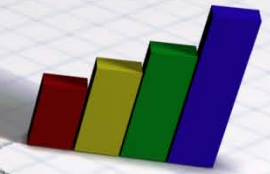
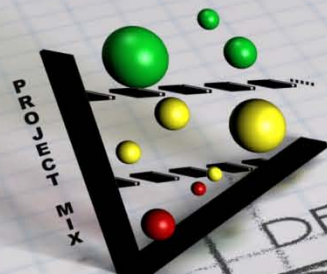


DEKKER SEMINAR SERIES

PART 1

INSIDE THE SCHEDULE

TRIPWIRES AND BEYOND



February 1
1 pm / 10 am
(Eastern / Pacific)
www.dekkerltd.com



Program and Project Management Solutions

Inside the Schedule: Tripwires and Beyond

- Introduction
- DCMA 14-Point Schedule Assessment
- Tripwire Metrics
- Additional Schedule Checks

OBS

Introduction

- U.S. government uses consistent, repeatable processes to analyze contractor schedules
- Before reporting performance to the government, contractors need the ability to analyze their own performance in depth
- **Course objective:** Identify key metrics that can reliably serve as early warning indicators for a project that may be in trouble
- Reports generated by Dekker Trakker® and Dekker iPursuit® Release 8

DCMA 14-Point Schedule Assessment

- Defense Contract Management Agency (DCMA) works with contractors to ensure supplies & services delivered on time and budget
- Developed 14-Point Schedule Assessment for training DCMA analysts
- Tests schedule configuration and assesses contract performance
- 14-Points not officially “published” beyond DCMA training materials (Berg, Cervantes, Johnson, Marks, & Yoo, 2010)



The 14 Points

Assessment Point	Description (<i>Berg, Cervantes, Johnson, Marks, & Yoo, 2010</i>)
1. Logic	Identify missing logic or logic connections that do not make sense.
2. Leads	Identify tasks that have “negative lags.” The use of leads is discouraged.
3. Lags	Identify tasks that have lags. Lags should not be used to manipulate float.
4. Relationship Types	Finish-to-Start (FS) relationship type should account for 90% of all relationships used.
5. Hard Constraints	Hard constraints prevent the schedule from being logic-driven.
6. High Float	Identify tasks with a float > 44 working days.
7. Negative Float	Identify tasks with a float < 0 days, which delay completion of milestone/project completion.
8. High Duration	Identify tasks with a baseline duration > 44 working days.
9. Invalid Dates	Identify tasks with forecast start/finish date before the status date, or actual start/finish date after the status date.
10. Resources	Identify incomplete tasks currently consuming resources (hours/dollars).
11. Missed Tasks	Identify tasks baselined to finish before the current status date.
12. Critical Path Test	Test the integrity of the overall network logic, especially regarding the critical path.
13. Critical Path Length Index (CPLI)	Tripwire metric. Gauges “realism” of critical path.
14. Baseline Execution Index (BEI)	Tripwire metric. Measures tasks completed to date against tasks baselined to be completed.

The Tripwires

Primary Trip Wires		Secondary Trip Wires						
System Indicator	Baseline Indicator	BEI	SPI	CPLI	CPI	CPI/TCPI	Contract Mods	Baseline Revs
		← <.95 →				10%	10%	5%
⊗	⊗	⊗ 0.78	⊗ 0.69	⊗ 0.92	⊗ 0.54	⊗ 1.46	⊗ \$100M	⊗ 25%

- Defense Acquisition Executive Summary (DAES) “tripwires initiative”
 - For the Undersecretary of Defense, Acquisition, Technology and Logistics
 - Scorecard with “primary” and “secondary” tripwires
- Primary: EVM system compliance and a passing Integrated Baseline Review (IBR)
- Secondary: Traditional Earned Value (EV) metrics (SPI, CPI, TCPI) combined with CPLI and BEI (Holden, 2008)

Critical Path Length Index (CPLI)

Purpose:

- Identify any warranted risk in the schedule based on the Critical Path Method (CPM)

Objectives:

- Gauge the realism of completing the contract on time
- Measure critical path realism against forecasted finish date

What's needed:

- Critical Path length (duration)
- Total project float

Critical Path Length Index (CPLI)

- Calculation:

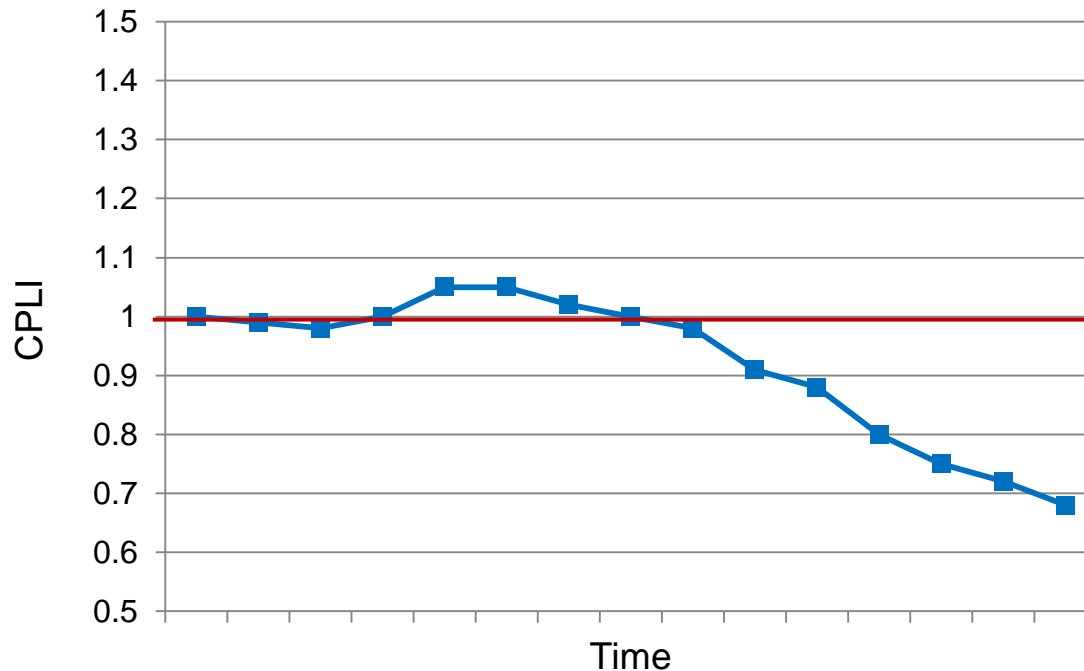
$$CPLI = \frac{\textit{Critical Path Length} + \textit{Total Float}}{\textit{Critical Path Length}}$$

- Interpreting CPLI

- Target value = 1.00
- Value > 1.00 is favorable
- Value < .95 is below the acceptable threshold
- Gauges projected slip past specified contract end date on the whole-project level
- Calculation heavily discounts float loss early in the project, reducing its value as an “early warning” indicator (Winter, 2011)

Critical Path Length Index (CPLI)

Critical Path Length Index Trend Report



- Has the most meaning when placed in historical context
- Lacks baseline comparison to assess variance

Finding the CPLI

- Incredibly complicated process as laid out by DCMA to find Critical Path and Total Float
 - 81-step process for Microsoft Project (Berg, Cervantes, Johnson, Marks, & Yoo, 2010)
 - Opens the door to human error
 - Requires changing data to follow the process
 - Assumes schedule logic is correct
- Dekker Trakker® able to generate this in report format automatically without a lengthy process

DCMA Analysis - Step 330
Defense Contract Management Agency

CRITICAL PATH IDENTIFIED

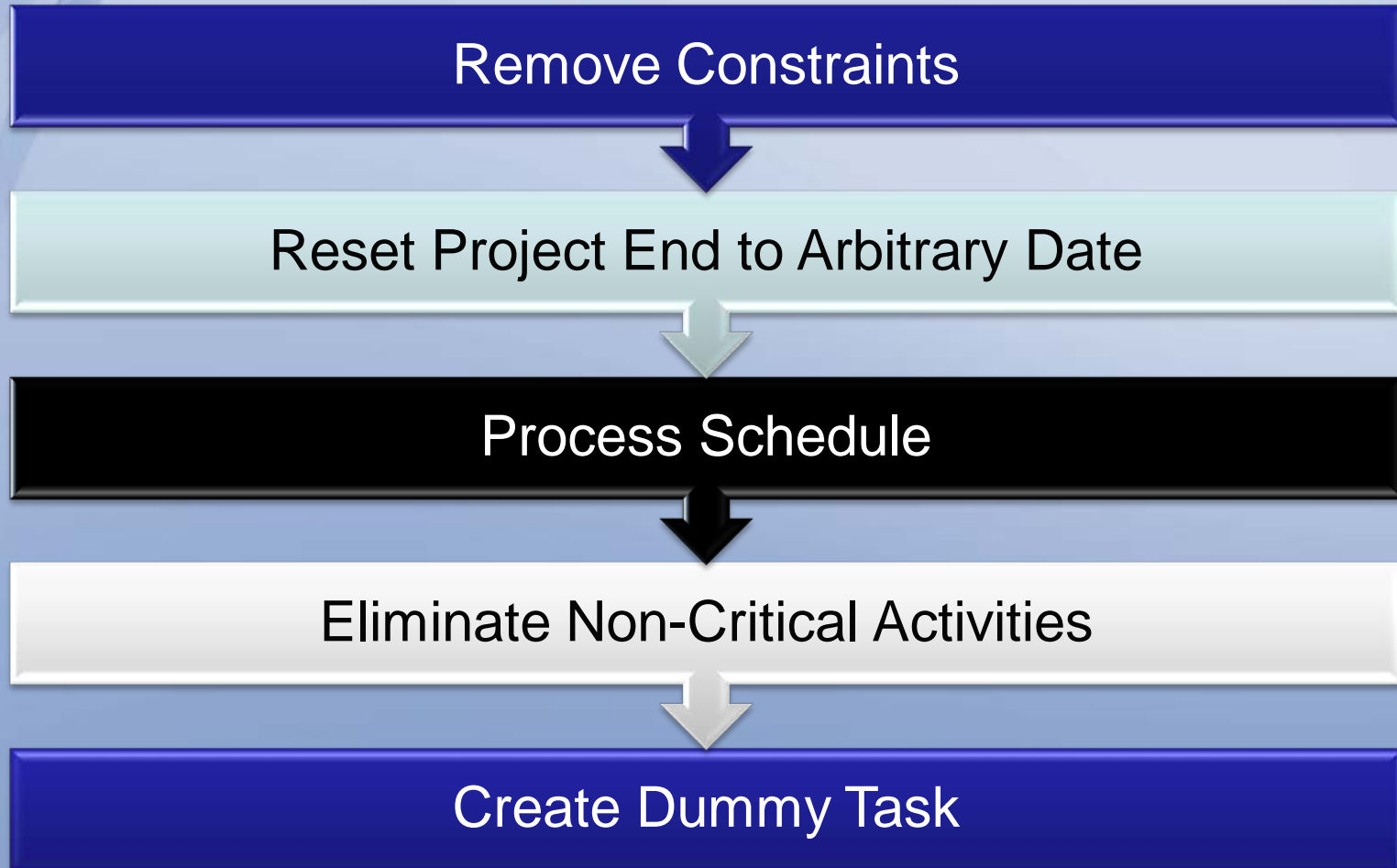
CLICK ON CELL AL4 AND TYPE "0.96" INTO THE "Critical Path Length Index (CPLI)" COLUMN

PRESS THE ENTER KEY

83

Finding the CPLI

- Valuable metric, difficult process
- Overview of the 81-Step Microsoft Project CPLI Process



Baseline Execution Index (BEI)

Purpose:

- Gauge contractor efficiency in executing baseline schedule

Objectives:

- Measures the number of tasks that were completed to those tasks that should have been completed to date according to the baseline

What's needed:

- Number of activities with an Actual Finish date
- Total tasks with baseline finish dates before Time Now
- Total tasks with no baseline start or finish dates

Baseline Execution Index (BEI)

- Calculation:

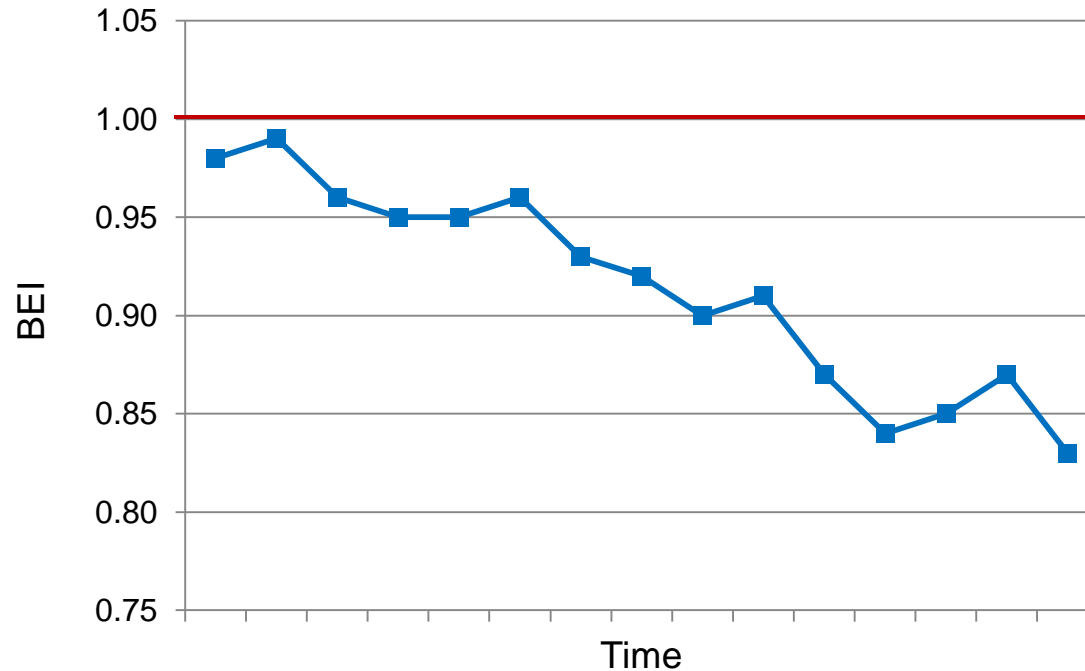
$$BEI = \frac{\textit{Completed Tasks}}{\textit{BEI Baseline Count}}$$

- Interpreting BEI

- Target value = 1.00, > 1.00 is favorable
- Value < .95 is below the acceptable threshold
- Tasks missing baseline dates included in BEI Baseline Count “until the problem is fixed” (Berg, Cervantes, Johnson, Marks, & Yoo, 2010)
 - Intended to capture added tasks that were not baselined
 - This can allow for a skewed index value
- Invalid activities with Actual Start or Actual Finish dates in the future are still counted
 - Problem with how MS Project handles Actual dates
 - Dekker Trakker® will not allow this condition

Baseline Execution Index (BEI)

Baseline Execution Index Trend Report



- DCMA describes as analogous to Schedule Performance Index (SPI) in EVM
- However, measures different criteria than SPI and can produce significantly different values (Holden, 2008)

Completed Milestones Chart

Purpose:

- Provide management with insight into how well the project plan is progressing against baseline
- Assess schedule process health (additions/deletions/scope change)

Objectives:

- Compare “apples to apples” – planned milestones vs. completed milestones
- Reveal scope creep or scheduling shortcuts

What's needed:

- Total milestones (baseline/rolling wave)
- Cumulative milestones complete

Completed Milestones Chart

- Calculation:

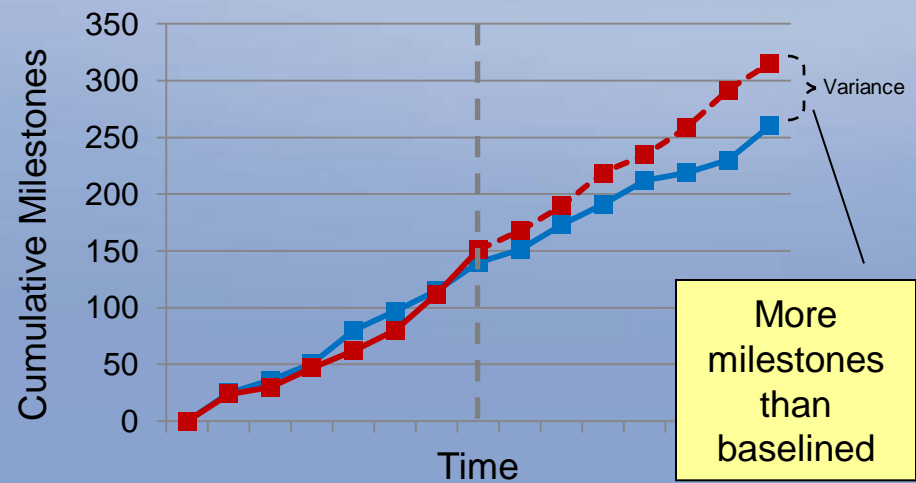
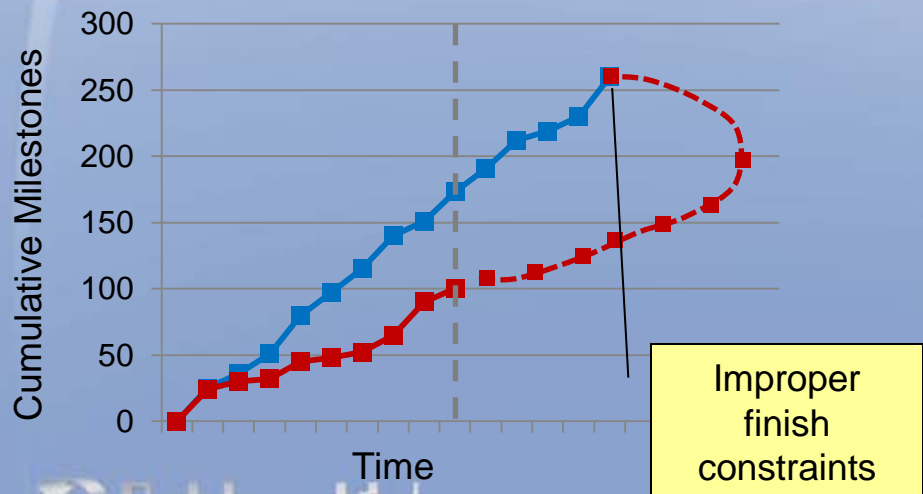
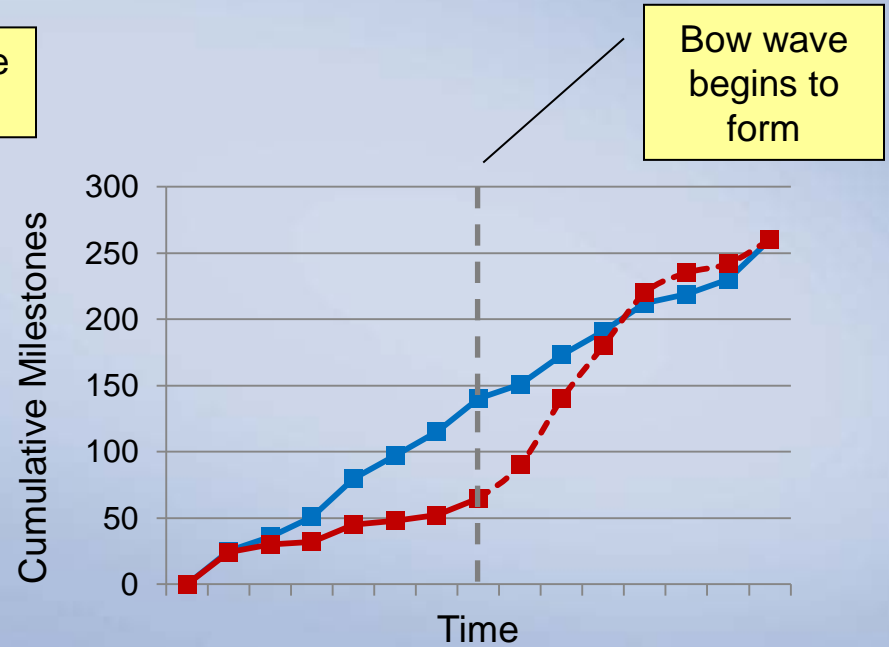
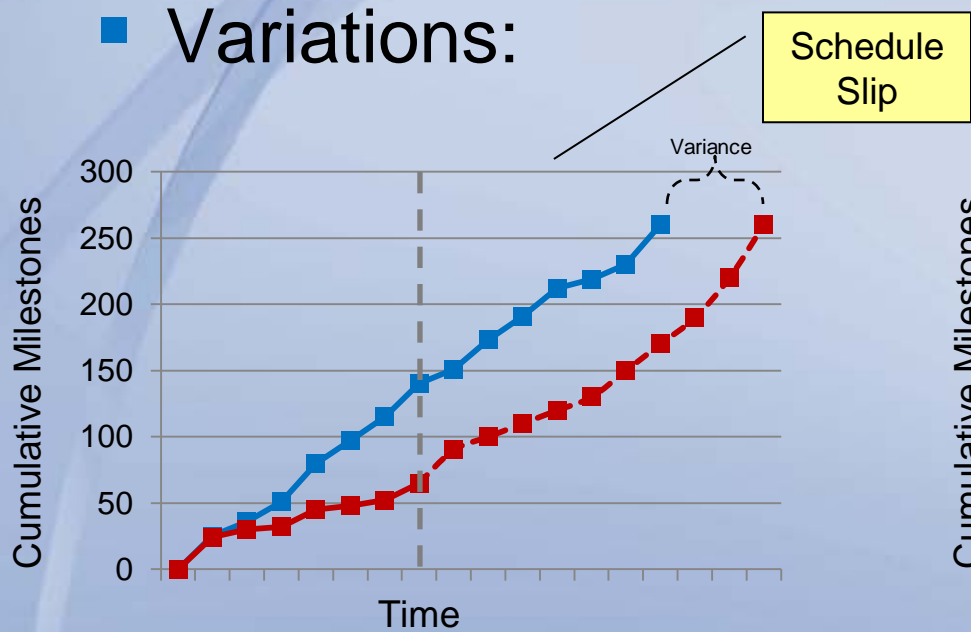
$$\text{Milestone Index} = \frac{\text{Cumulative Milestones Complete}}{\text{Baselined Planned Milestones to Date}}$$

- Interpreting Completed Milestones

- Target value = 1.00
- A value > 1.00 can indicate performance ahead of schedule OR the inclusion of unplanned milestones
- Can also be run on critical or near-critical milestones
- Projected completions can reveal improper schedule constraints

Completed Milestones Chart

Variations:



Cumulative Start and Finish Chart

Purpose:

- Identify any growing disconnects between tasks started and tasks finished
- Enable additional analysis of critical, near-critical, and near term tasks

Objectives:

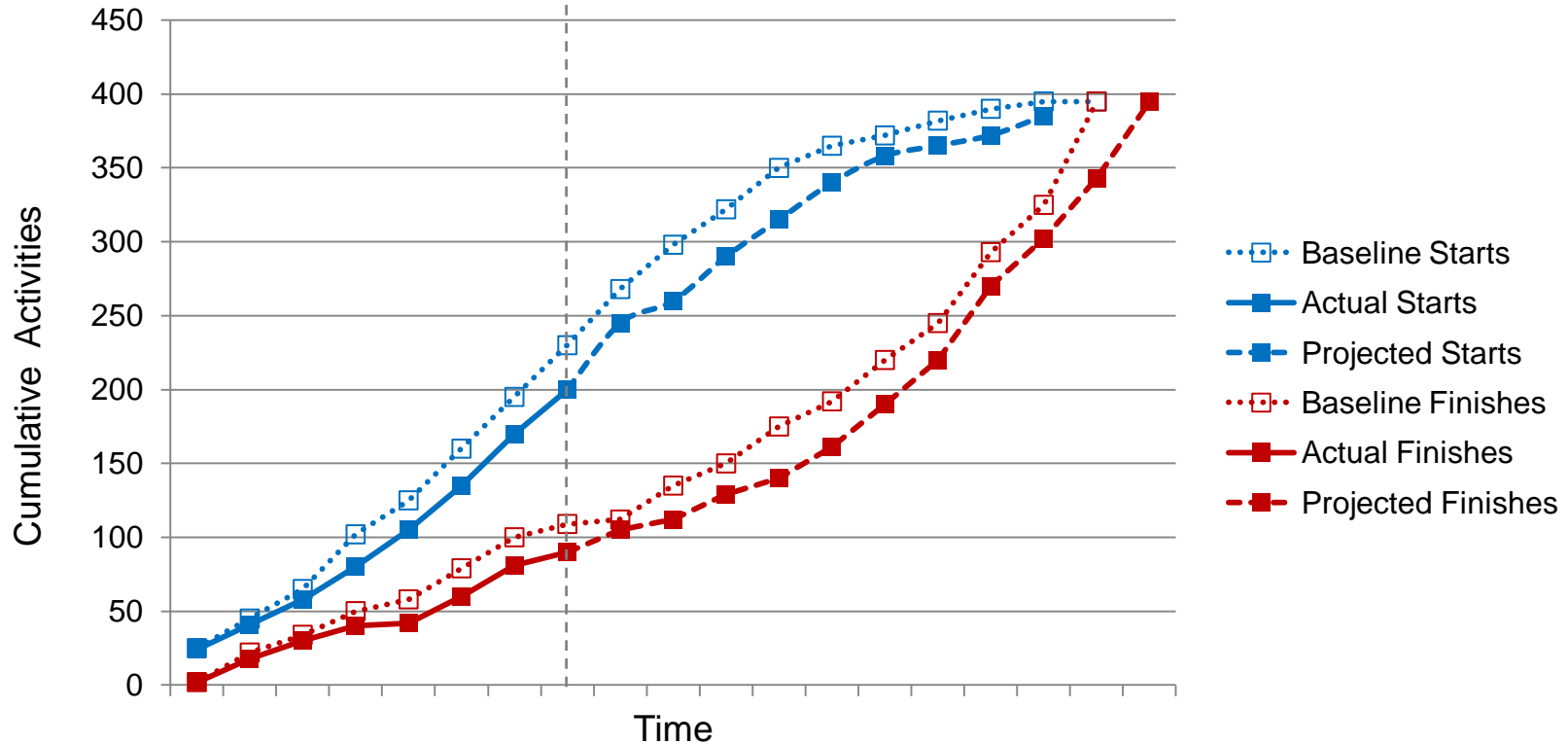
- Provide additional insight into tasks underlying BEI, CPLI, and Completed Milestones indexes
- Display projected future starts and finishes

What's needed:

- Baseline activity starts and finishes
- All tasks with Actual Start and/or Actual Finish dates before Time Now

Cumulative Start and Finish Chart

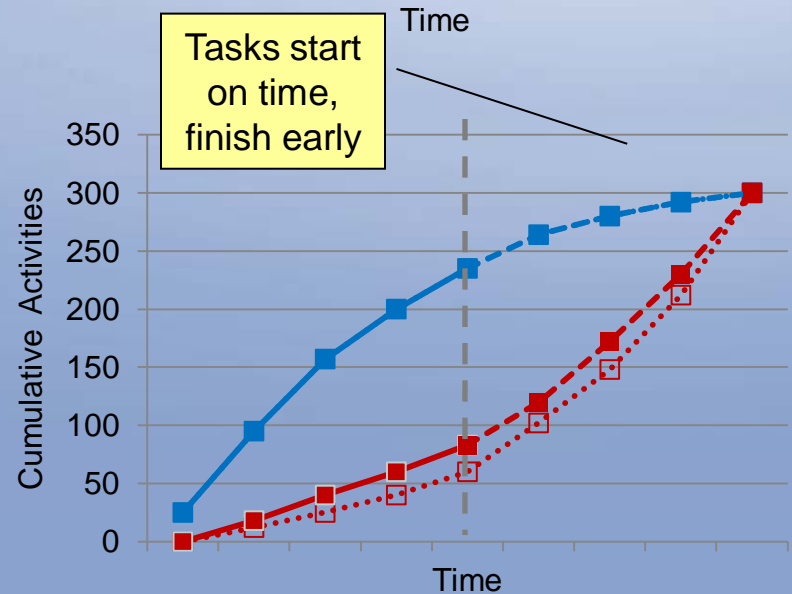
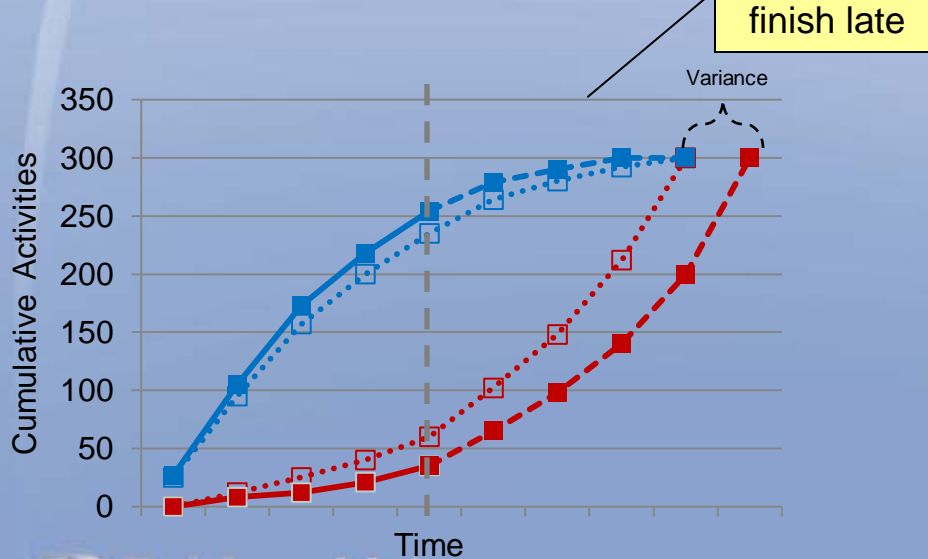
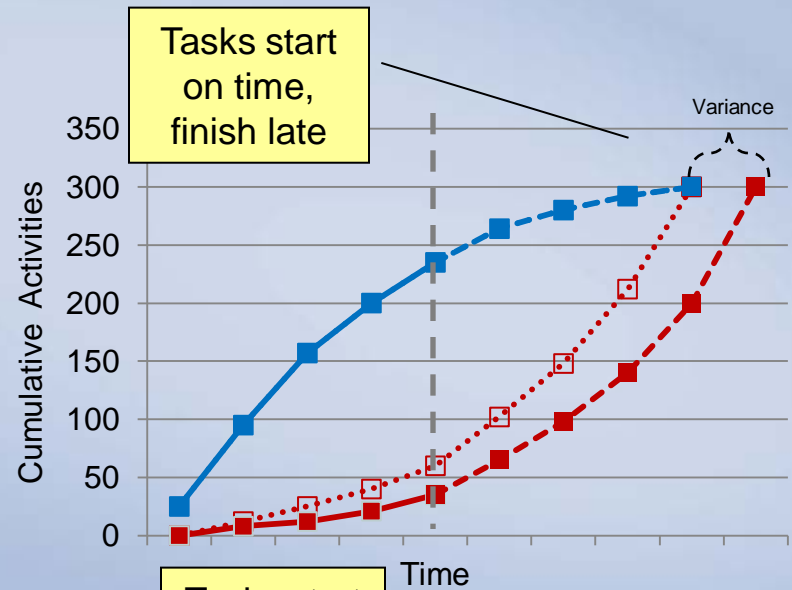
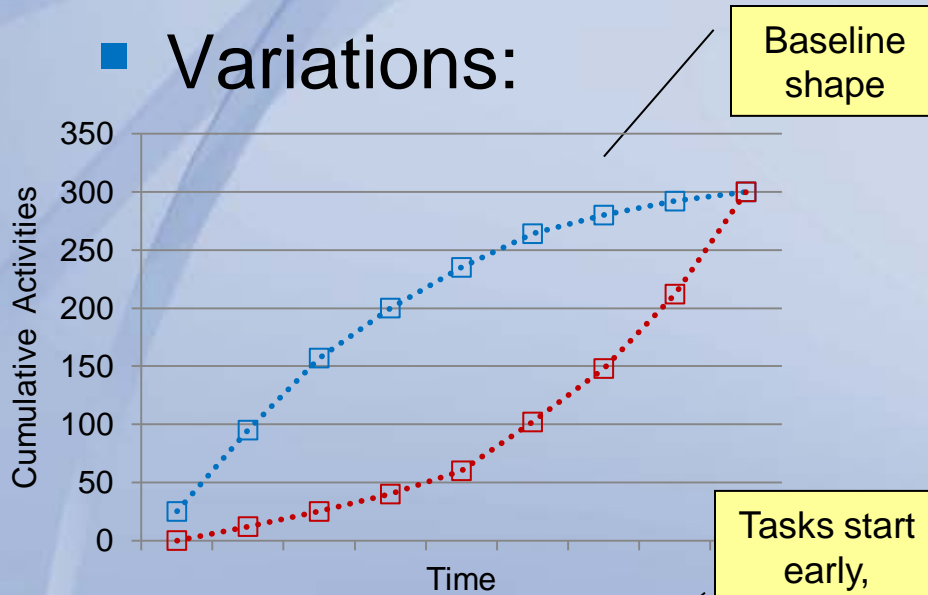
Cumulative Activity Start and Finish Chart



- Compare baseline starts and finishes against actual performance
- Makes projections of future performance

Cumulative Start and Finish Chart

■ Variations:



Activity Shadowing

Purpose:

- Analyze performance against baseline both incrementally and cumulatively
- Baseline represents the “shadow” on the report, actual performance represented as histograms

Objectives:

- Provide greater context for activity counts, adding historical comparison
- Compare performance against baseline and previous periods
- Optional: Run on critical and near-critical activities

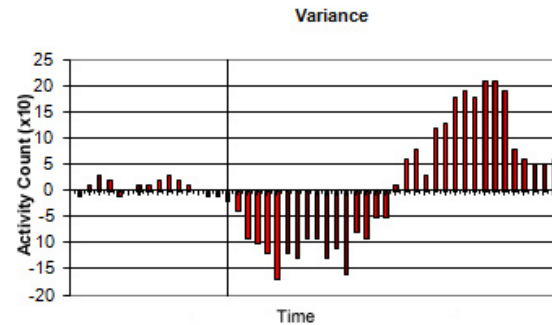
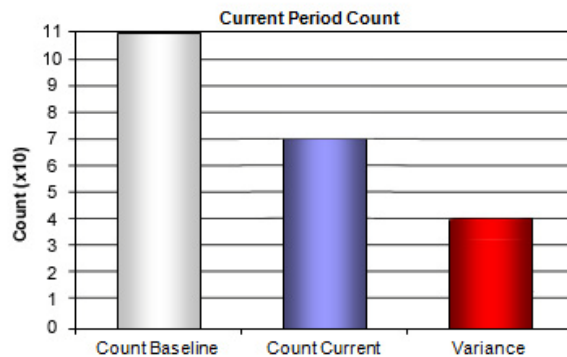
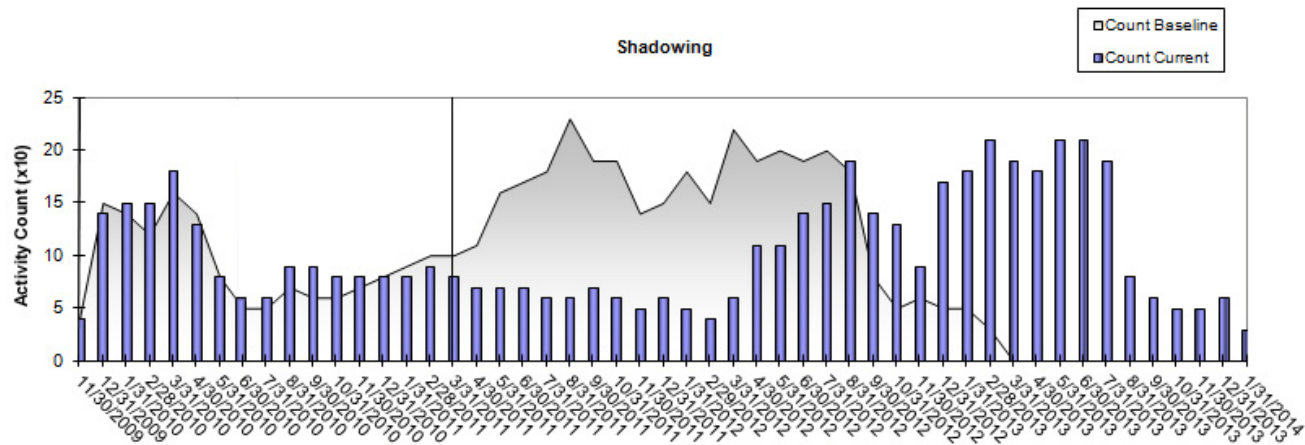
What's needed:

- Entire project baseline activity listing
- Current period activity listing
- Filter for activities with durations > 0

Activity Shadowing Report



Activity Shadowing



References

1. Berg, E., Cervantes, R., Johnson, K., Marks, C., & Yoo, A. (2010, December 23). ENGR120: Integrated Master Plan/Integrated Master Schedule Basic Analysis. *IMP/IMS Training*. Washington D.C.: Defense Contract Management Agency (DCMA).
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2. Holden, D. (2008, November 20). OSD(AT&L) DAES Review Tripwires. *PMI Luncheon*. Bailey's Crossroads, VA: Defense Contract Management Agency (DCMA).
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