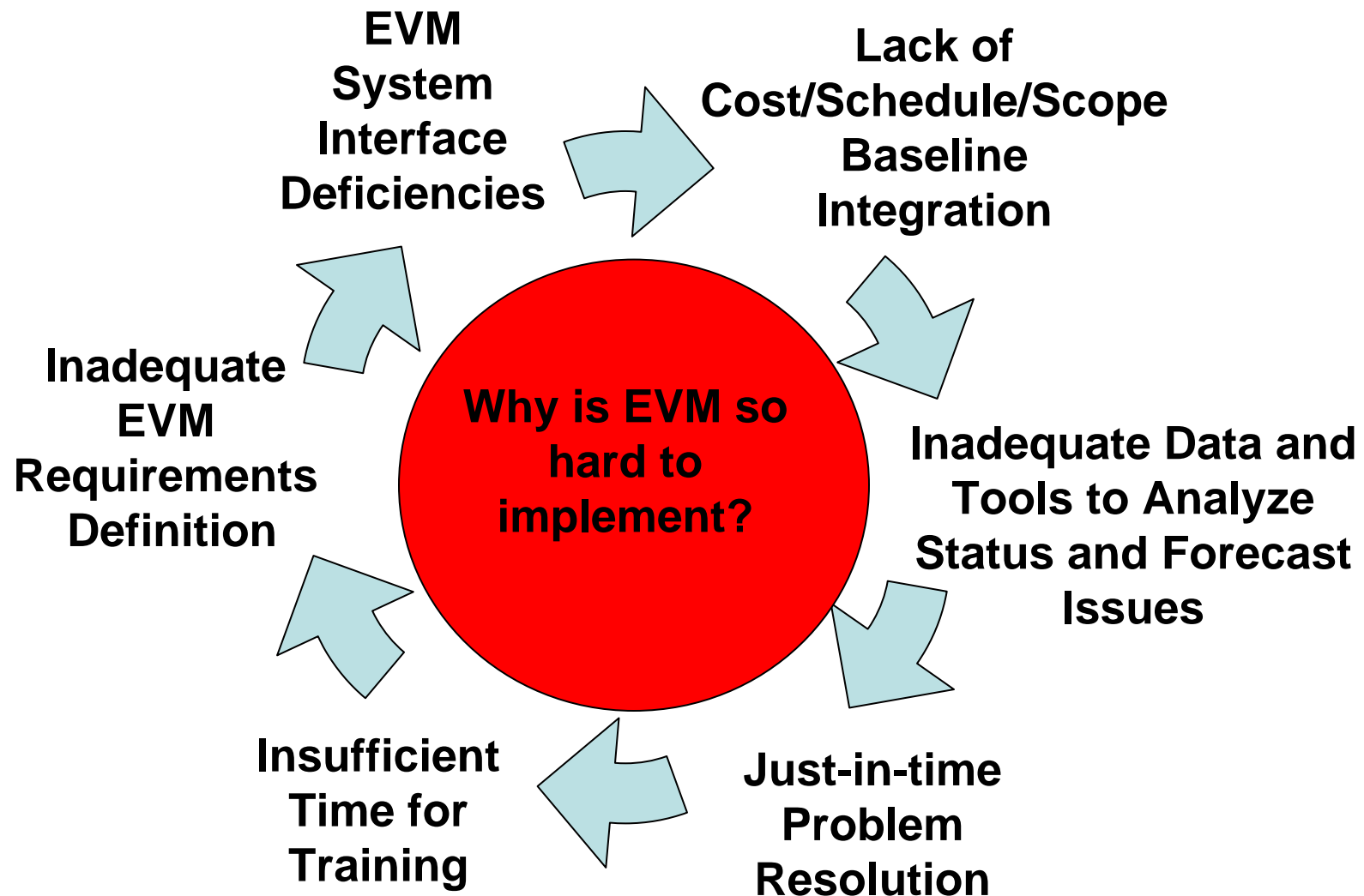


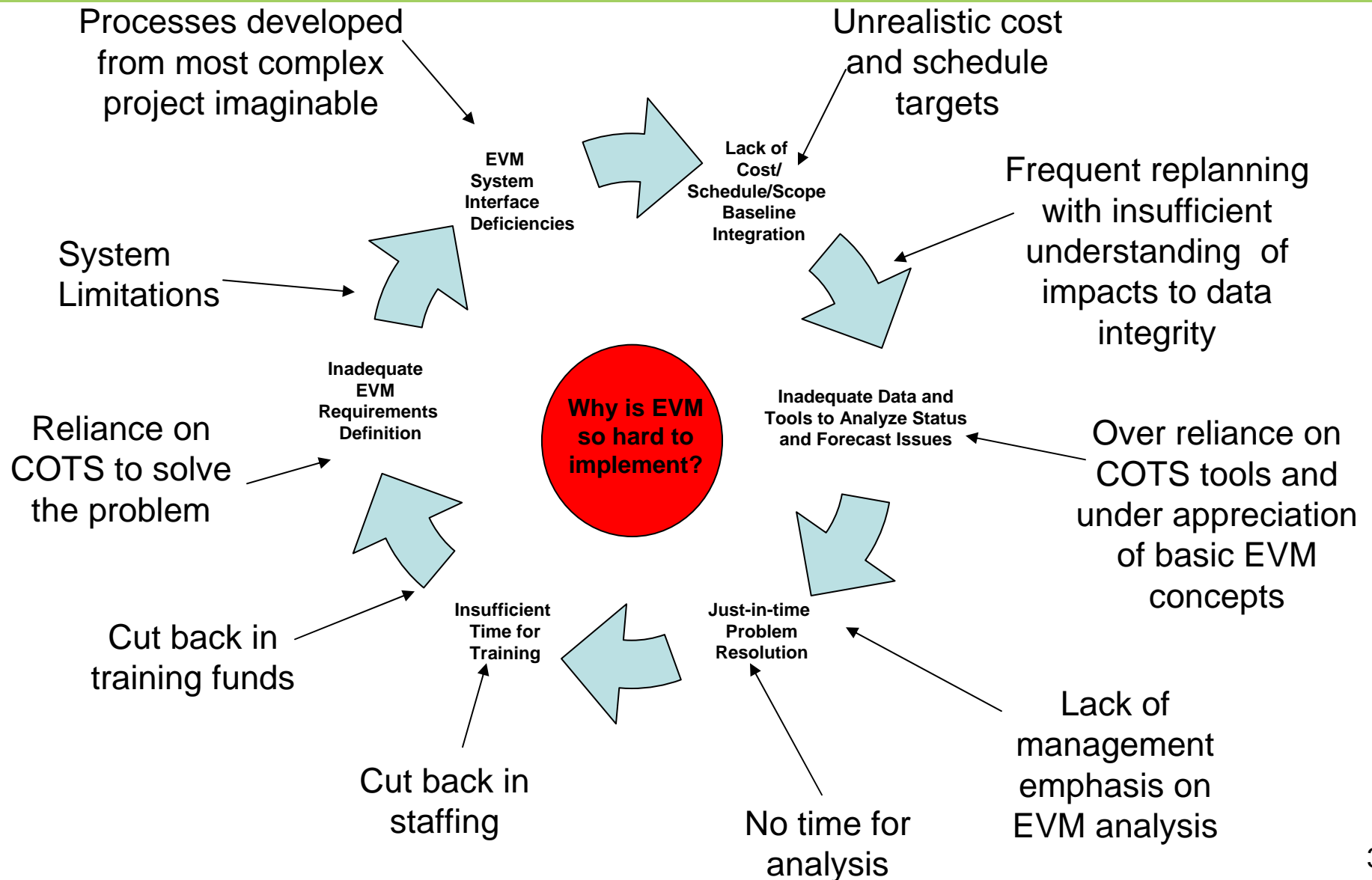
2007 Joint ISPA/SCEA National
Conference & Workshop
June 12-15, 2007


The First Steps in Implementing a Simplified Earned Value Management System

Dorothy Tiffany, CPA, PMP
NASA/GSFC



Mission Impossible???





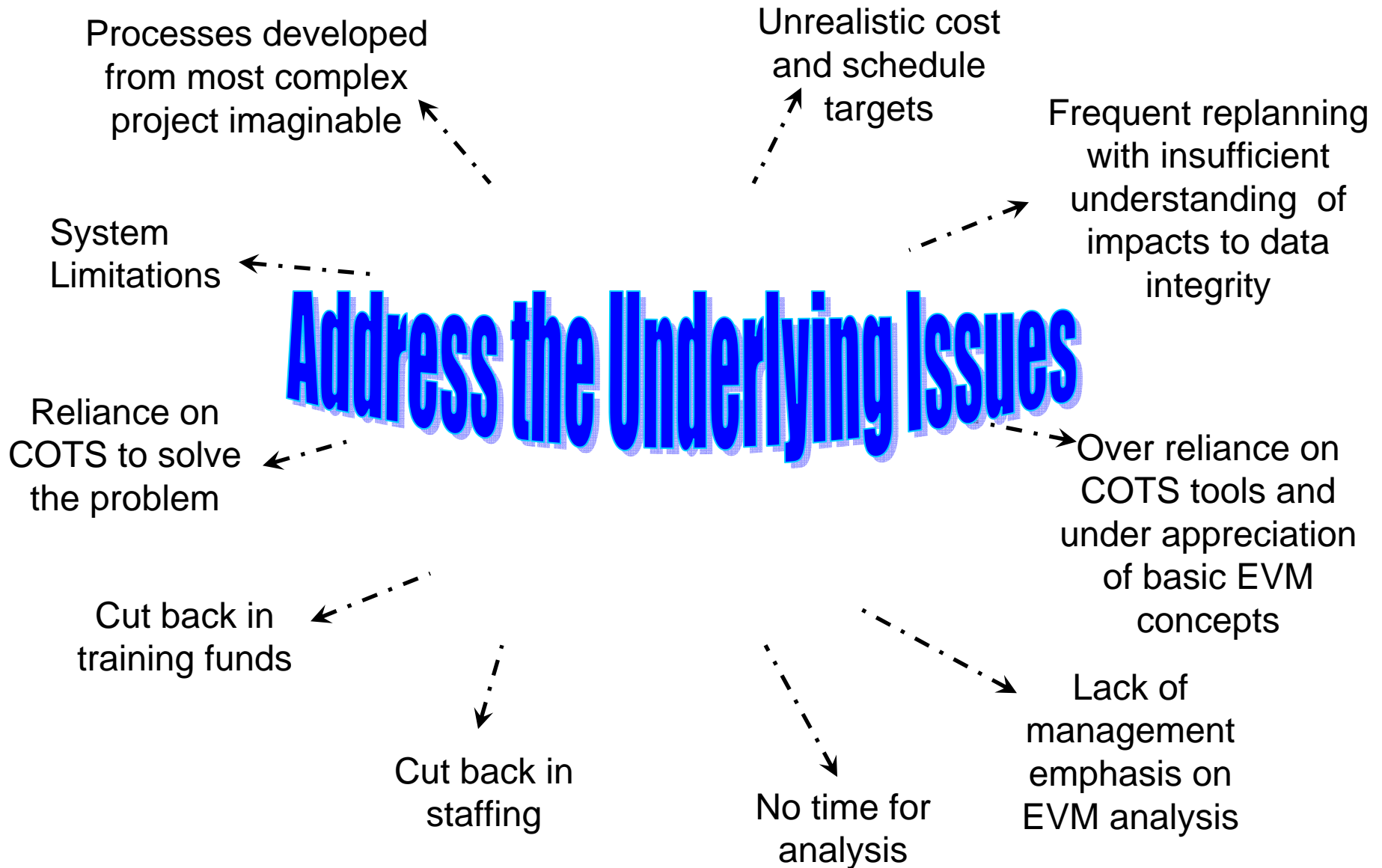
**Does EVM
really have to be
this hard to
implement?**

“Earned Value Project Management is not a difficult concept to understand or to employ. It is certainly not as complicated a process as some have made it to be over the years.”



***Earned Value Project
Management, Third Edition***

Quentin W. Fleming and Joel M. Koppelman



Implementing Simplified EVM

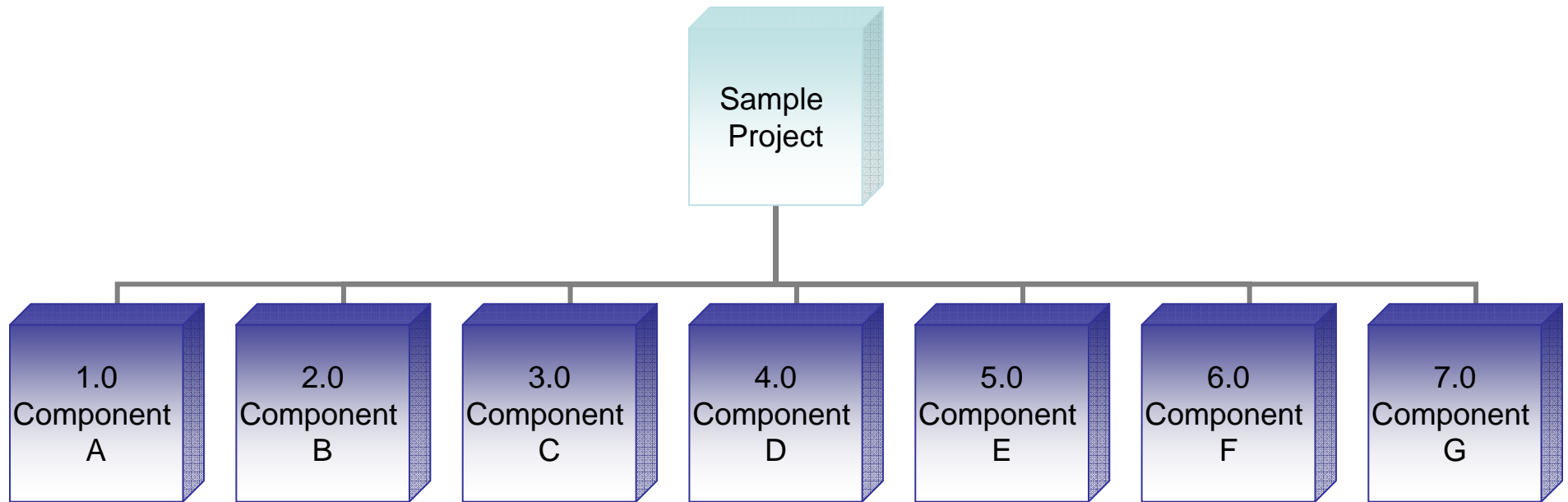
- Don't try to solve all the complex problems at once
- Incrementally implement EVM as project planning progresses
- Do a good job in analyzing the data that you do have
- Engage the various stakeholders that will benefit with successful EVM implementation

EVM First Steps Roadmap

- Define the Project Scope
- Assign Work Responsibility
- Schedule the Work
- Allocate the Resources
- Establish the Earned Value Project Baseline
- Assess and Award Earned Value
- Accumulate Actual Cost
- Analyze the Resulting Data Carefully

Define the Project Scope

Work Breakdown Structure:



Assign Work Responsibility

| | | |
|---------|-------------|-----------------------------------|
| WBS 1.0 | Component A | Systems Engineering Office |
| WBS 2.0 | Component B | Acme Company |
| WBS 3.0 | Component C | Launch Vehicle Manufacturer |
| WBS 4.0 | Component D | SATERN Corporation |
| WBS 5.0 | Component E | Flight Software Branch |
| WBS 6.0 | Component F | Engineering Division |
| WBS 7.0 | Component G | Mission Assurance & Safety Branch |

Allocate the Resources

| WBS | Budget at Completion |
|------------------------|-----------------------------|
| 1.0 Component A | 100 |
| 2.0 Component B | 200 |
| 3.0 Component C | 150 |
| 4.0 Component D | 700 |
| 5.0 Component E | 500 |
| 6.0 Component F | 300 |
| 7.0 Component G | 200 |
| Total | 2150 |

Establish the Earned Value Performance Baseline

Cumulative Plan

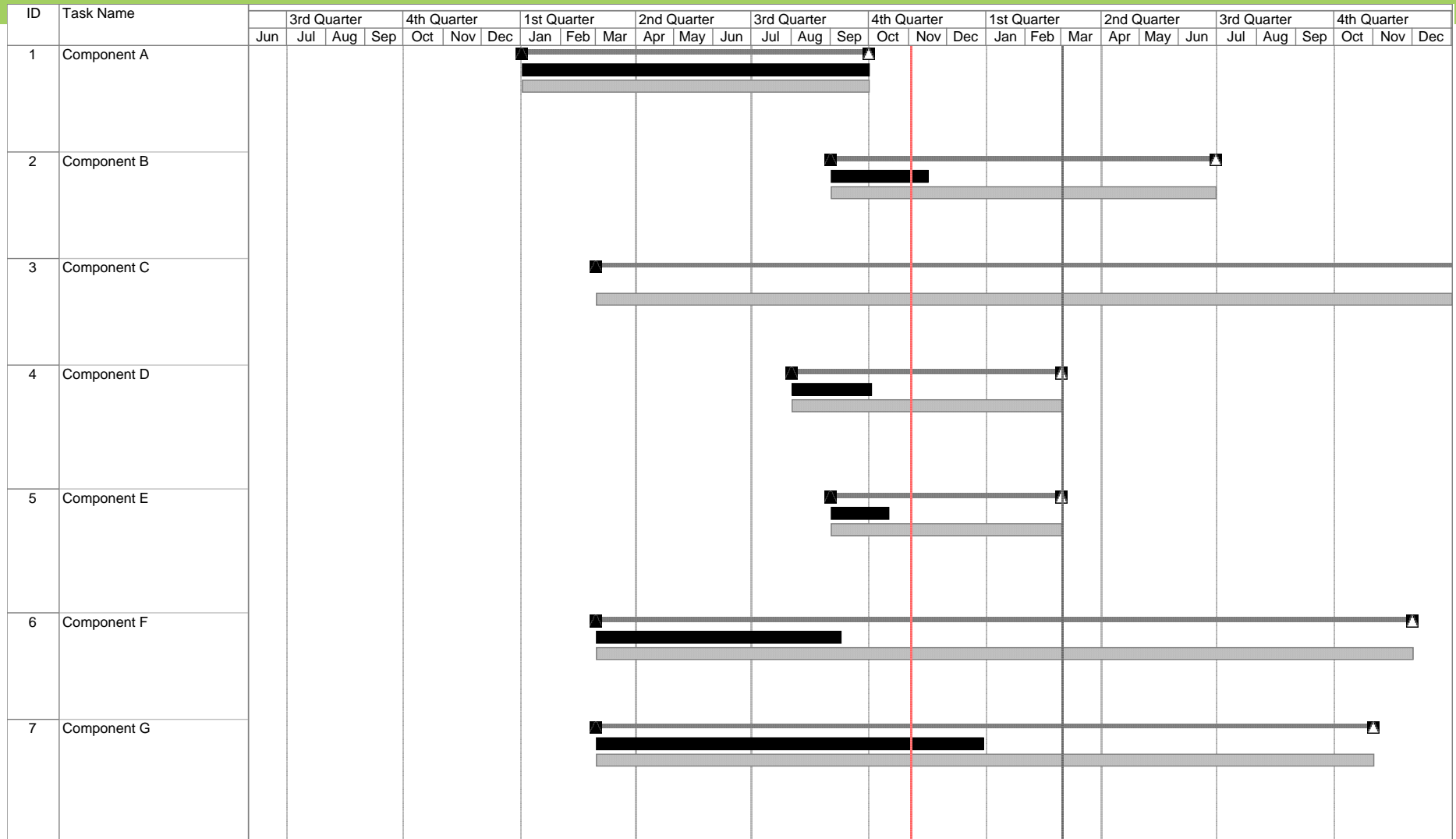
| | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | At Completion |
|------------------------|-----|-----|-----|-----|-----|------|------|------|---------------|
| 1.0 Component A | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 2.0 Component B | | | 20 | 50 | 60 | 90 | 100 | 120 | 200 |
| 3.0 Component C | | | | | 0 | | | | 150 |
| 4.0 Component D | | 50 | 200 | 300 | 400 | 550 | 600 | 700 | 700 |
| 5.0 Component E | | | 50 | 100 | 200 | 250 | 400 | 500 | 500 |
| 6.0 Component F | 75 | 80 | 100 | 115 | 125 | 130 | 145 | 150 | 300 |
| 7.0 Component G | 25 | 40 | 55 | 70 | 90 | 100 | 135 | 145 | 200 |
| Total | 200 | 270 | 525 | 735 | 975 | 1220 | 1480 | 1715 | 2150 |

Traditional Plan versus Actual Through November

| | Plan | Actual |
|------------------------|-------------|---------------|
| 1.0 Component A | 100 | 110 |
| 2.0 Component B | 60 | 55 |
| 3.0 Component C | 0 | 0 |
| 4.0 Component D | 400 | 375 |
| 5.0 Component E | 200 | 155 |
| 6.0 Component F | 125 | 135 |
| 7.0 Component G | 90 | 95 |
| Total | 975 | 925 |

How is the project doing?

Assess the Progress



Assess Percent Complete

| WBS | Budget at Completion | November Percent Complete |
|------------------------|-----------------------------|----------------------------------|
| 1.0 Component A | 100 | 100% |
| 2.0 Component B | 200 | 25% |
| 3.0 Component C | 150 | 0% |
| 4.0 Component D | 700 | 30% |
| 5.0 Component E | 500 | 25% |
| 6.0 Component F | 300 | 30% |
| 7.0 Component G | 200 | 50% |

Note: Percent complete status is based on milestone completion, technical judgment, and/or physical inspection.

Assess and Award Earned Value

| WBS | Budget at Completion | November | |
|-----------------|----------------------|------------------|--------------|
| | | Percent Complete | Earned Value |
| 1.0 Component A | 100 | 100% | 100 |
| 2.0 Component B | 200 | 25% | 50 |
| 3.0 Component C | 150 | 0% | 0 |
| 4.0 Component D | 700 | 30% | 210 |
| 5.0 Component E | 500 | 25% | 125 |
| 6.0 Component F | 300 | 30% | 90 |
| 7.0 Component G | 200 | 50% | 100 |

Note: Earned Value = BAC x Percent Complete

Accumulate Actual Cost

| WBS | Budget at Completion | November | | |
|-----------------|----------------------|------------------|--------------|-------------|
| | | Percent Complete | Earned Value | Actual Cost |
| 1.0 Component A | 100 | 100% | 100 | 110 |
| 2.0 Component B | 200 | 25% | 50 | 55 |
| 3.0 Component C | 150 | 0% | 0 | 0 |
| 4.0 Component D | 700 | 30% | 210 | 375 |
| 5.0 Component E | 500 | 25% | 125 | 155 |
| 6.0 Component F | 300 | 30% | 90 | 135 |
| 7.0 Component G | 200 | 50% | 100 | 95 |
| Total | 2150 | | 675 | 925 |

Still think the project is doing okay?

Analyze the Resulting Data Carefully

| WBS | November | | | Budget at Completion |
|-----------------|---------------|--------------|-------------|----------------------|
| | Planned Value | Earned Value | Actual Cost | |
| 1.0 Component A | 100 | 100 | 110 | 100 |
| 2.0 Component B | 60 | 50 | 55 | 200 |
| 3.0 Component C | 0 | 0 | 0 | 150 |
| 4.0 Component D | 400 | 210 | 375 | 700 |
| 5.0 Component E | 200 | 125 | 155 | 500 |
| 6.0 Component F | 125 | 90 | 135 | 300 |
| 7.0 Component G | 90 | 100 | 95 | 200 |
| Total | 975 | 675 | 925 | 2150 |

The project has gotten far less work done than planned for a lot more money than the work should have cost.

Simple Formulas Forecast Problems Based on Past Performance

| WBS | November | | | At Completion | | |
|-----------------|--------------------|-------------------|------------------|----------------------|--|--|
| | Planned Value (PV) | Earned Value (EV) | Actual Cost (AC) | Budget at Completion | Forecast Estimate at Completion Based on Historical Cost Efficiency | Forecast Estimate at Completion Based on Historical Schedule Efficiency |
| 1.0 Component A | 100 | 100 | 110 | 100 | 110 | 100 |
| 2.0 Component B | 60 | 50 | 55 | 200 | 220 | 240 |
| 3.0 Component C | 0 | 0 | 0 | 150 | 0 | 0 |
| 4.0 Component D | 400 | 210 | 375 | 700 | 1250 | 1333 |
| 5.0 Component E | 200 | 125 | 155 | 500 | 620 | 800 |
| 6.0 Component F | 125 | 90 | 135 | 300 | 450 | 417 |
| 7.0 Component G | 90 | 100 | 95 | 200 | 190 | 180 |
| Total | 975 | 675 | 925 | 2150 | 2840 | 3070 |

| | | |
|--------------------------|------------|------------|
| Potential Overrun | 690 | 920 |
| Percent Overrun | 32% | 43% |

Note: $EAC = \frac{BAC}{(EV / AC)}$ or $EAC = \frac{BAC}{(EV / PV)}$

Is the Data Worth the Effort?





Thank you.

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