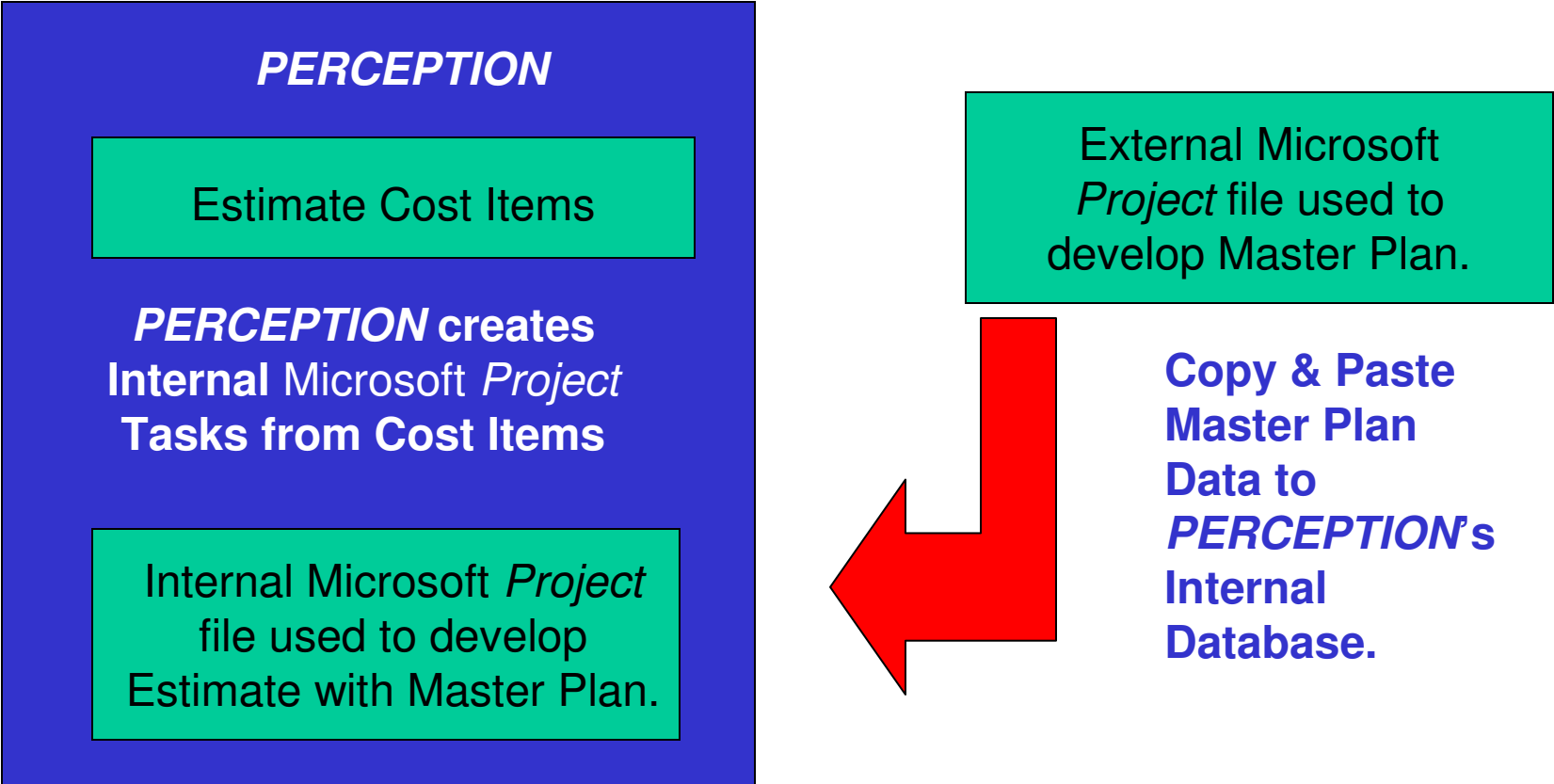
View the Estimate Cost Item Tasks

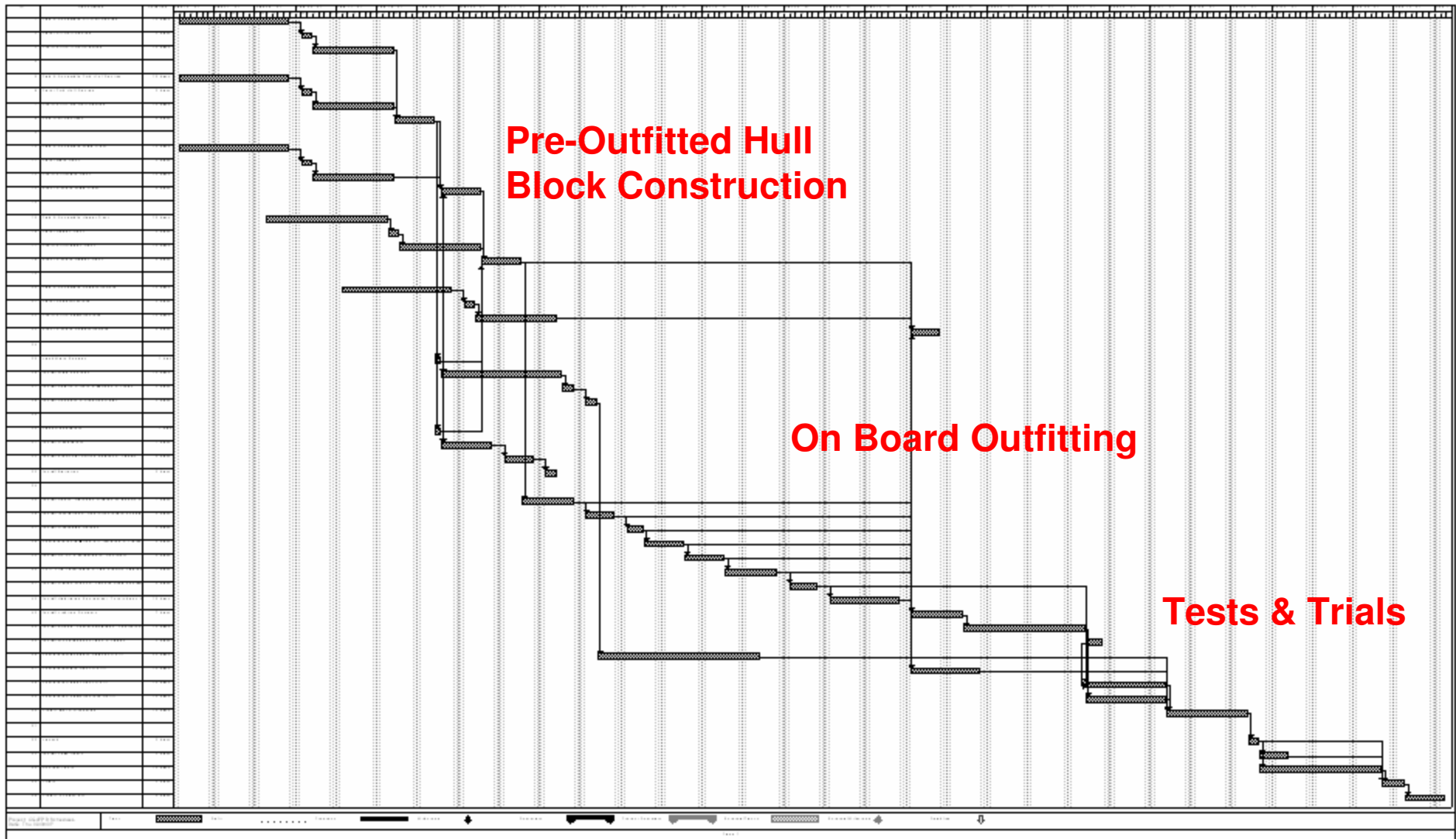


Linking the Cost Estimate to the Schedule Master Plan



Using Microsoft *Project* as an external system create a basic production Master Plan. This data eventually will be copied and pasted into *PERCEPTION's* internal Microsoft *Project* database to link with the estimate cost items.





Create a External Microsoft Basic Production Master Plan



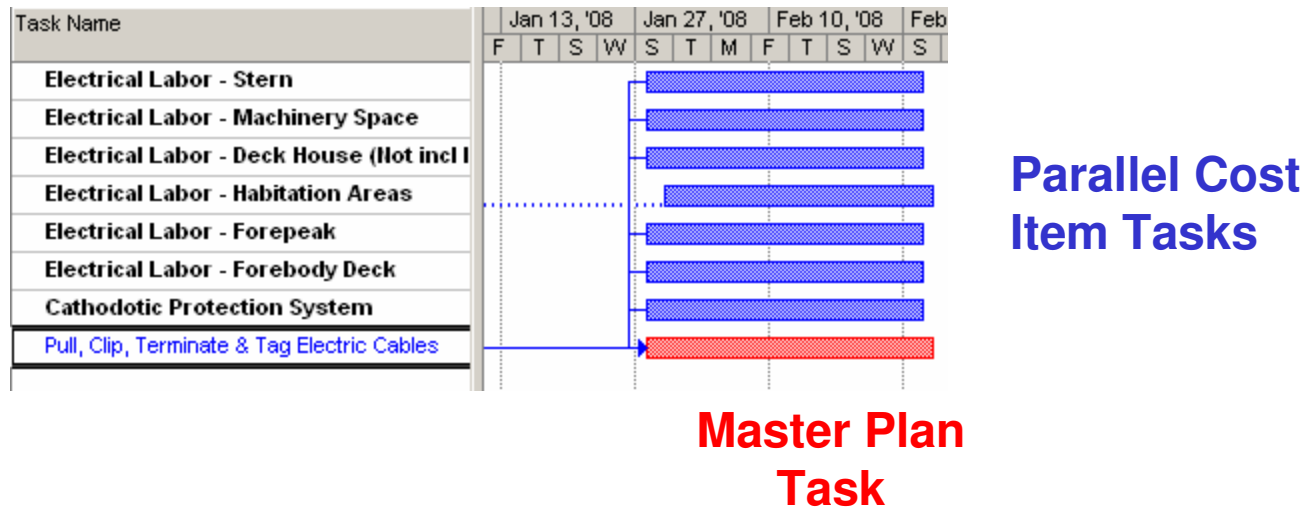
1. Now re-open the External Microsoft *Project* file of the Master Plan.
2. Highlight all of the Master Plan tasks and copy them to the clipboard.
3. Re-open the *PERCEPTION* Internal Microsoft *Project* database of Estimate Cost Item Tasks.
4. Paste in the Master Plan data.
5. Link the Estimate Cost Item Tasks to the appropriate Master Plan Tasks.



Set approximate durations for the Cost Item tasks and set the overall project schedule and other necessary scheduling parameters.

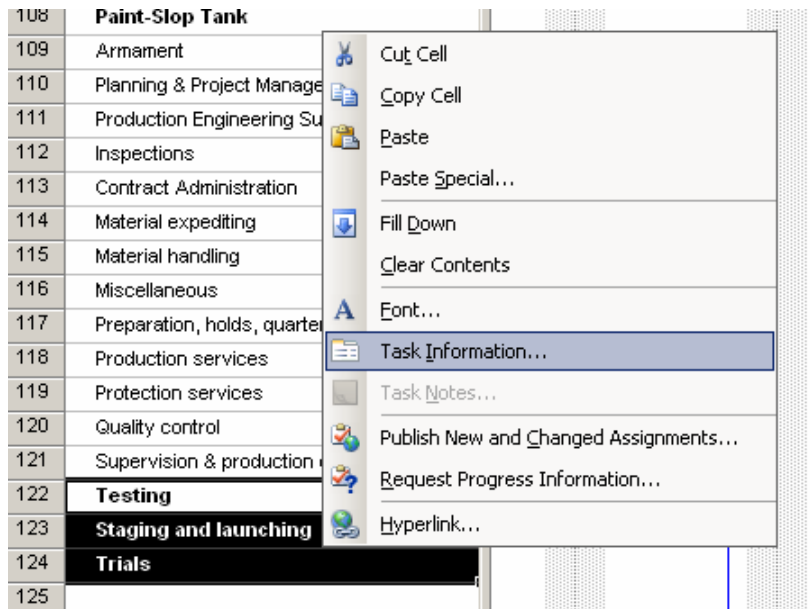


Since the Cost Item Tasks carry labor and/or material cost data, they normally should be linked in parallel to the assigned Master Plan tasks.



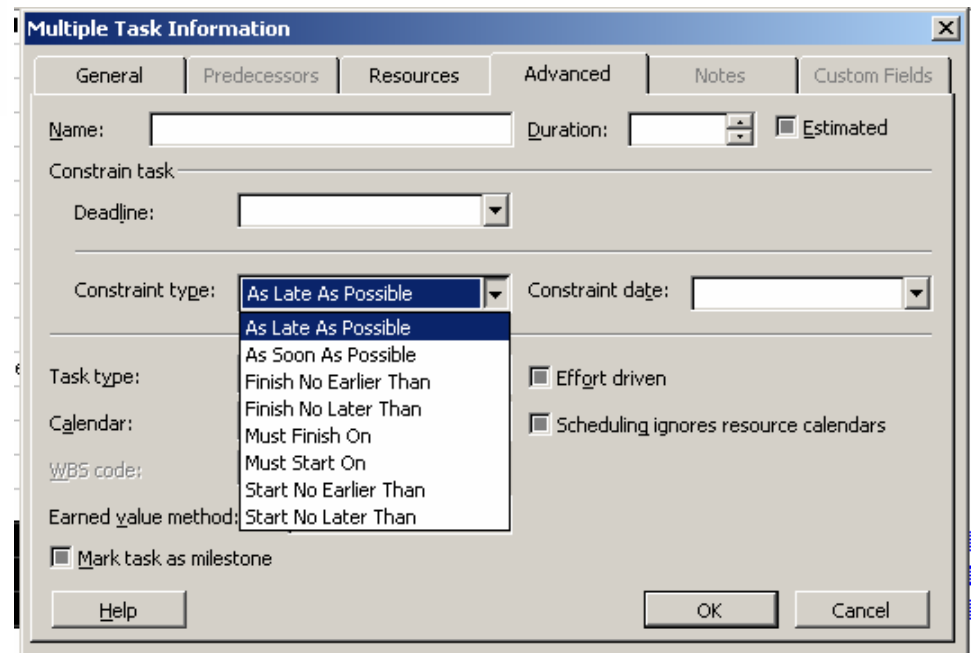
In the Task Information window (prior slide) set the link “Type” to “Start-to-Start (SS)”. Other options are available from the drop-down window under “Type.”





When all Estimate Cost Item tasks have been linked to Master Plan tasks, they can be given a constraint type “As Late As Possible.” This lines up their schedules with the Master Plan schedules.

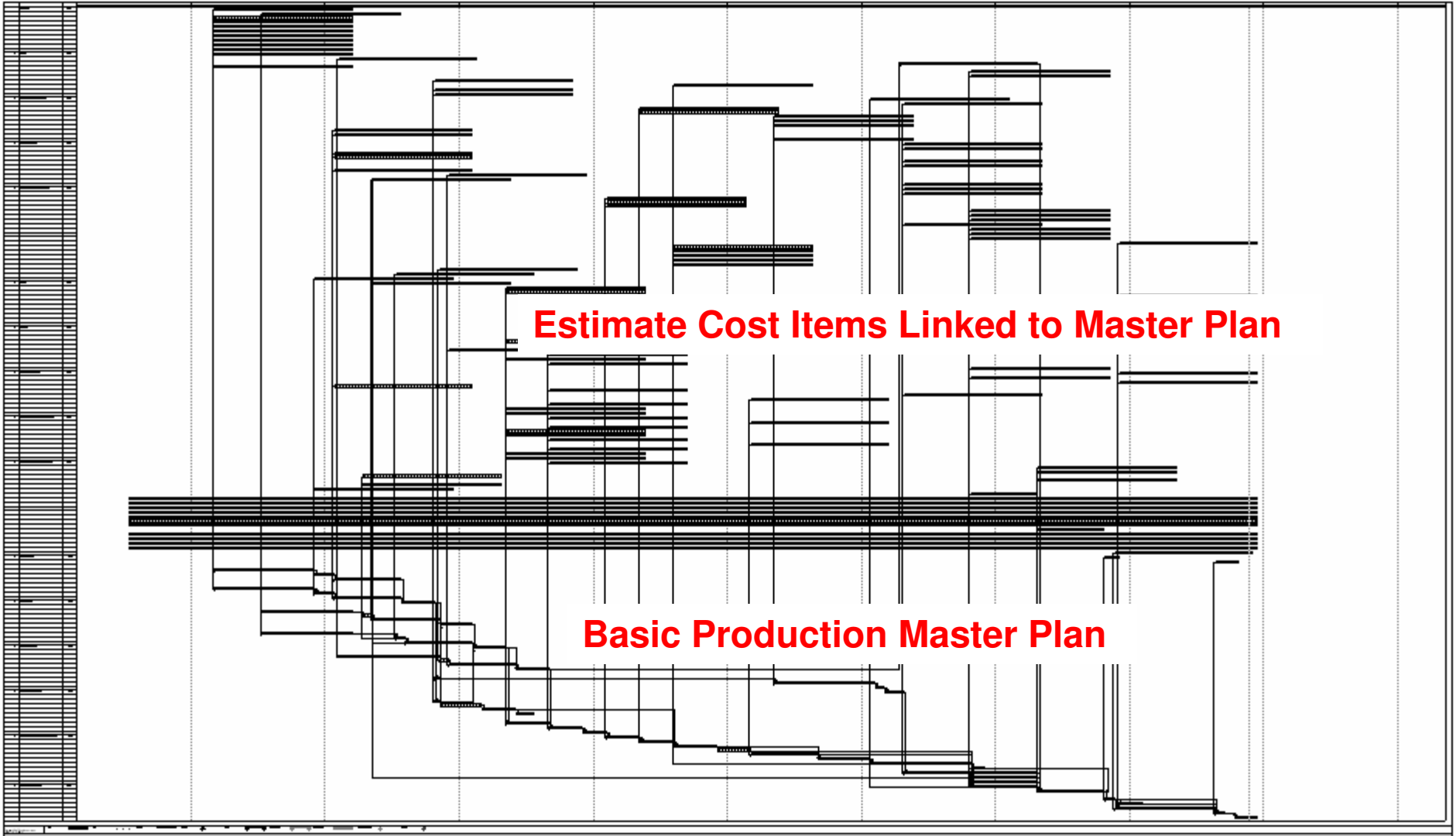
To set this constraint type to a large group of Estimate Cost Item tasks, highlight the tasks, then right click and select “Task Information” from the pop-up menu. Set the Constraint Type in the “Multiple Task Information” window.



SPECIAL NOTE: Estimate Cost Item Tasks for level-of-effort shipyard support services should be given durations more equal to the overall project duration.

These tasks normally are not linked to Master Plan Tasks





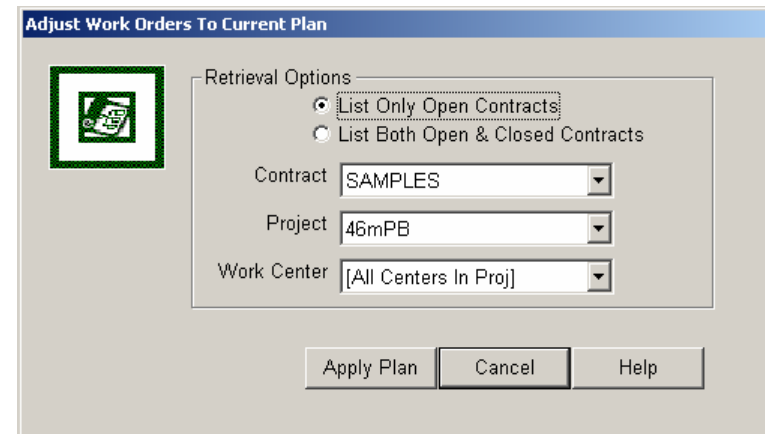
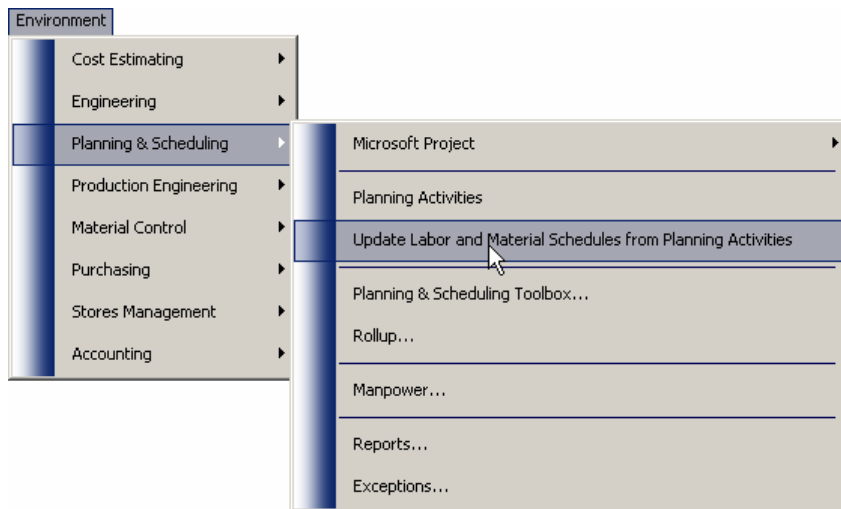
Integrated Estimate & Production Master Plan



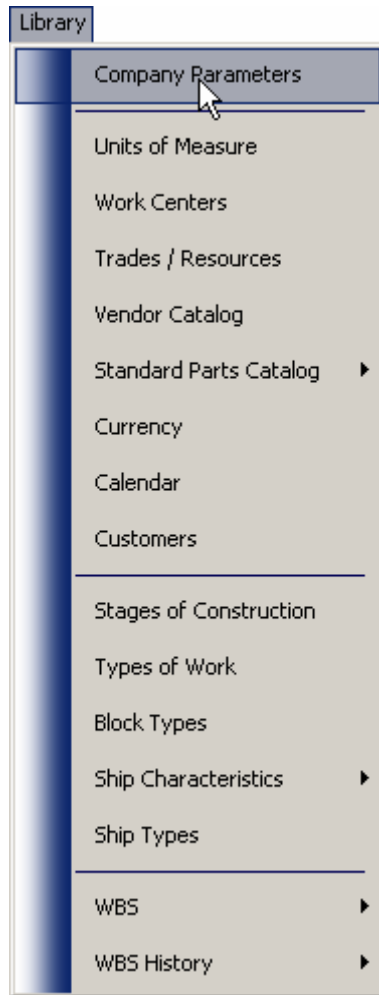
When the Internal Integrated Master Plan is updated and saved to the database, it automatically updates the planned schedules of the project Planning Activities.



If the *PERCEPTION* Estimate Cost Items were used to create Work Orders and Material Requisitions, the saved schedules can be transferred to the Work Orders



When work orders schedules are updated, requisitions and purchase orders also will be updated if the system’s “Company Parameters” flag is set on for automatic scheduling.



System Parameters and Company Defaults

Company Information | **Company Defaults** | Steel Setup | Tax Rates | Set COA M...

Default Number of Days (Process Times)

Req Delay: To Create and Approve a Req from a Released Drawing

PO Process Time: To Negotiate and Issue a Purchase Order from a Req

PO Lead Time: From Purchase to Receipt

Buffer Days: To Receive, Process and Store Material

Pallet Pick Time: To Pick and Issue Material

Automatic Scheduling Options

Schedule Requisitions From Pallets/WOs/Activities?

Schedule Quick POs From Requisitions?

Schedule All Other POs From Requisitions?

Reports

Report Header

Report Footer

Printer Paper Size

Auto Increment Reqs, POs and Pallets?

Currency

Default Storage Location

Stock Cost Method

Email Domain Name

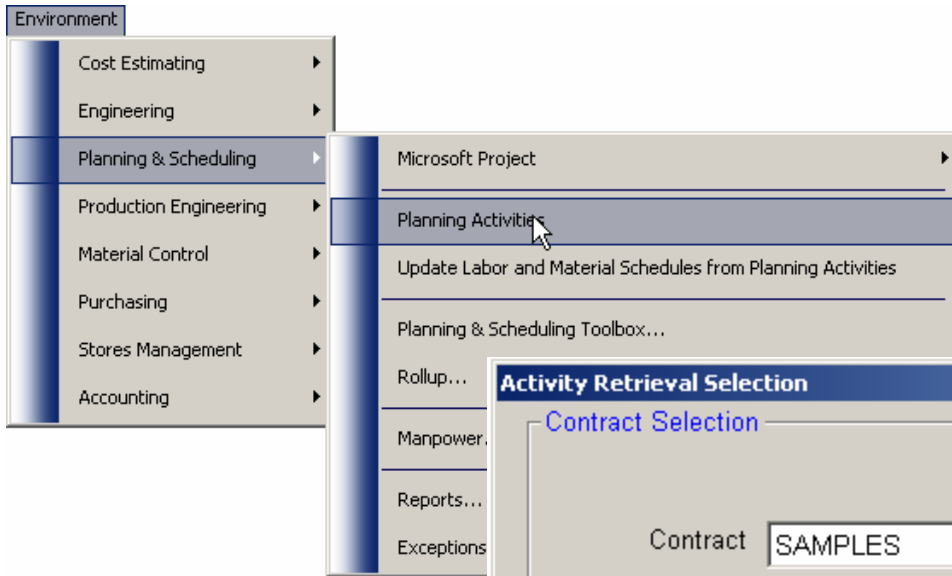
Save Close Help



Eventually, the preliminary work orders will be replaced with actual production work orders. These revised work orders should be assigned to the appropriate Planning Activity that is linked to the Master Plan.



Retrieving Planning Activities from the database.



Activity Retrieval Selection

Contract Selection

List Only Open Contracts
 List Both Open & Closed Contracts

Contract To

Project

Activity Center Activity

SWBS

Group

Account

PWBS

Zone

Unit/Block

Planned Start

Retrieval Options

Reset Retrieval Reset To Globals Append

Critical Path Options

Path No Path Both

OK Cancel



Planning Activities Information for the Planning Environment								
	Contract	Project	Center	Activity	Description	Group	Account	Zone
18	SAMPLES	46mPB	SY	310.3	Electrical Labor - Deck House (Not in	3	310	
19	SAMPLES	46mPB	SY	310.4	Electrical Labor - Habitation Areas	3	310	
20	SAMPLES	46mPB	SY	310.5	Electrical Labor - Forepeak	3	310	
21	SAMPLES	46mPB	SY	310.6	Electrical Labor - Forebody Deck	3	310	
22	SAMPLES	46mPB	SY	314.1	Ship Service Generator	3	314	
23	SAMPLES	46mPB	SY	314.3	Emergency Diesel Generator	3	314	
24	SAMPLES	46mPB	SY	400.1	Install Bridge, Communications, Cont	4	400	BRIDGE
25	SAMPLES	46mPB	SY	408.1	Electronics Installation Labor Hours	4	408	
26	SAMPLES	46mPB	SY	500.1	Pre-Outfit Aft Hull Section	5	500	H-AFT
27	SAMPLES	46mPB	SY	500.2	Pre-Outfit Fwd Hull Section	5	500	H-FWD
28	SAMPLES	46mPB	SY	500.3	Pre-Outfit Main Deck	5	500	MAINDK
29	SAMPLES	46mPB	SY	500.4	Pre-Outfit Upper Deck	5	500	UPPRDK
30	SAMPLES	46mPB	SY	500.5	Pre-Outfit Superstructure	5	500	HOUSE
31	SAMPLES	46mPB	SY	500.6	Complete Installation of Plumbing & I	5	500	SW
32	SAMPLES	46mPB	SY	500.7	Install HVAC Equipment & Ductwork	5	500	SW
33	SAMPLES	46mPB	SY	500.8	Install Miscellaneous Tags & Labels	5	500	SW
34	SAMPLES	46mPB	SY	500.9	Complete Machinery Spaces Outfit	5	500	MACHYSF
35	SAMPLES	46mPB	SY	502.1	Engine Room Ventilation	5	502	

Selecting a Planning Activity for assigning Work Orders.

Double click to open details of the Planning Activity.



Details of the Planning Activity.

Activity Details Information for the Planning Environment											
Activity		Work Orders		Engineering Drawings		Pallets		Requisitions		MS-Project Task	
Contract ID		SAMPLES		Project		46mPB		Center		SY	
Description		Emergency Diesel Generatc									
Activity		314.3		Duration		90.00		Lead Time		0	
Slack		0		Free Slack		0.00					
Start Date		Finish Date		Activity Budget Hours		35.02		Revised Budget		0.00	
Baseline		00/00/0000		00/00/0000		Hours Not Allocated to Work Orders		3.50		Revision Date	
Planned		12/21/2007		04/24/2008		BCWS		0.00		Number of WOs	
Actual		00/00/0000		00/00/0000		BCWP		0.00		WO Budget Hours	
Progress		0		EAC		0.00		WO Actual Hours		0.00	
Manual Progress		0		Last Charge		00/00/0000					
On Critical Path		Yes		Task Constraint Type		As Late as possible		Constraint Date		00/00/0000	
SWBS		Group		3		Account		314		PWBS	
COAs		Division		Shop		Zone		Outfit Zone		Unit/Block	
Center		Supervisor		Sub Assy		Assembly		Part			



Open the “Work Orders” tab and define work orders to be related to the Planning Activity. Development functions for work orders under the Planning Activity window are the same as available elsewhere in the system.

Activity Details Information for the Planning Environment

Activity Work Orders Engineering Drawings Pallets Requisitions MS-Project Task

Contract	Project	Center	Work Order	Heading	Revision	Revision Date	Planned Qty	Actual Qty	UoM	Labor CER
1 SAMPLES	46mPB	SY	314.3	Emergency Diesel Generator		00/00/0000	40.00	0.00	KW	0.80

Double click on the work order in this work sheet to open details of the work order.

Work Order Details Information for the Planning Environment

Contract: SAMPLES Project: 46mPB Heading: Emergency Diesel Generator Issue Date: 00/00/0000

Center: SY Work Order: 314.3 Description: Emergency Diesel Generator Revision: 00/00/0000

IPT: Planner: Foreman: Rev Date: 00/00/0000

Division: Shop: Center: Drawing: Planned: Actual: Start Date: Finish Date

Supervisor: Qty: 40.00 0.00 Planned: 12/21/2007 04/24/2008

Zone: Labor CER: 0.80 UoM: Actual: 00/00/0000 00/00/0000

Outfit Zone: Labor Rate: 20.08 KW Date of Last Charge: 00/00/0000

Unit/Block: Hours: Cost: Budget Material \$: 21,758.28

Assembly: Budget: 31.52 703.17 Actual Material \$: 0.00

Sub Assembly: Actual: 0.00 0.00 Product Code:

MFG Part: Rework: 0.00 0.00 WO Type: Discrete

SWBS Group: 3 Premium: 0.00 0.00 Manpower Curve:

SWBS Account: 314 After Close: 0.00 0.00 Authorization: NOT Authorized

CLIN: Estimated to Complete: 0.00 Rework Status: NOT a Rework WO

Activity Center: SY Manual Progress: 0.00 % Pallet Budgeted Hours: 0.00

Planning Activity: 314.3 Change Order ID: Work Order Serial Number: 4088



Another option is to assign work orders to the Planning Activity that already have been defined on the database for the project.



Click on the “Attach”  button on the tool bar.

Activity Details Information for the Planning Environment

Activity | Work Orders | Engineering Drawings | Pallets | Requisitions | MS-Project Task

	Contract	Project	Center	Work Order	Heading	Revision	Revision Date	Planned Qty	Actual Qty
1	SAMPLES	46mPB	SY	314.3	Emergency Diesel Generator		00/00/0000	40.00	0.0

Select Work Orders to Link to Activities

	Contract	Project	Center	Work Order	Heading
1	SAMPLES	46mPB	SY	200.2	Diesel HS Geared Drive w/ FPP
2	SAMPLES	46mPB	SY	310.1	Electrical Labor - Stern
3	SAMPLES	46mPB	SY	310.2	Electrical Labor - Machinery Space
4	SAMPLES	46mPB	SY	310.3	Electrical Labor - Deck House (Not
5	SAMPLES	46mPB	SY	310.4	Electrical Labor - Habitation Areas
6	SAMPLES	46mPB	SY	310.5	Electrical Labor - Forepeak
7	SAMPLES	46mPB	SY	310.6	Electrical Labor - Forebody Deck
8	SAMPLES	46mPB	SY	314.1	Ship Service Generator
9	SAMPLES	46mPB	SY	314.3	Emergency Diesel Generator
10	SAMPLES	46mPB	SY	408.1	Electronics Installation Labor Hours
11	SAMPLES	46mPB	SY	502.1	Engine Room Ventilation
12	SAMPLES	46mPB	SY	502.2	Conventional HP HVAC, Accommod

Select row(s), then drag it to the window to add. Close



From the pop-up list of work orders, drag and drop any existing work orders to be assigned to the Planning Activity.

Activity Details Information for the Planning Environment

Activity | Work Orders | Engineering Drawings | Pallets | Requisitions | MS-Project Task

	Contract	Project	Center	Work Order	Heading	Revision	Revision Date	Planned Qty	Actual Qty
1	SAMPLES	46mPB	SY	314.3	Emergency Diesel Generator		00/00/0000	40.00	0.0
2	SAMPLES	46mPB	SY	310.2	Electrical Labor - Machinery Space		00/00/0000	1,820.56	0.0

Select Work Orders to Link to Activities

	Contract	Project	Center	Work Order	Heading
1	SAMPLES	46mPB	SY	200.2	Diesel HS Geared Drive w/ FPP
2	SAMPLES	46mPB	SY	310.1	Electrical Labor - Stern
3	SAMPLES	46mPB	SY	310.3	Electrical Labor - Deck House (Not
4	SAMPLES	46mPB	SY	310.4	Electrical Labor - Habitation Areas
5	SAMPLES	46mPB	SY	310.5	Electrical Labor - Forepeak
6	SAMPLES	46mPB	SY	310.6	Electrical Labor - Forebody Deck
7	SAMPLES	46mPB	SY	314.1	Ship Service Generator
8	SAMPLES	46mPB	SY	314.3	Emergency Diesel Generator
9	SAMPLES	46mPB	SY	408.1	Electronics Installation Labor Hours
10	SAMPLES	46mPB	SY	502.1	Engine Room Ventilation
11	SAMPLES	46mPB	SY	502.2	Conventional HP HVAC, Accommod
12	SAMPLES	46mPB	SY	502.3	HVAC & Refrigeration Machinery

Select row(s), then drag it to the window to add. Close

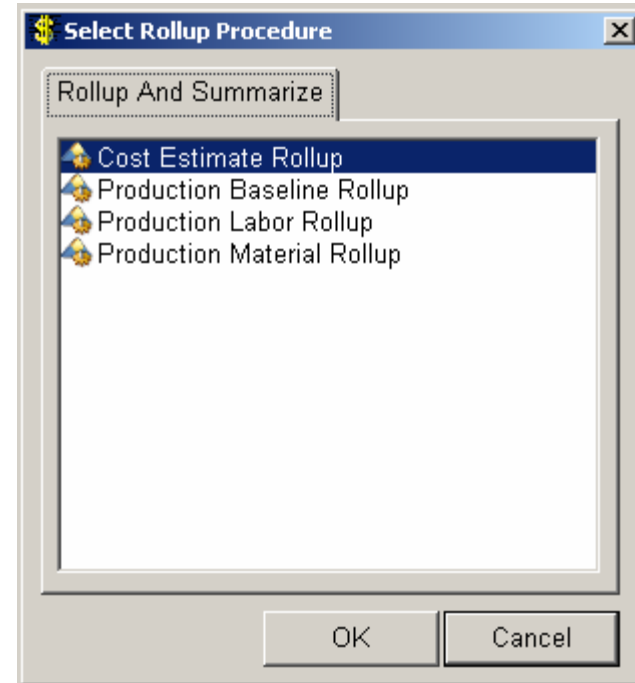
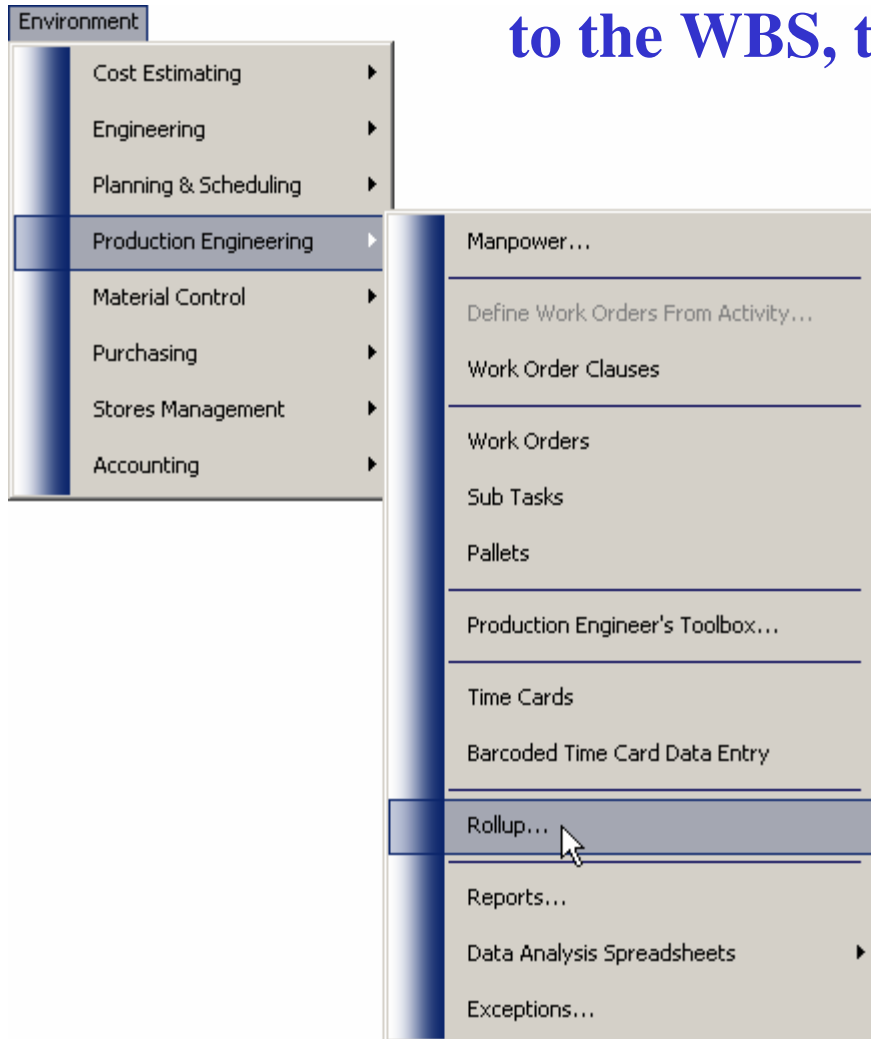


Similar operations can be done to develop and/or assign Engineering Drawings, Pallets, and/or Requisitions by opening their respective tabs.

The tab labeled “MS Project Task” enables various comments to be entered against the task that will be displayed in the MS Project various reports.



In order to summarize costs and schedules to the WBS, the user must perform roll-ups.



- 1. Estimate roll-up summarizes estimated costs from Cost Items to the WBS**
- 2. Baseline roll-up summarizes Planning Activity budgets and Planned Schedules to the WBS. Options also are available to roll-up labor and material costs, schedules and earned value performance information to the Planning Activities.**
- 3. Labor roll-up summarizes Work Order costs, schedule, and earned value performance information to the WBS.**
- 4. Material roll-up summarizes materials costs, schedules, and earned value performance information to the WBS.**



Whenever the internal Microsoft Project database file is opened, the tasks are updated automatically by the Planning Activities with actual costs, schedules and earned value performance information.



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