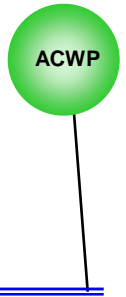
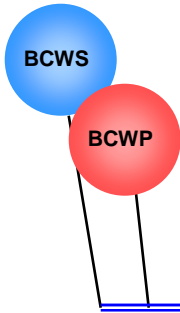
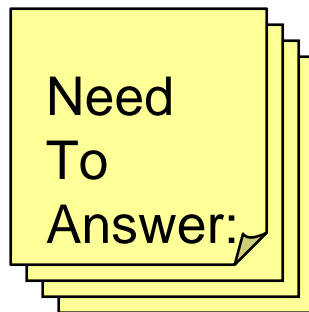


# WHY EARNED VALUE MANAGEMENT SYSTEMS WORK FOR PROGRAM MANAGERS

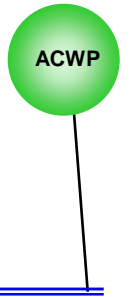
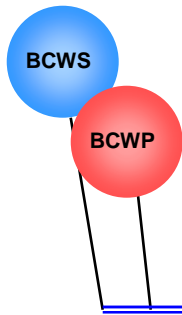


# TRAINING OBJECTIVES

- **Understand Basic Concepts**



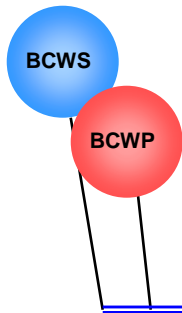
Does EVMS =  
Common Sense Project  
Management???



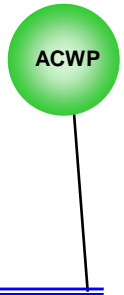
# WHAT WE'LL COVER...

---

- Who, What, Where, When and Why
- Basic EVMS Terms



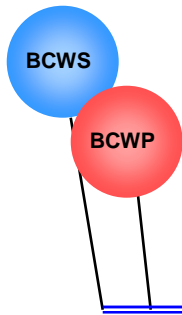
# WHY USE EVMS?



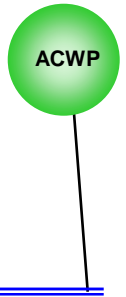
## Life without EVMS

## FAIL TO PLAN, PLAN TO FAIL

- Given:
  - Total Budget of \$100,000
  - 12 Month Effort
  - Produce 20 Units
- Status:
  - Spent to Date: \$64,000
  - Time Elapsed: 6 Months
  - Units Produced: 8 Complete, 2 Partial
- **How Are You Doing, and How Do You Know How You Are Doing?**
- **How Far Along Are You? (64%, 50%, >40%)**

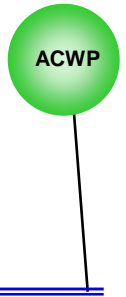
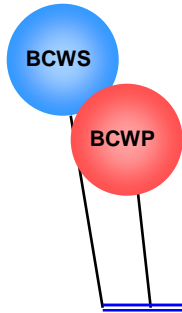


# WHY USE EVMS?



## PLAN AHEAD

- Early and Accurate Identification of Trends and Problems
- Accurate Picture of Contract Status
  - Cost, Schedule, and Technical
- Basis for Course Correction
- Supports Mutual Goals of Contractor and Customer
  - Bring Project in on Schedule and Cost



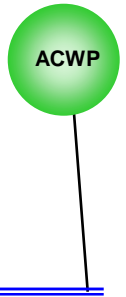
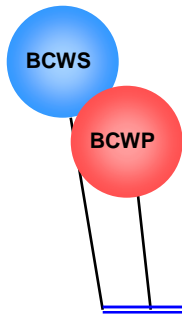
# WHY DO WE NEED EARLY WARNING?

---

Course Corrections Are Easier  
When You Have Time to Make  
Small Adjustments

It's Too Late When You're This  
Close to the Iceberg!

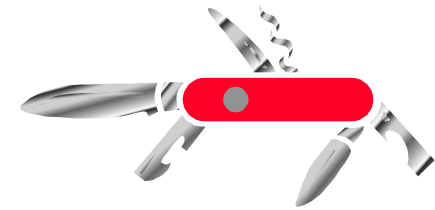




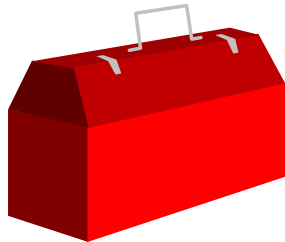
# WHAT IS EVMS?

---

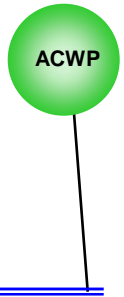
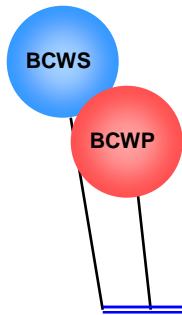
**EVMS** Is the Primary Project Management Tool...



That Integrates the **Technical**, **Schedule**, and **Cost** Parameters of the Contract.

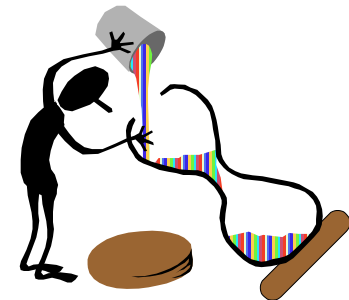


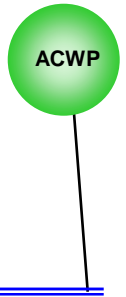
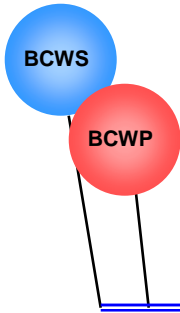
The **Project Manager** Is the Primary Tool in the EVMS Toolbox.



# WHAT IS THE PROCESS?

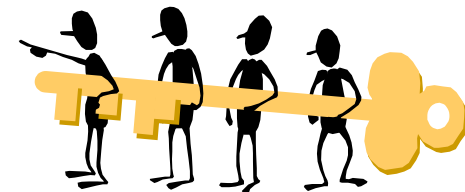
- The Contractor Establishes a Management Control System
  - May Be Required to Show That System Meets 32 Criteria
- An Integrated Baseline Plan Is Established
  - Work Is Defined, Scheduled, and Resources Are Allocated
- Work and Resources Are Driven Down to Lowest Level for Execution
- A Work Authorization System Is Set up That Controls Changes to the Baseline
- Budgets Are “Earned” As Work Is Completed = **EARNED VALUE**
- Status Provided Against Baseline
  - Schedule and Cost Variances Are Isolated
- Problem Assistance
  - Early Warning
  - Corrective Plans
- Early Insight Provided Into Final Estimated Cost

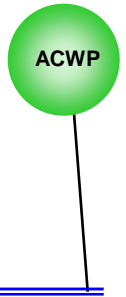
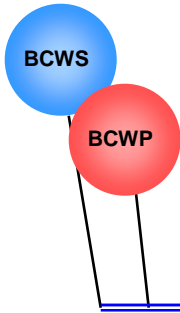




# WHO'S WHO IN EVMS

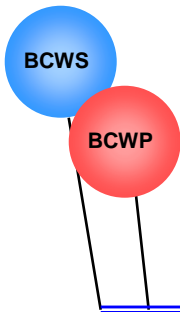
- Primary Users  
Program/Project Managers  
Technical Staff and IPTs
- Primary Implementers  
EVMS specialists  
control account administrators
- Executive Agent  
(Compliance)  
Defense Contract Management  
Command (DCMC) (EVMS Center)
- DoD Policy  
OSD



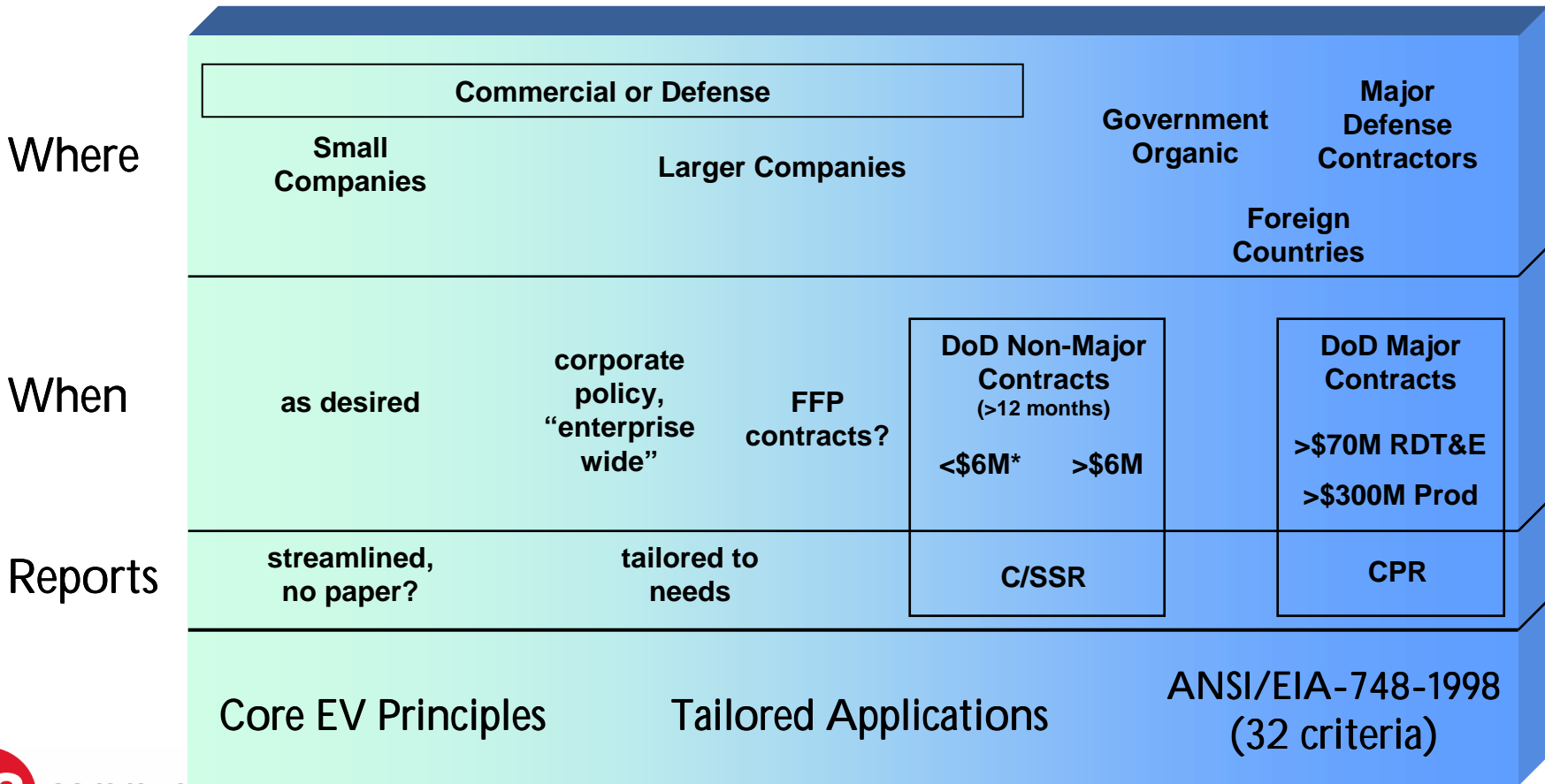


# EVMS CRITERIA

- **Major DoD Programs**
  - Contractor's Management Control System Must Meet Certain Criteria
    - Project Manager Need Accurate and Timely Data
  - Don't Impose a Specific System
  - Acceptance of Management System Performed by Government Customer or Prime
- OSD adopted ***industry developed*** EVMS Standard
  - ANSI/EIA-748-1998, Earned Value Management Systems
  - 32 criteria
    - 5 major groups
      - I Organization (5)
      - II Planning & Budgeting (10)
      - III Accounting (6)
      - IV Analysis (6)
      - V Revisions and Access to Data (5)



# A SPECTRUM OF IMPLEMENTATION

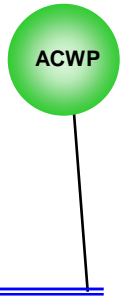
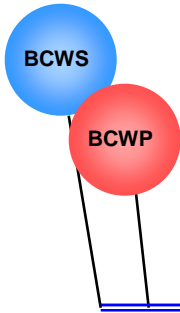


\*with judgement

All \$ are BY96

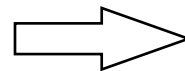
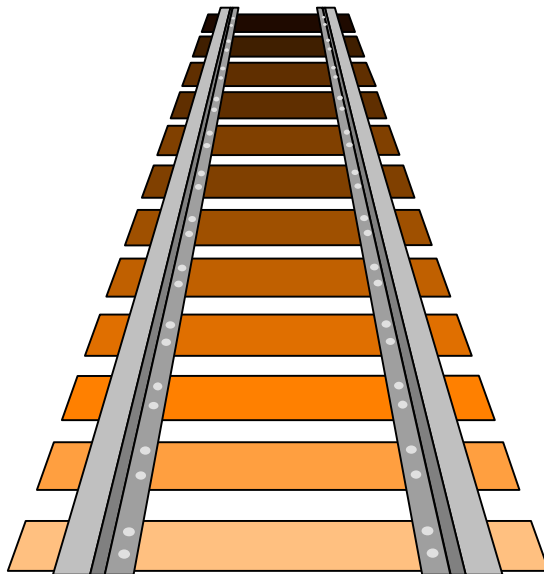


# BASIC EVMS TERMS



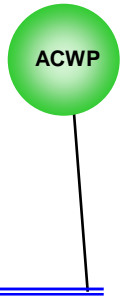
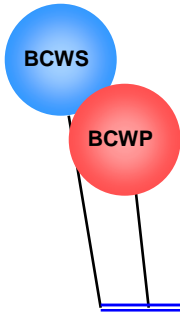
# EVMS MEASURES PROGRESS

*Progress = Movement Forward*



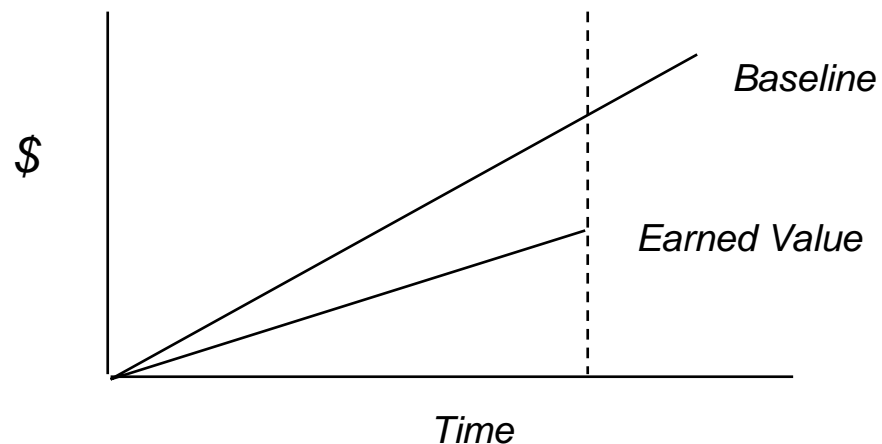
*To Measure Progress,  
There Must Be a Standard  
Against Which the Forward  
Movement May Be Compared*

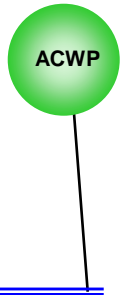
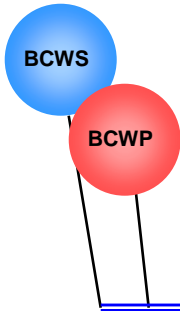
*EVMS Establishes a Baseline  
To Measure Progress*



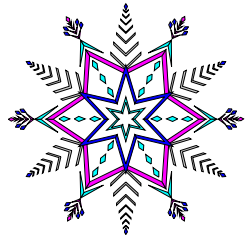
# WHAT DO WE MEASURE PROGRESS AGAINST?

- Performance Measurement Baseline
  - Budget That Is Spread Over . . .
  - Time, to Accomplish the Scope of
  - Work
  - And Against Which Progress Can Be Measured
- Earned Value Is Key Concept
  - How Much Progress Did I Make Against My Original Plan?
  - Expressed in Dollars or Hours



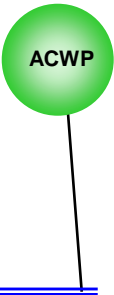
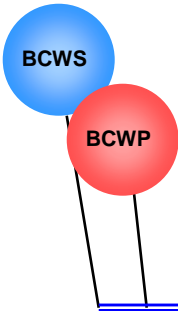


# FIVE BASIC ELEMENTS



BCWS	Budgeted Cost of Work Scheduled
BCWP	Budgeted Cost of Work Performed
ACWP	Actual Cost of Work Performed
BAC	Budget at Completion
EAC	Estimate at Completion

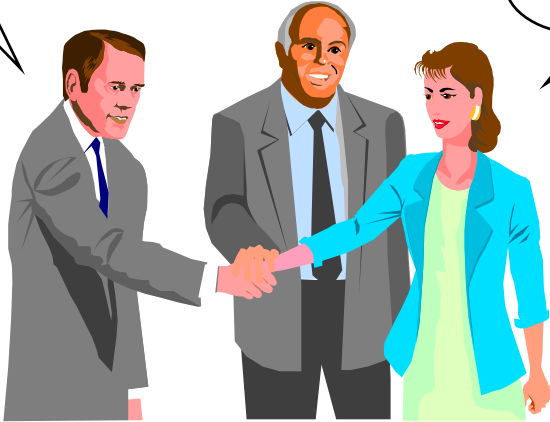




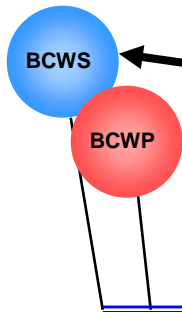
# TOTAL BUDGET

It's My Pleasure to Award You This Contract for a New Railroad Track

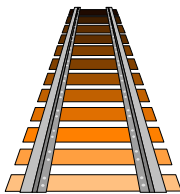
*Hmm...5 Miles of Track, 5 Months to Do It All...\$5000 Budget...This Is Going to Be Tough!*



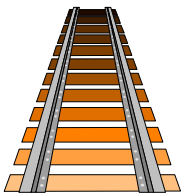
What Is the Total Job Supposed to Cost?  
What Is the Value of the Contract at Cost?



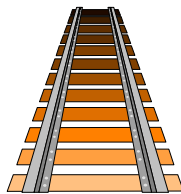
# BUDGETED COST OF WORK SCHEDULED (BCWS)



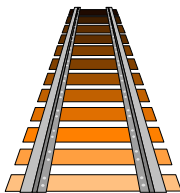
Month 1  
BCWS = \$1,000



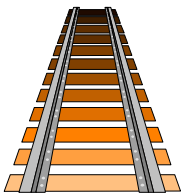
Month 2  
BCWS = \$1,000



Month 3  
BCWS = \$1,000



Month 4  
BCWS = \$1,000



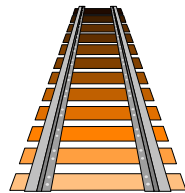
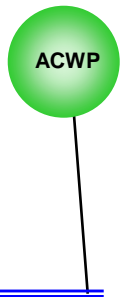
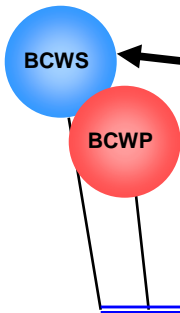
Month 5  
BCWS = \$1,000

Total Budget = \$5,000  
To Be Spent Over 5 Months  
I Plan to Lay 1 Section  
Of Track Each Month at an  
Estimated Cost of \$1,000.  
BCWS Each Month = \$1,000

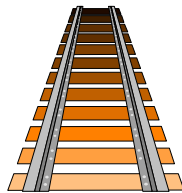


**Each Dollar of BCWS Represents a Specific Dollar of Work Scope**

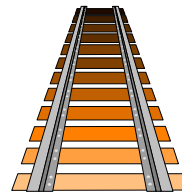
# BUDGETED COST OF WORK SCHEDULED (BCWS)



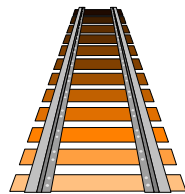
Month 1  
BCWS = \$1,000



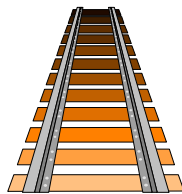
Month 2  
BCWS = \$1,000



Month 3  
BCWS = \$1,000



Month 4  
BCWS = \$1,000

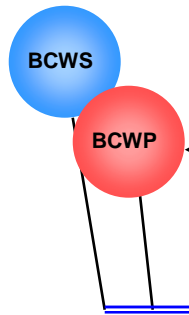


Month 5  
BCWS = \$1,000

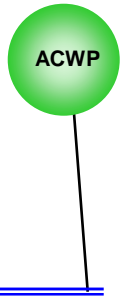
Total Budget = \$5,000  
Total BCWS = \$5,000



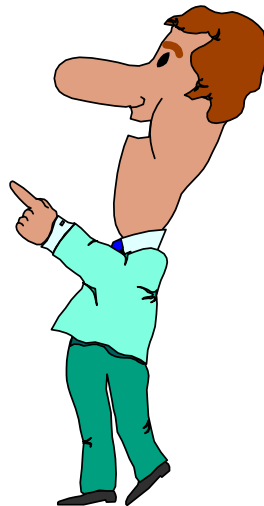
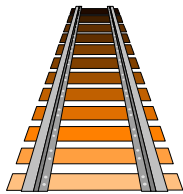
**BCWS Is Aggregated and Summed As the Performance Measurement Baseline**



# BUDGETED COST OF WORK PERFORMED (BCWP)

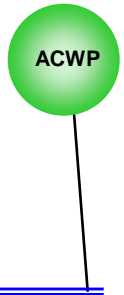
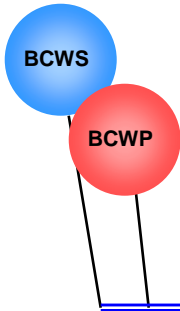


## The **EARNED VALUE** Concept



We're at the End of the Second Month, but Only 1 Section of Track Is Complete. Value of Work Performed = \$1,000

You Earn Value the Same Way As It Was Budgeted in Baseline



# SCHEDULE VARIANCE

BUDGET BASED  
**BC WS**  
**BC WP**

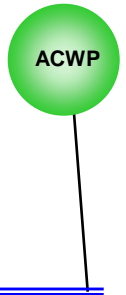
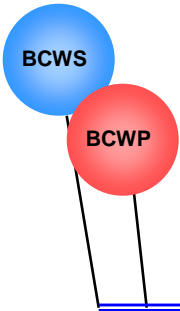
Of the Work I Scheduled to Have Done,  
 How Much Did I Budget for It to Cost?

Of the Work I Actually Performed,  
 How Much Did I Budget for It to Cost?

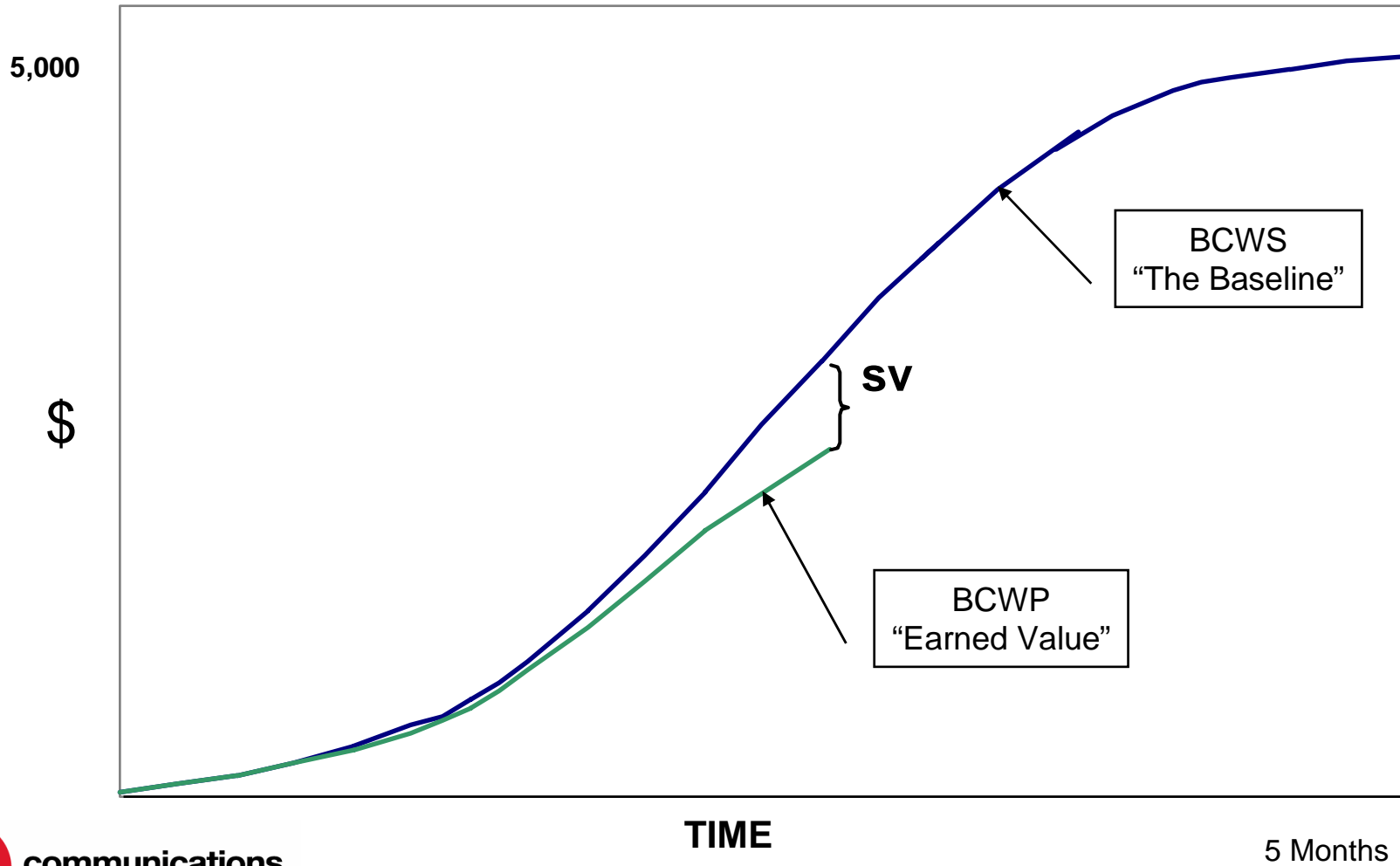
**SCHEDULE VARIANCE** Is the Difference Between Work Scheduled and Work Performed (Expressed in Terms of Budget Dollars)

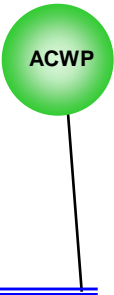
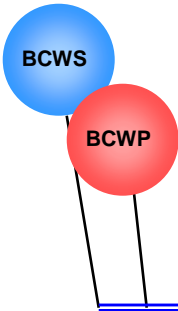
**Formula:**                     **$SV \$ = BCWP - BCWS$**

Example:                         $SV = BCWP - BCWS = \$1,000 - \$2,000$   
     $SV = -\$1,000$  (Negative = Behind Schedule)

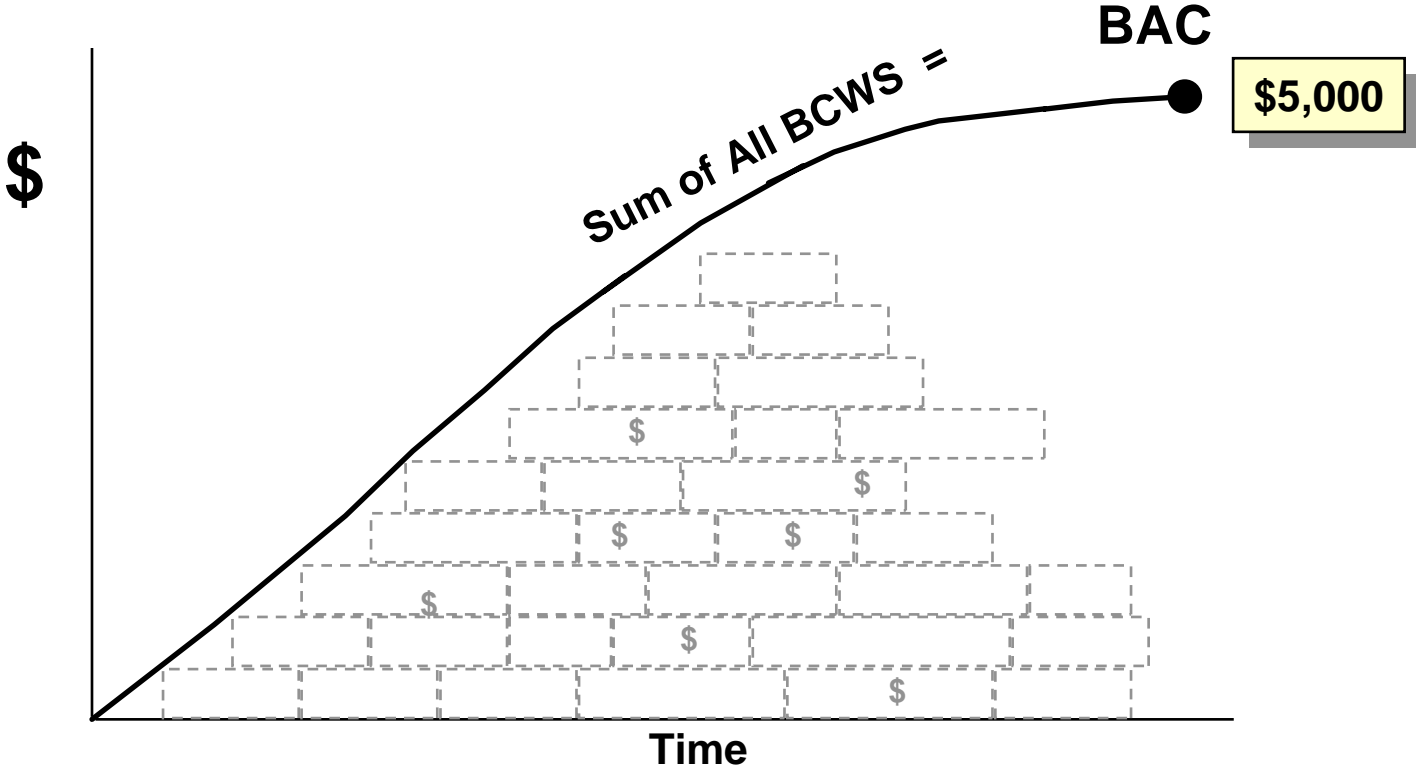


# SCHEDULE VARIANCE

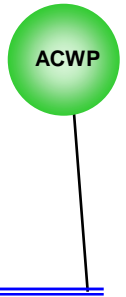
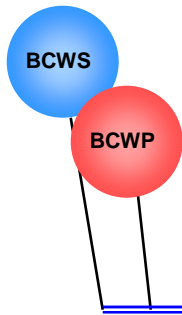




# BUDGET AT COMPLETION (BAC)



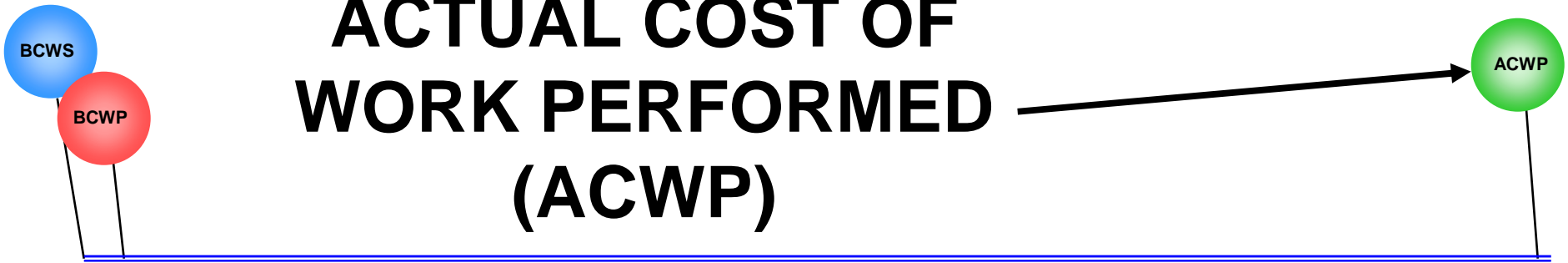
• When All Work Has Been Phased, Cumulative BCWS = BAC  
E.G., \$5,000 = \$5,000



# AT THE END...

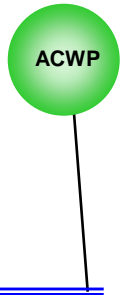
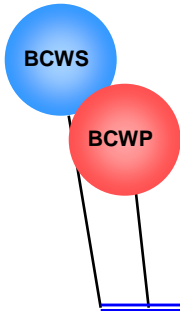
- At the End of the Contract, When All Work Has Been Completed:
  - I've "Earned" All of My Budget (\$5,000)
    - BCWP (Cumulative) = **\$5,000**
    - BCWS (Cumulative) = **\$5,000**
    - Therefore, Schedule Variance (\$) = 0
  - Formal Schedule Will Reflect Whether Milestones Were Achieved on Time
- Example:
  - I Finished Late, but I Did Finish
    - Sv (\$) = \$ 0
    - Formal Schedule Shows a 5 Month Actual Delay in Completing the Contract

# ACTUAL COST OF WORK PERFORMED (ACWP)



Labor Came to \$1,300,  
And Materials Cost  
\$1,100. That First Section  
Of Track Cost \$2,400!

**Actual Expenditures Vs. Budget**



# COST VARIANCE

BC WP  
AC WP

PERFORMANCE BASED

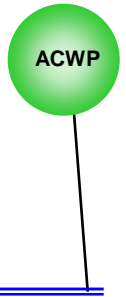
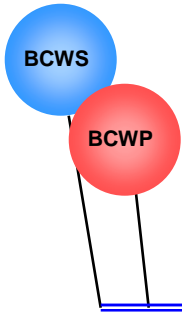
Of the Work I Actually Performed,  
How Much Did I Budget for It to Cost?

Of the Work I Actually Performed,  
How Much Did It Actually Cost?

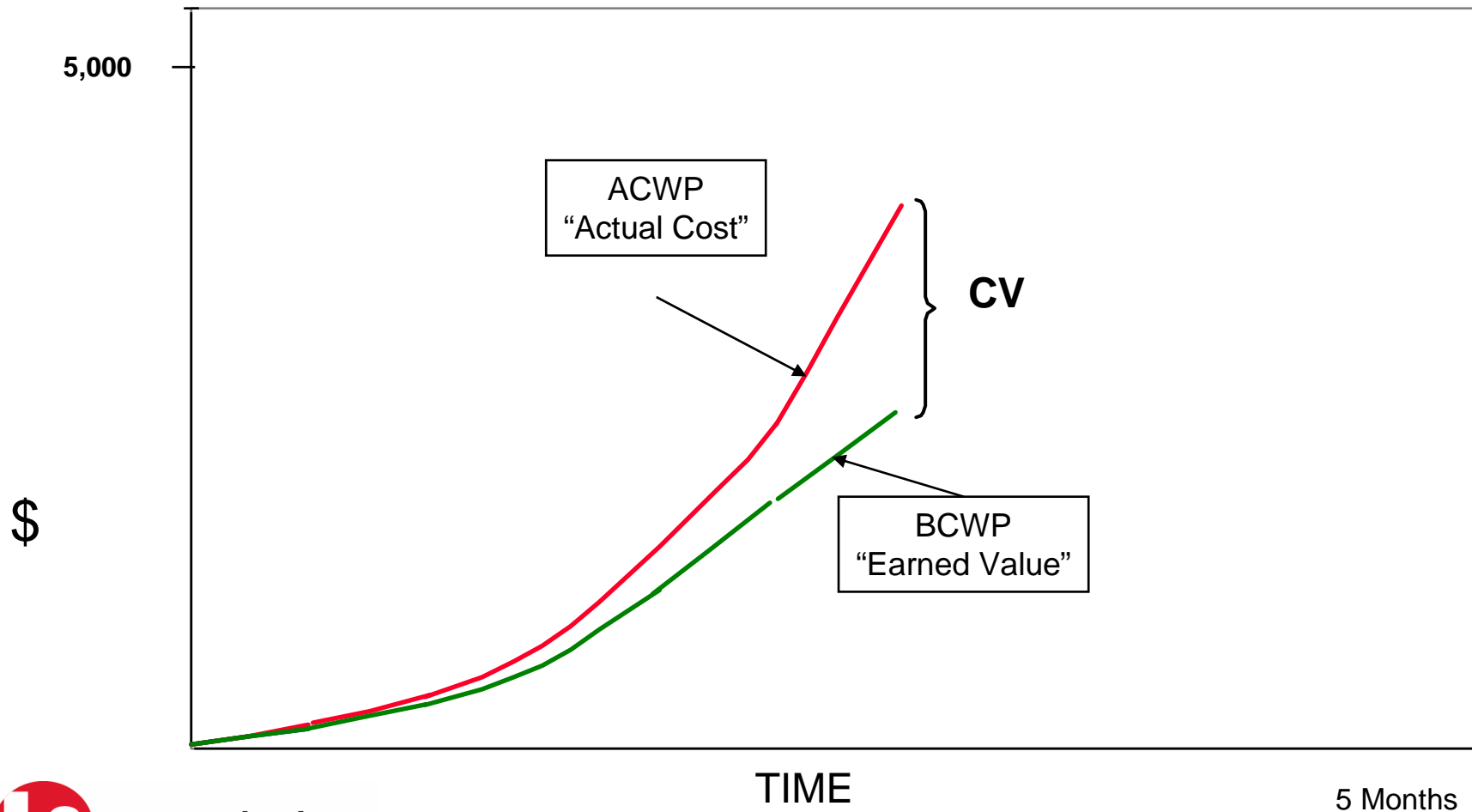
**COST VARIANCE** Is the Difference Between Budgeted Cost And Actual Cost

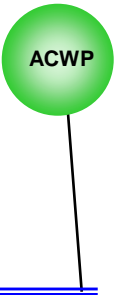
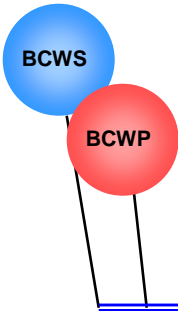
**Formula:**  $Cv \$ = BCWP - ACWP$

**Example:**  $Cv = BCWP - ACWP = \$1,000 - \$2,400$   
 $Cv = -\$1,400$  (Negative = Cost Overrun)



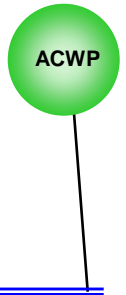
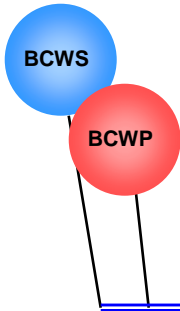
# COST VARIANCE





# ESTIMATE AT COMPLETION (EAC)





# VARIANCE AT COMPLETION (VAC)

B AC  
E AC

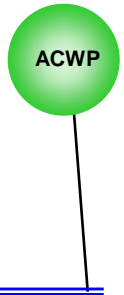
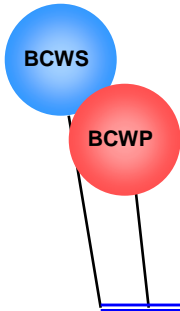
What the **Total** Job Is Supposed to Cost

What the **Total** Job Is Expected to Cost

**VARIANCE AT COMPLETION** Is the Difference Between What the Total Job Is Supposed to Cost and What the Total Job Is Now Expected to Cost.

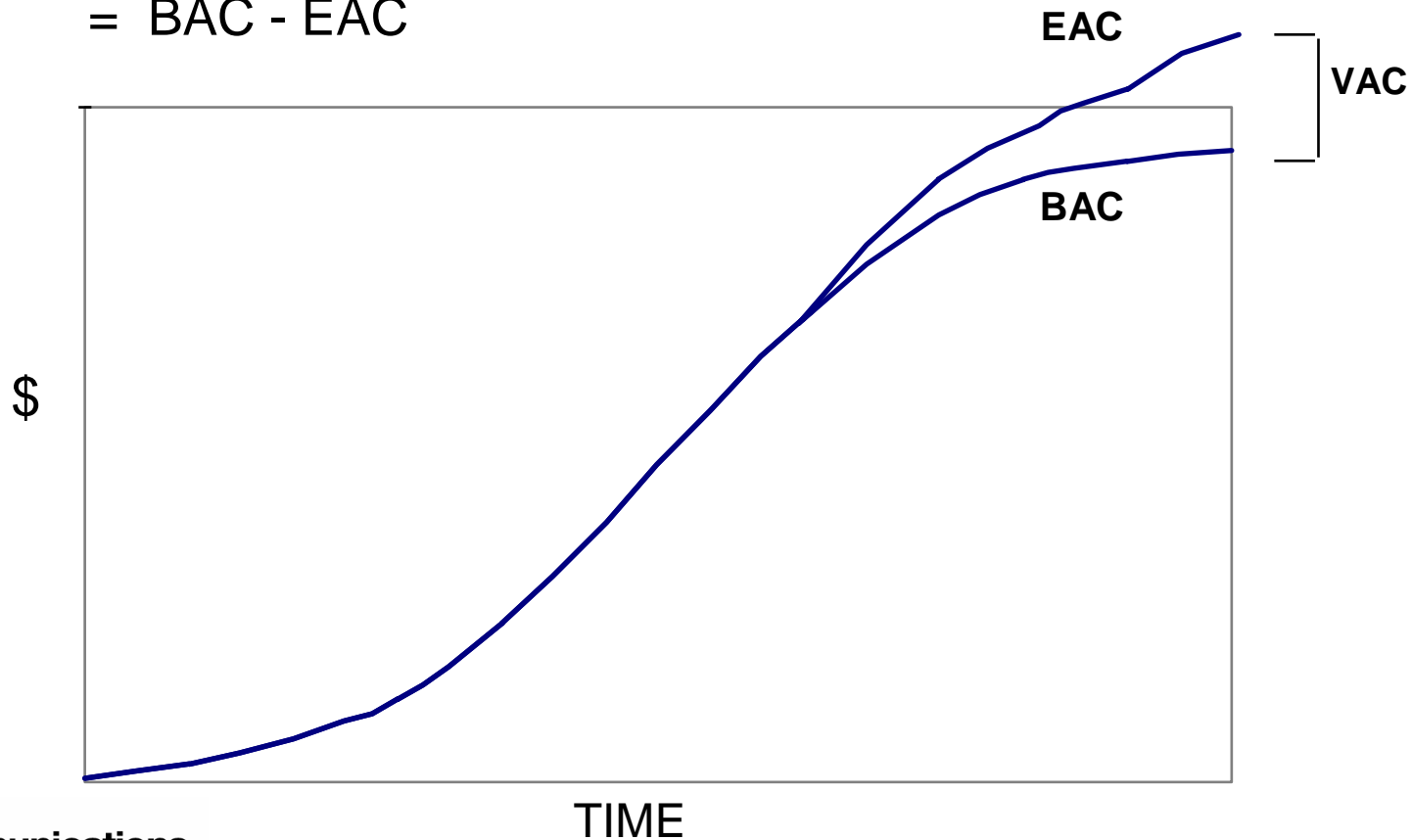
**FORMULA:**     **VAC = BAC - EAC**

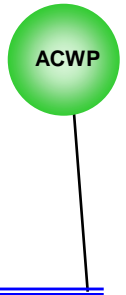
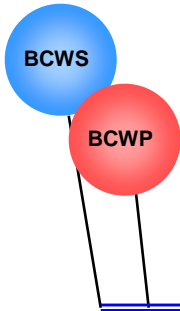
Example:     VAC = \$5,000 - \$7,500  
                  VAC = - \$2,500 (Negative = Overrun)



# VARIANCE AT COMPLETION (VAC)

$$\begin{aligned} \text{VAC} &= \text{Budget at Completion} - \text{Estimate at Completion} \\ &= \text{BAC} - \text{EAC} \end{aligned}$$

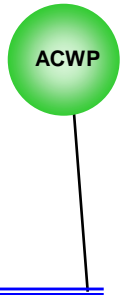
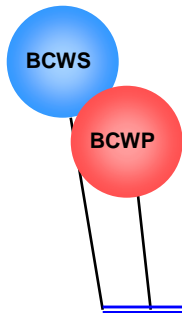




# FIVE BASIC PERFORMANCE DATA QUESTIONS & ANSWERS

<u>Question</u>	<u>Answer</u>	<u>Acronym</u>
How Much Work <u>Should</u> Be Done?	Budgeted Cost for Work Scheduled	BCWS
How Much Work <u>Is</u> Done?	Budgeted Cost for Work Performed	BCWP
How Much Did the <u>Is Done</u> Work Cost?	Actual Cost of Work Performed	ACWP
What Was the Total Job <u>Supposed</u> to Cost?	Budget at Completion	BAC
What Do We <u>Now Expect</u> the Total Job to Cost?	Estimate at Completion	EAC





# SUMMARY

---

The Principles of Earned Value, Properly Applied to Your Project Will Tell You:

1. How Much Work Should Be Done
2. How Much Work Has Be Done
3. What It Has Cost to Date
4. What Is Supposed to Cost for the Project
5. What Is the Expected Final Cost

There Are Only Three Kinds of Managers:

1. Those That Make Things Happen
2. Those That Watch Things Happen
3. Those That Wonder What Happen

**What Kind of a Manager to You Want to Be?**

