



## Cost and Price Evaluation

***SEAPOWERTHROUGH ENGINEERING***

3.2.4

**TOPIC LEARNING OBJECTIVES**

Upon successful completion of this topic, the student will be able to:

1. Recognize the use of cost and price data in the context of determining a fair and reasonable price.
2. Recognize the importance of Contractor financial principles to the defense acquisition process.
3. Identify how the balance sheet and income statement portray the operating characteristics and health of a business.
4. Differentiate between a direct cost and an indirect cost.
5. Given the necessary information, calculate allocation of indirect costs to a contract:
  - a. Calculate Contractor indirect cost rates.
  - b. Allocate General and Administrative (G&A) costs to the Total Cost Input (TCI).
6. Identify the five bases for cost allowability.
7. Recognize the purpose and application of forward pricing rates to Government contracts.
8. Apply the fully burdened rate to labor hours to correctly calculate Contractor's costs.

**STUDENT PREPARATION**

Student Support Material

1. None

Primary References

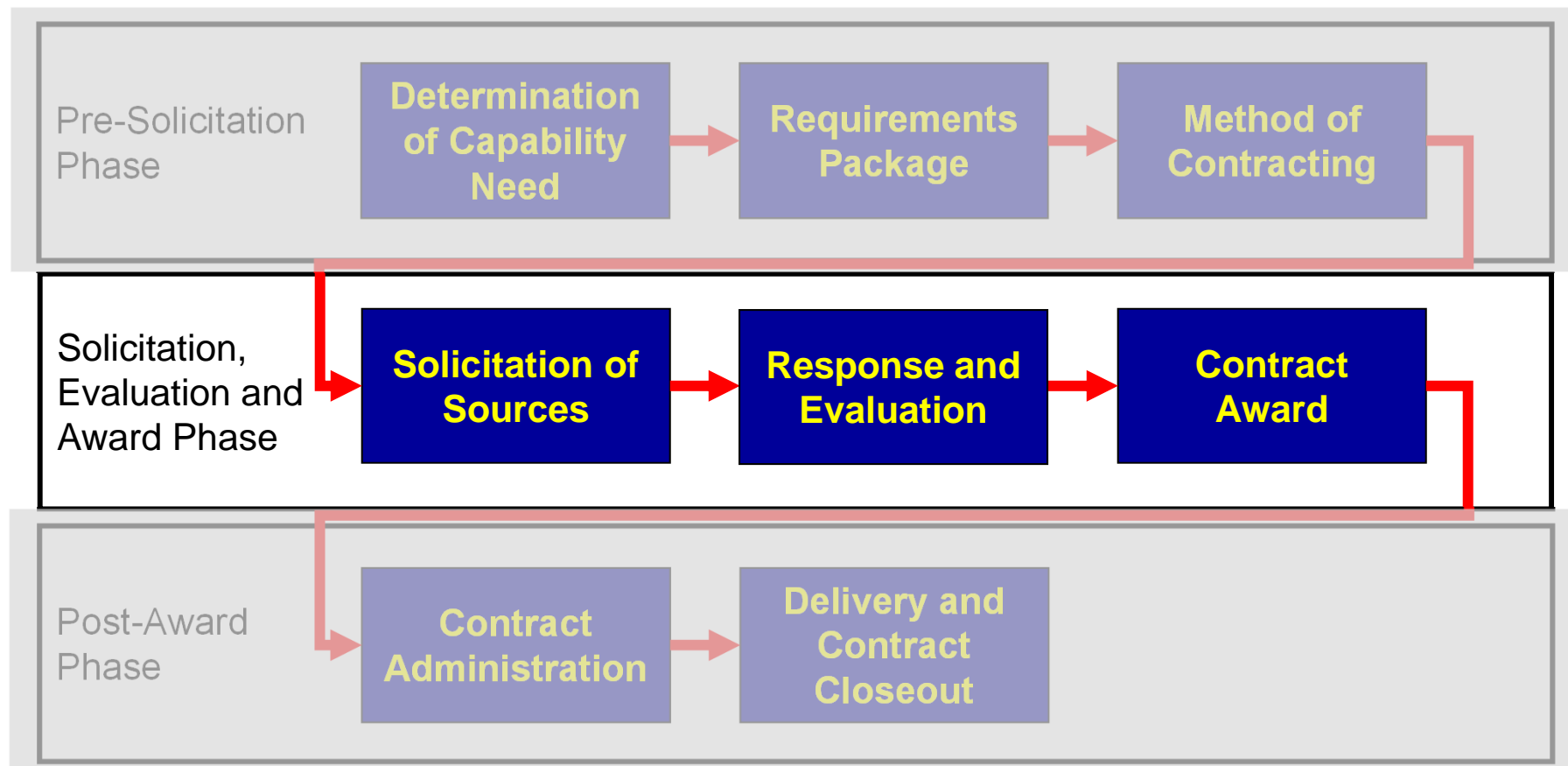
1. Federal Acquisition Regulations (FAR)
2. NAVSEA Contracting Handbook

Additional References

1. None



# Source Selection Process





# Overview

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- Contract pricing
- Contractor financial health
- Contractor cost accounting



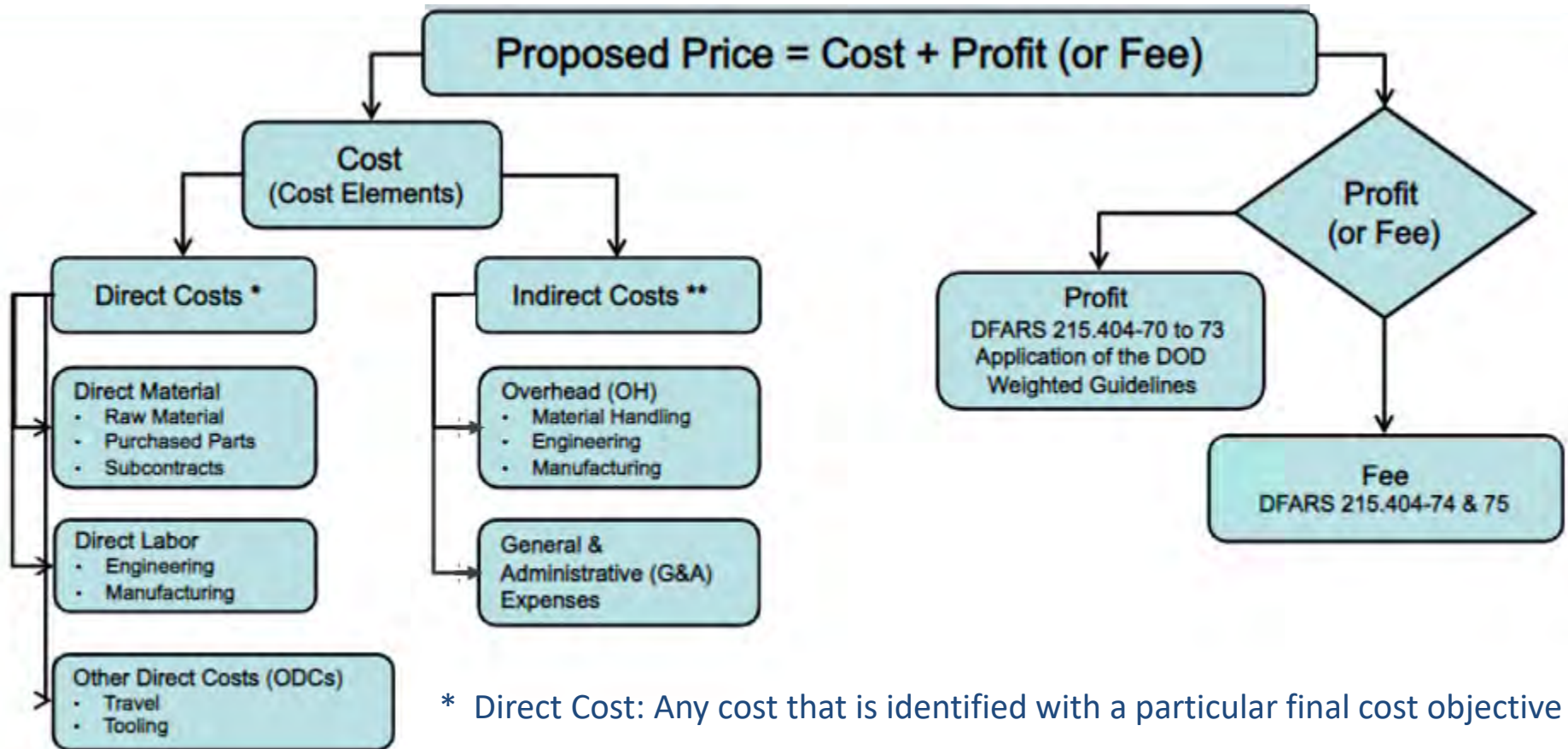
# Determining Contract Price

- Contracting Officer (KO) is responsible for evaluating the reasonableness of offered price
  - KO uses their training, experience, good business judgment, and different types of analyses to determine if an offer is fair and reasonable
  - **Price analysis, cost analysis, technical analysis, field pricing support, and risk analysis may be used for this determination**
- Cost analysis and price analysis are the primary techniques used in determining if the proposed contract price is fair and reasonable

*Fair and reasonable price determined via any combination of price, cost, technical, field pricing support, and risk analyses*



# Proposed Price



\* Direct Cost: Any cost that is identified with a particular final cost objective

\*\* Indirect Cost: Any cost not identified with a single final objective, but identified with two or more final cost objectives



# Cost Analysis

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- The review and evaluation of separate cost elements and profit in an offeror's or Contractor's proposal
- The application of judgment to determine how well proposed costs represent what the cost of the contract should be, assuming reasonable economy and efficiency
- All elements of cost are examined, such as materials, labor, indirect costs, and profit (fee)
- FAR 15.404-1(c) contains techniques and procedures for performing cost analysis
- Cost analysis is more time-consuming than price analysis, and might increase the contract price



# Cost Analysis

Cost Elements	Offeror 1		Offeror 2		Offeror 3	
Direct Labor	60,000.00		55,000.00		62,000.00	
IT Specialist	75,000.00		76,000.00		75,500.00	
Program Analyst	90,000.00		95,000.00		89,000.00	
Computer Engineer	100,000.00		110,000.00		10,500.00	
Cyber Technician	95,000.00		75,000.00		95,000.00	
Program Manager	120,000.00		115,000.00		125,000.00	
<b>Subtotal</b>	<b>540,000.00</b>		<b>526,000.00</b>		<b>457,000.00</b>	
Fringe Benefits	216,000.00	40%	184,100.00	35%	205,650.00	45%
Overhead	302,400.00	40%	248,535.00	35%	251,807.00	38%
<b>Subtotal</b>	<b>1,058,400.00</b>		<b>958,635.00</b>		<b>914,457.00</b>	
Direct Material						
Raw material	50,000.00		85,000.00		89,000.00	
Purchased parts	45,000.00		60,000.00		65,000.00	
<b>Subtotal</b>	<b>95,000.00</b>		<b>145,000.00</b>		<b>154,000.00</b>	
<b>Travel</b>	<b>5,000.00</b>		<b>500.00</b>		<b>4,500.00</b>	
<b>Subtotal Cost Input</b>	<b>1,158,400.00</b>		<b>1,104,135.00</b>		<b>1,072,957.00</b>	
<b>G&amp;A Expense</b>	<b>104,256.00</b>	<b>9%</b>	<b>121,454.85</b>	<b>11%</b>	<b>128,754.84</b>	<b>12%</b>
<b>Total Cost</b>	<b>1,262,656.00</b>		<b>1,225,589.85</b>		<b>1,201,711.84</b>	
Profit	63,132.80	5%	36,767.70	3%	48,068.47	4%
<b>Total Price</b>	<b>1,325,788.80</b>		<b>1,262,357.55</b>		<b>1,249,780.31</b>	



# Price Analysis

- *"The process of examining and evaluating a proposed price without evaluating its separate cost elements and proposed profit." (FAR 15.404-1(b))*
- Price analysis techniques include:
  - Comparison of proposed prices received in response to the solicitation
  - Comparison of prior proposed prices with current proposed prices for same or similar terms
  - Application of rough yardsticks (e.g., \$/ton)

*An evaluation of price relative to prices in the marketplace paid by the general public for the same or similar items*



# Cost or Pricing Data

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- Required when the contract action amount exceeds \$2M
  - Cost or pricing data shall not be obtained if the KO concludes that one of the five exceptions listed in the "Prohibition on obtaining cost or pricing data" applies (FAR section 15.403-1)
- Cost or pricing data must be specifically requested by the Government in the solicitation
- When cost or pricing data are required, the KO should generally request a technical analysis of proposals by the appropriate technical personnel
  - Technical Analysis is an evaluation of the type and quantities of material, labor, and other technical aspects of the proposals



# Cost vs. Price Analysis

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## ■ Cost Analysis

- Looks at detailed cost breakout
- Reasonableness is based on thorough analysis of each cost element
  - Direct Labor
  - Indirect Rates (Fringe, Overhead and G&A)
  - Material
  - Subcontracts
  - Other Direct Cost
- Profit is evaluated

## ■ Price Analysis

- Looks at total price
- Reasonableness is based on a comparison of proposed prices to same or similar items
- Profit is embedded in price



# Field Pricing Support

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- Field pricing support consists of all audit and other specialist effort necessary for the KO to determine the reasonableness of the proposed cost or price
- The KO should consider requesting field pricing assistance for:
  - Accountants
  - Auditors
  - Price/cost analysts
  - Negotiators
  - Engineers
  - Small and disadvantaged business utilization specialists (SADBUS)
  - Production Specialists
- Defense Contract Management Agency (DCMA) field assistance
- Defense Contract Audit Agency (DCAA) audit assistance for fixed price proposal exceeding \$10M and cost-type proposals exceeding \$100M



# Overview

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- Contract pricing
- Contractor financial health
- Contractor cost accounting



# Contractor Financial Health

- Part of determining if an offeror is responsible is determining their financial health. **There are two primary profitability ratios** that can help with this:
  - Return on Sales (ROS)
  - Return on Assets (ROA)
- To understand and calculate ROS and ROA, it is necessary to understand two annual reports:
  - Balance Sheet
  - Income Statement
- Debt, cash on hand, and cash flow analyses also help to determine financial health

*Determining an offeror's financial principles and health is a key to determining if they are responsible and therefore eligible to be awarded the contract*



# Balance Sheet

- Represents the financial condition of an organization as of a specific date

Period Ending	Dec 31, 2015	Dec 31, 2014	Dec 31, 2013
<b>Assets</b>			
Current Assets			
Cash And Cash Equivalents	16,549,000	18,347,000	18,898,000
Short Term Investments	56,517,000	46,048,000	39,819,000
Net Receivables	13,909,000	10,849,000	10,916,000
Inventory	-	-	-
Other Current Assets	3,139,000	3,412,000	3,253,000
<b>Total Current Assets</b>	<b>90,114,000</b>	<b>78,656,000</b>	<b>72,886,000</b>
Long Term Investments	5,183,000	3,079,000	1,976,000
Property Plant and Equipment	29,016,000	23,883,000	16,524,000
Goodwill	15,869,000	15,599,000	11,492,000
Intangible Assets	3,847,000	4,607,000	6,066,000
Accumulated Amortization	-	-	-
Other Assets	3,181,000	3,187,000	1,976,000
Deferred Long Term Asset Charges	251,000	176,000	-
<b>Total Assets</b>	<b>147,461,000</b>	<b>129,187,000</b>	<b>110,920,000</b>
<b>Liabilities</b>			
Current Liabilities			
Accounts Payable	15,297,000	14,018,000	11,837,000
Short/Current Long Term Debt	3,225,000	2,009,000	3,009,000
Other Current Liabilities	788,000	752,000	1,062,000
<b>Total Current Liabilities</b>	<b>19,310,000</b>	<b>16,779,000</b>	<b>15,908,000</b>
Long Term Debt	1,555,000	3,228,000	2,236,000
Other Liabilities	5,485,000	4,458,000	3,381,000
Deferred Long Term Liability Charges	340,000	862,000	2,086,000
Minority Interest	-	-	-
Negative Goodwill	-	-	-
<b>Total Liabilities</b>	<b>27,130,000</b>	<b>25,327,000</b>	<b>23,611,000</b>
<b>Stockholders' Equity</b>			
Misc Stocks Options Warrants	-	-	-
Redeemable Preferred Stock	-	-	-
Preferred Stock	-	-	-
Common Stock	32,982,000	28,767,000	25,922,000
Retained Earnings	89,223,000	75,066,000	61,262,000
Treasury Stock	-	-	-
Capital Surplus	-	-	-
Other Stockholder Equity	(1,874,000)	27,000	125,000
<b>Total Stockholder Equity</b>	<b>120,331,000</b>	<b>103,860,000</b>	<b>87,309,000</b>
<b>Net Tangible Assets</b>	<b>100,615,000</b>	<b>83,654,000</b>	<b>69,751,000</b>

Total Assets =  
Stockholder equity  
+ Liabilities

Current liabilities  
are due over the  
next 12 months



# Income Statement

- Summarizes sales revenue and expenses for a period of time

Income Statement

Get Income Statement for:

View: [Annual Data](#) | [Quarterly Data](#)

Comparison is usually made with the previous year

All numbers in thousands

Period Ending	Dec 31, 2015	Dec 31, 2014	Dec 31, 2013
Total Revenue	74,989,000	66,001,000	55,519,000
Cost of Revenue	28,164,000	25,691,000	21,993,000
Gross Profit	46,825,000	40,310,000	33,526,000
Operating Expenses			
Research Development	12,282,000	9,832,000	7,137,000
Selling General and Administrative	15,183,000	13,982,000	10,986,000
Non Recurring	-	-	-
Others	-	-	-
Total Operating Expenses	-	-	-
Operating Income or Loss	19,360,000	16,496,000	15,403,000
Income from Continuing Operations			
Total Other Income/Expenses Net	291,000	763,000	496,000
Earnings Before Interest And Taxes	19,651,000	17,259,000	15,899,000
Interest Expense	-	-	-
Income Before Tax	19,651,000	17,259,000	15,899,000
Income Tax Expense	3,303,000	3,639,000	2,739,000
Minority Interest	-	-	-
Net Income From Continuing Ops	16,348,000	13,620,000	13,160,000
Non-recurring Events			
Discontinued Operations	-	516,000	(427,000)
Extraordinary Items	-	-	-
Effect Of Accounting Changes	-	-	-
Other Items	-	-	-
Net Income	16,348,000	14,136,000	12,733,000
Preferred Stock And Other Adjustments	(522,000)	-	-
Net Income Applicable To Common Shares	15,826,000	14,136,000	12,733,000

Comparison is usually made with the previous year



# Analyzing Profitability

- Return on Sales (ROS) (a.k.a. profit margin) is a ratio that measures how efficiently a company generated profits from its revenue
- Measure of profitability
- Calculated by dividing net income for the period by sales (revenue)

$$\text{ROS}_{\text{Google2014}} = \frac{\text{Net Income}}{\text{Revenue}} = \frac{\$14,136,000}{\$66,001,000} * 100 = 21.4\%$$

$$\text{ROS}_{\text{Google2015}} = \frac{\text{Net Income}}{\text{Revenue}} = \frac{\$16,348,000}{\$74,989,000} * 100 = 21.8\%$$

*Increasing ROS indicates the company is growing more efficient, while a decreasing ROS could signal looming financial troubles*



# Analyzing Profitability

- Return on Assets (ROA) looks at the ability of a company to utilize its assets to gain a net profit
- It is a measure of efficiency
- Calculated by dividing net income for the period by the total value of the assets on the balance sheet:

$$ROA_{\text{Google2014}} = \frac{\text{Net Income}}{\text{Total Value of Assets}} = \frac{\$14,136,000}{\$129,187,000} * 100 = 10.9\%$$

$$ROA_{\text{Yahoo2014}} = \frac{\text{Net Income}}{\text{Total Value of Assets}} = \frac{\$7,521,731}{\$96,444,421} * 100 = 7.8\%$$

*The higher the ROA, the more a company earns on a smaller investment*



# Analyzing Profitability

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- To understand if a company's ROA is acceptable, you need to compare it to other companies within the same industry
- When a firm has an ROS or ROA that is more than one or two percent points less than the historical averages for the industry, you should find out why
- DCMA administers most DoD contracts and usually has insights into a firm's financial health
  - Some of the variation in ratios between firms may be explained by unusual accounting events during a given year (i.e., merger costs)

*Profitability is a motivator and a constraint for a Contractor to participate in Defense acquisition*



# Overview

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- Contract pricing
- Contractor financial health
- Contractor cost accounting



# Direct and Indirect Costs

## ■ Direct Costs

- Direct costs are those costs that can be tracked to **one specific cost objective**
- Includes direct materials, direct labor, and other costs traceable direct to that single cost objective
- Clearly identified
- Easily identified with final product

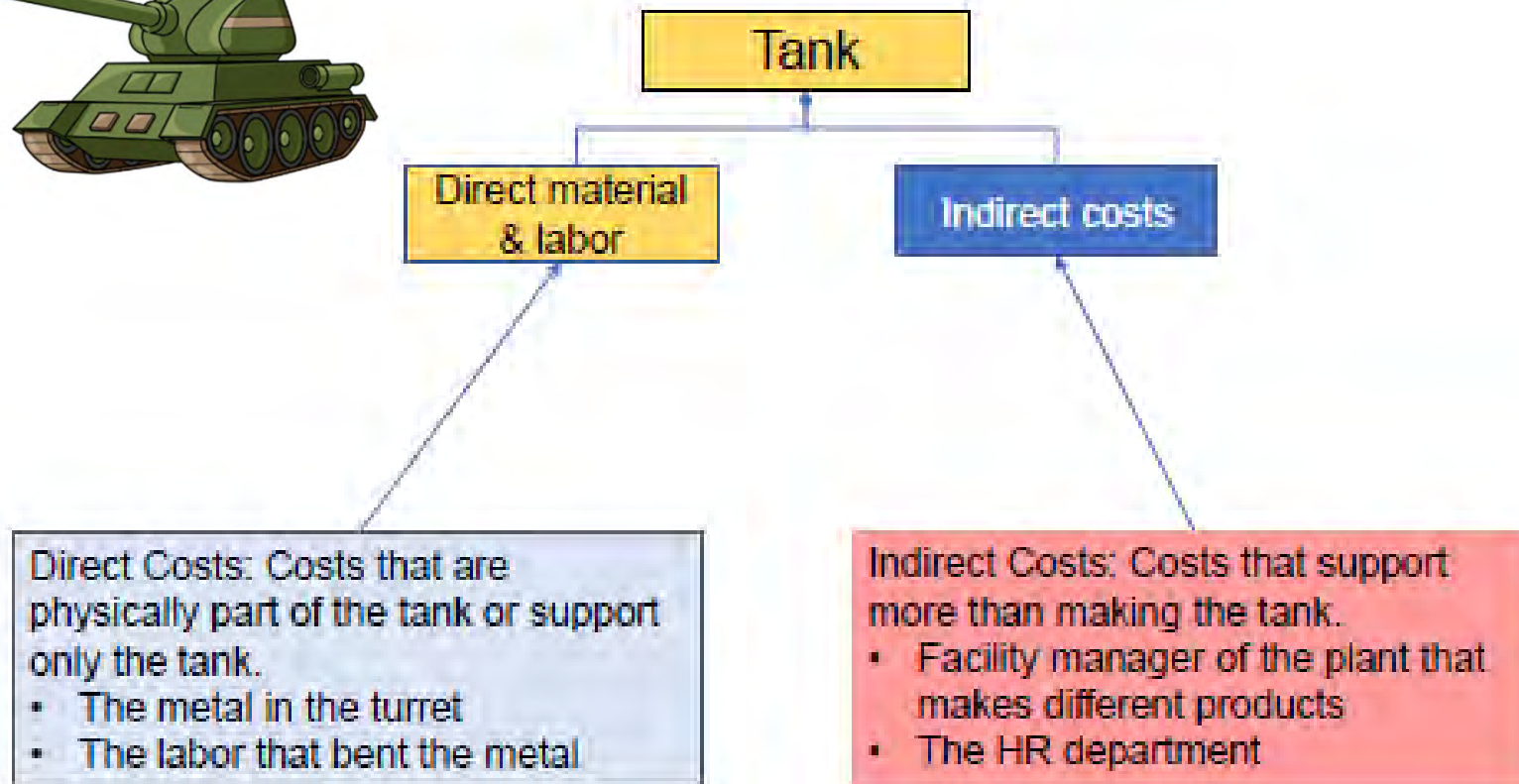
“Cost objective ” means a function, organizational subdivision, contract, or other work unit that has direct costs for which cost data are desired

## ■ Indirect Costs

- Indirect costs applies to **two or more cost objectives**
- Includes costs associated with
  - Management
  - Legal
  - Travel
  - Utilities
  - Facility Security
- Typically, indirect costs are placed into two categories:
  - Overhead
  - Administrative or General and Administrative (G&A)



# Direct and Indirect Costs Example





# Indirect Costs

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## ■ Overhead

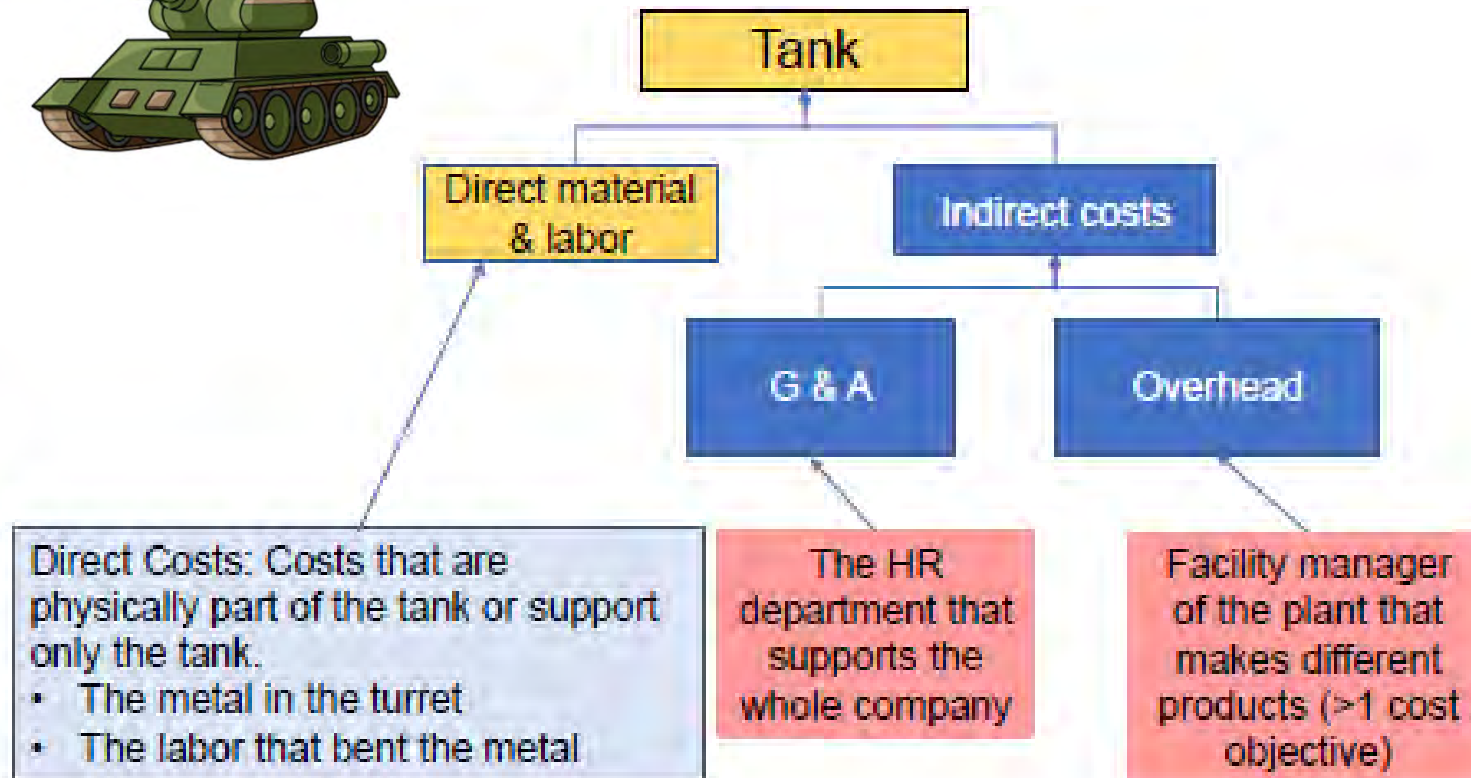
- The category of indirect costs that support a specific part or function of the company but not the entire company
  - Supports multiple cost objectives
  - Allocated across the cost objectives it supports
- Examples include:
  - Supervision
  - Engineering
  - Production Control
  - Quality control
  - Material handling

## ■ General & Administrative (G&A)

- The category of indirect costs that support the whole company
  - Allocated across all the product lines
- Examples include:
  - Accounting
  - Legal
  - Executive
  - Human Resources



# Indirect Cost Examples





# Cost Allowability

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- Allowable cost are most of the cost incurred as direct or indirect
  - If costs are allowable, they are billable
- While the total cost of the contract includes all costs properly allocable to the contract, the allowable costs to the government are limited
- There are five bases for cost allowability:
  1. Reasonableness
  2. Allocability
  3. Cost Accounting Standards (CAS) and Generally Accepted Accounting Principles (GAAP)
  4. Contract Terms
  5. Limitations set forth in FAR 31.205
- Unallowable costs cannot be passed on to the Government as defined by Federal Acquisition Regulations (FAR) Part 31



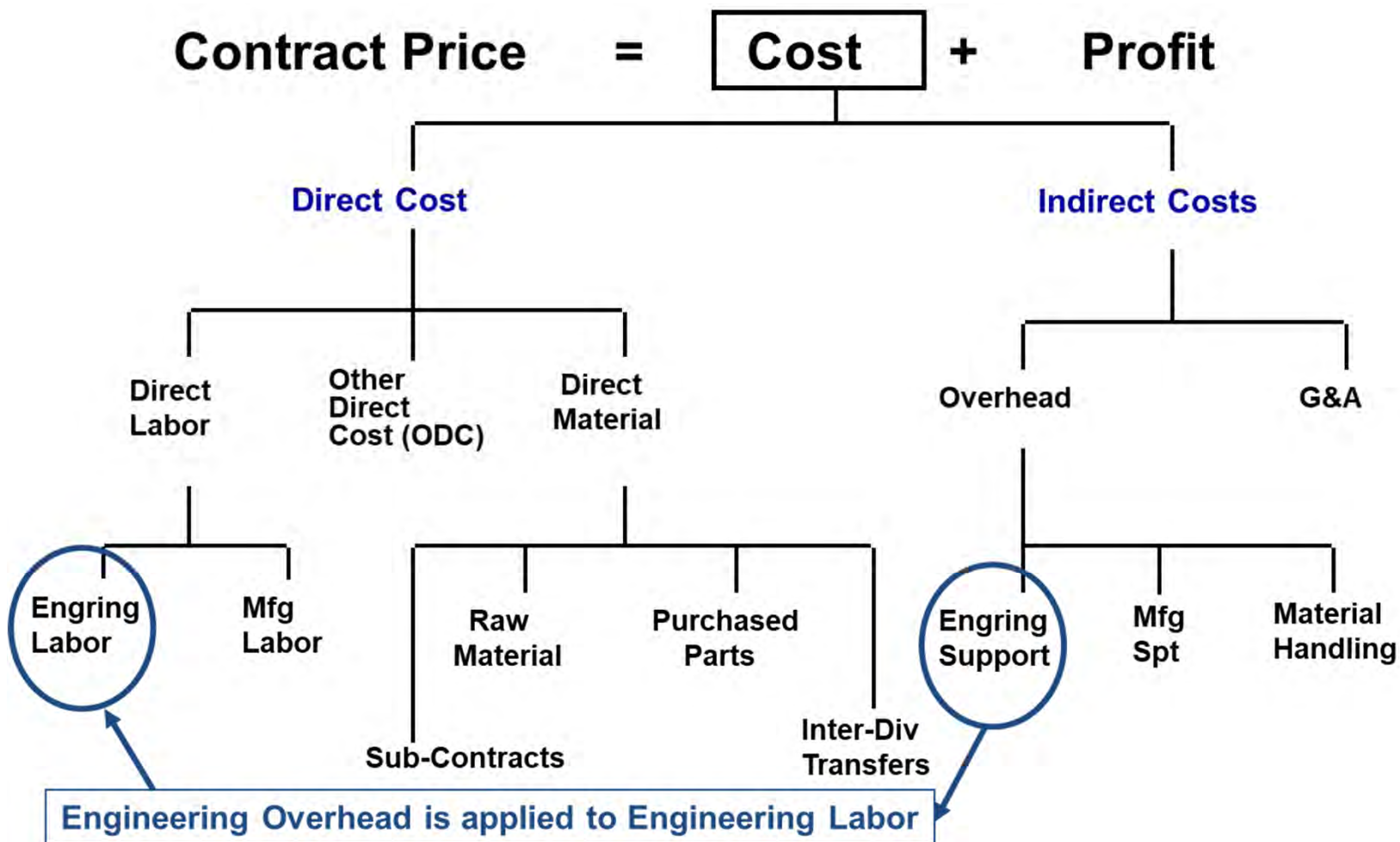
# Cost Allowability (cont)

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- Allocability: A cost is allocable if it is incurred specifically for the contract or benefits the contract and other work (i.e., it's an overhead cost), and can be fairly distributed based on benefits received, or it is necessary for overall operation of the business (i.e., certain G&A expenses)
- Unallowable Cost:
  - Bad debts
  - Contributions or donations
  - Entertainment cost
  - Costs of alcoholic beverages



# Direct and Indirect Costs





# Indirect Cost Rates

- Indirect cost rates:
  - The way to make sure that the total cost of whatever we build includes its fair share of all the costs associated with running the company
  - Overhead and G&A cost rates determine how much to include in the total cost of a contract item
  - Usually expressed as a percentage

$$\text{Indirect Cost Rate} = \frac{\text{Indirect Cost Pool}}{\text{Allocation Base}}$$



# Indirect Cost Rates

- Allocation Base:
  - Represents the method of allocation. It can include direct labor dollars, direct labor hours, material dollars, total machine hours, or total units produced

<b>Direct Labor</b> <ul style="list-style-type: none"><li>– Dollars or</li><li>– Hours</li></ul>	<b>Space</b> <ul style="list-style-type: none"><li>– Square Feet or</li><li>– Cubic Feet</li></ul>
<b>Direct Material</b> <ul style="list-style-type: none"><li>– Dollars or</li><li>– Quantity</li></ul>	<b>Activity</b> <ul style="list-style-type: none"><li>– Hours or</li><li>– Items</li></ul>



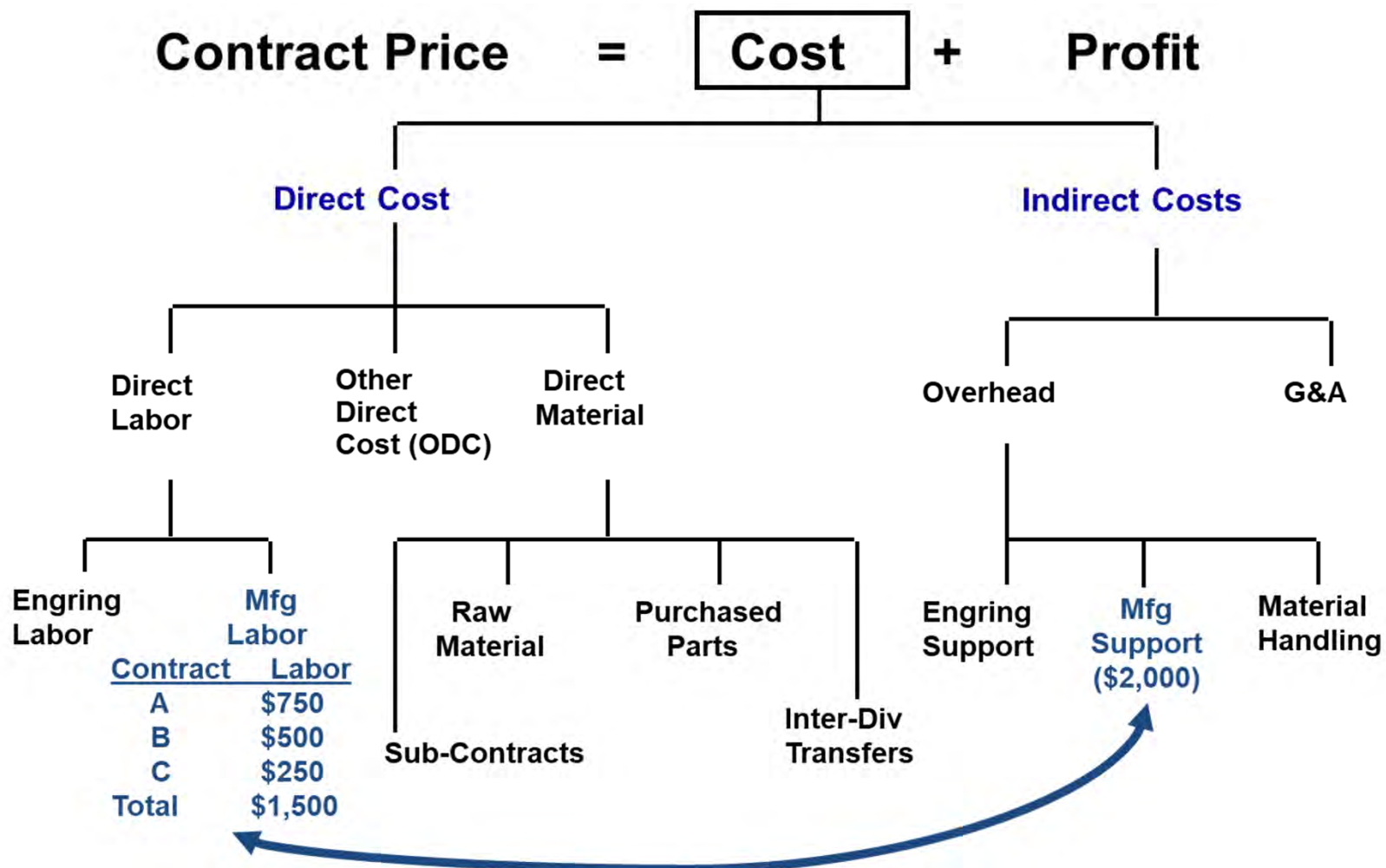
# Indirect Cost Pools

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- Indirect cost pools:
  - Represents indirect costs to be allocated
  - A collection of different indirect costs that are combined into a single “pool” to simplify their allocation
  - The costs in each pool should be homogenous - similar in purpose
  - Allocated to a cost objective based on a logical (causal beneficial) relationship to the direct costs in the pool
  - Cost pool examples:
    - Material handling
    - Design support
    - Heat and air conditioning
    - Building maintenance
    - Manufacturing support



# Indirect Cost Rates





# Indirect Cost Rates

Mfg Overhead Costs = \$2000

Calculate Total Manufacturing Direct Labor

Contract	Mfg Direct Labor
A	\$750
B	\$500
C	\$250
Total Mfg Direct Labor	\$1,500

Overhead Rate = 
$$\frac{\text{Mfg Indirect Expense for Year}}{\text{Mfg Direct Labor \$ for Year}}$$

Overhead Rate = 
$$\frac{\$2,000}{\$1,500} = 133\% \text{ Mfg Overhead Rate}$$

= \$1.33 on Mfg overhead

This means that \$1.33 of manufacturing overhead is allocated to (is "fair shared to") every \$1.00 of direct manufacturing labor for every product



# Indirect Cost Rates

## Allocating Overhead Costs

Mfg Direct Labor X OH Rate = Indirect Mfg.

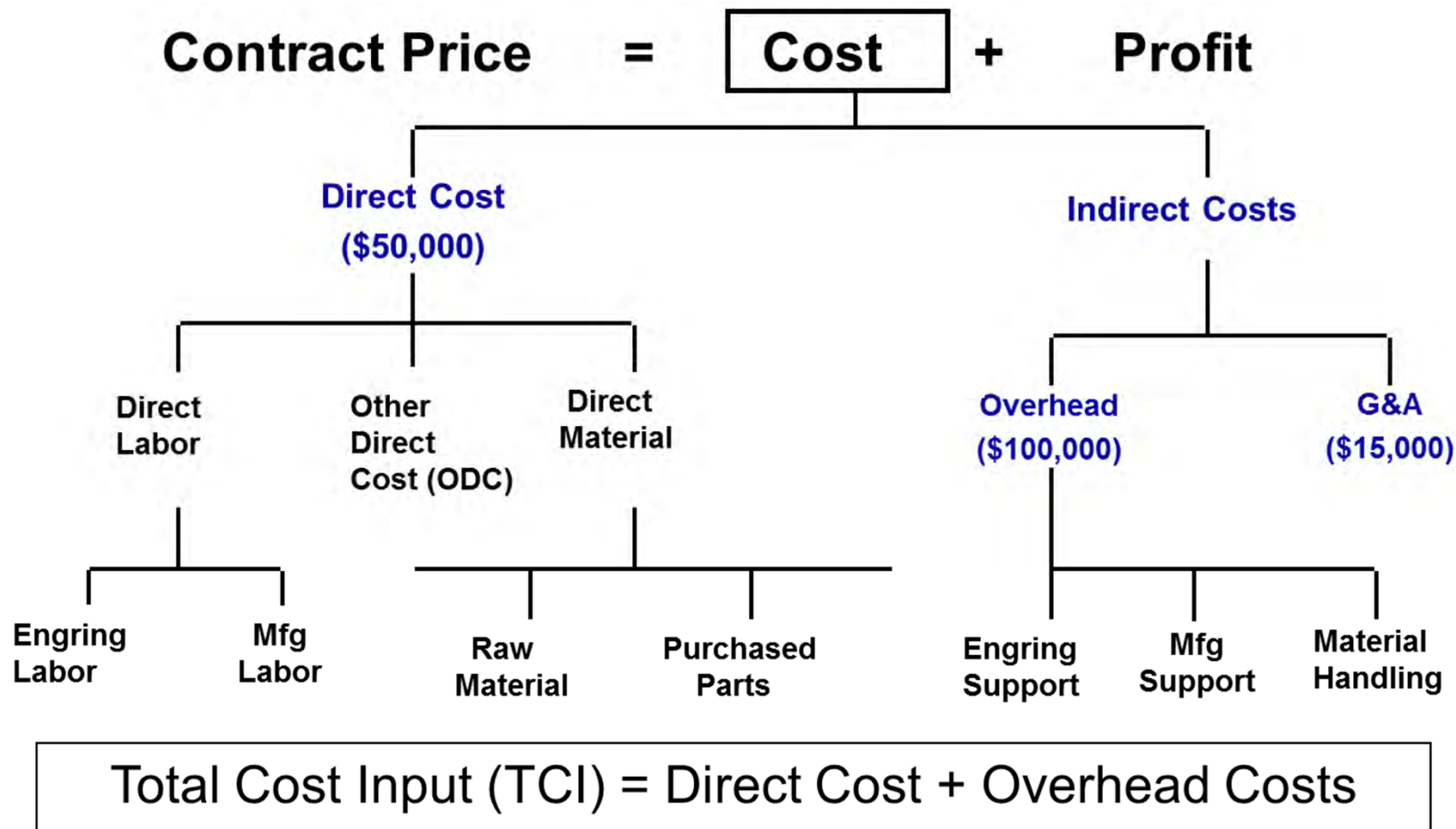
<u>Contract</u>				<u>Charge</u>
A	\$ 750	X	133.3%	= \$1,000
B	\$ 500	X	133.3%	= \$667
C	\$ 250	X	133.3%	= \$333
	\$1,500			\$2,000

## Total Cost for each contract

<u>Contract</u>		
A	\$750 + \$1,000 = \$1,750	} Total = \$3,500
B	\$500 + \$667 = \$1,167	
C	\$250 + \$333 = \$ 583	



# G&A Cost and Total Cost Input (TCI)





# G&A Cost and Total Cost Input (TCI)

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$$\text{TCI} = \$50\text{k} + \$100\text{k} = \$150,000$$

$$\text{G\&A} = \$15,000$$

$$\text{G\&A rate} = \frac{\text{G\&A Costs}}{\text{TCI}} = \frac{\$15\text{k}}{\$150\text{k}} = 0.10 \text{ or } 10\%$$

In this case, \$0.10 of General & Administrative cost will be allocated to each product for every \$1.00 of all other (direct and indirect) costs

*G&A rate is useful for comparing companies cost performance*



# Fully Burdened Rate

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- Used by an offeror to ensure direct labor, indirect costs, and profit are accounted for in their pricing
- ***Useful data point for comparison by analyzing total cost to the Contractor on a time basis***
- Another use of fully burdened rate is in cost estimation. Instead of looking at only the bottom-line cost, we can analyze estimated costs at the trade level; for example:
  - Add up engineer days and then multiply by the fully burdened engineer rate
  - Add up machinist days and then multiply by the fully burdened machinist rate



# Fully Burdened Rate

Category	Contract A	(100 Hrs)
	Amount	Per Hr
Direct Labor Cost		
Engineering	\$1250	
Manufacturing	\$750	
<b>Total:</b>	<u>\$2000</u>	
Indirect Costs		
Engineering O/H	\$1875	
Manufacturing O/H	\$1000	
Material Handling	\$875	
G&A	\$575	
<b>Total:</b>	<u>\$4325</u>	
<b>Fully Burdened Rate</b> (Direct Costs + Indirect Costs) / Time	<b>\$6325</b>	<b>\$63.25/hr</b>



# Practical Exercise: Fully Burdened Rate

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- Contractor XYZ reported the following for Contract A22
  - 50,000 hours direct labor (DL)
  - \$1 million DL costs
  - \$0.50 million manufacturing overhead
  - \$0.20 million other costs
  
- Calculate the Fully Burdened Rate for this Contractor for Contract A22



# Forward Pricing Rates

## ■ Purpose

- An agreement between the Contractor and Government in which certain indirect rates are established for a specified period (typically, one to three years)
  - These rates are estimates of costs and are used to price contracts and contract modifications
- To ensure that contract prices are fair and reasonable which can speed up the contracting process by eliminating the need to audit or analyze the rates
- DCMA negotiated FPRAs avoid each KO doing their own rate analysis in their overall cost analysis
- Provide reasonable projections to estimate and budget for the costs of contracts

## ■ Process

- Contractor submits a Forward Pricing Rate Proposal (FPRP) to the Government for the certification of their cost and labor rates over specified period
- Government performs review of Contractor proposal to establish well-supported negotiation positions
- Contractor and Government negotiate and agree on rates which lead to a Forward Pricing Rate Agreement (FPRA)
- ACO monitors the Contractor's rates

ACO = Administrative Contracting Officer



# Summary

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- Why is it important to determine the financial health of an offeror?
- What are the two profitability ratios that can be determined from the balance sheet and income statement?
- What is the difference between a direct cost and an indirect cost?
- What is the fully burdened rate?



# Summary

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- What is the formula for calculating indirect cost (overhead) rates?
- What are the two formulas needed to calculate the G&A allocation rate?
- Why are forward pricing rate agreements used?