Defense Acquisition University

Schedule Analysis Lunch & Learn

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25 June 2014

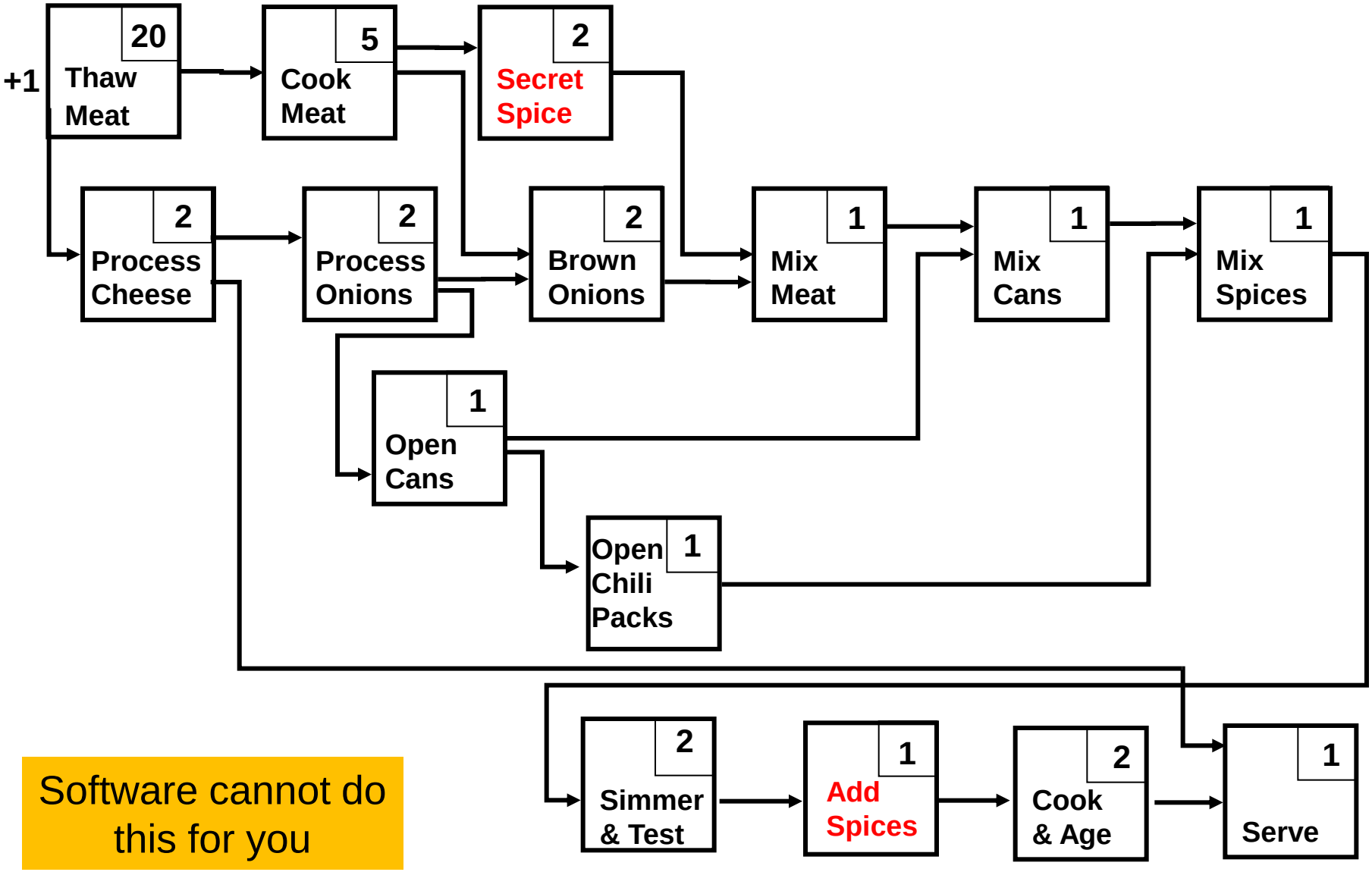
Objectives

- Summarize basic schedule health assessment and performance metrics and the schedule risk assessment process

Overview

- Schedule Health Assessment
- Schedule Performance Metrics
- Schedule Risk Analysis
- Other Resources

Chili Production



Software cannot do this for you

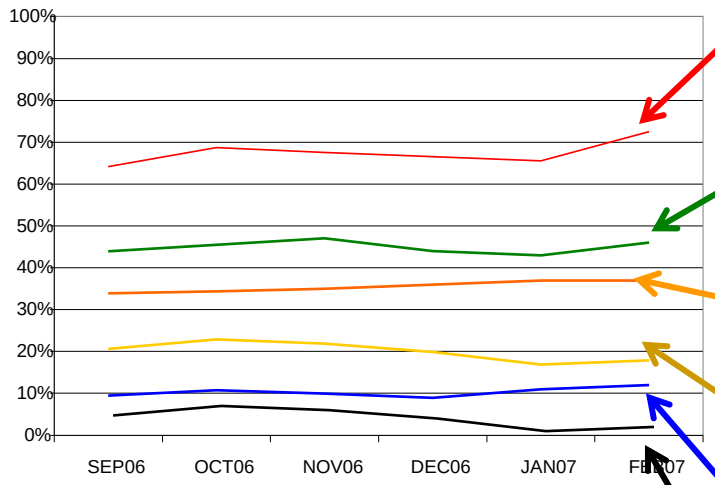
Baseline Comparison Analysis

A stable baseline is imperative to a good plan. Each month, the analyst should:

- Look at the new tasks in the schedule - They should all be out in the future beyond the contractor's freeze period
- Look at the tasks deleted from the schedule - Does the contractor have authorization to remove this work?
- Look at the tasks that changed baseline dates or actual dates - History (past tasks) "should not be changing. Period!"

Schedule Health Metrics

Schedule health metrics isolate areas that may need to be altered in order to improve the overall fidelity of the IMS.



High Float: Percentage of Incomplete Tasks with greater than 2 calendar months of float (~44 work-days)

High Duration: Percentage of Incomplete Tasks with greater than 2 calendar months in duration (~44 work-days)

Missed Tasks: Percentage of missed tasks on the task's baseline finish date in history

Constraints: Percentage of Incomplete tasks that are constrained

Missing Logic: Percentage of Incomplete Tasks without a predecessor or successor

Out of Sequence Tasks: Percentage of Incomplete Tasks being worked in violation of network logic

Schedule Analysis:
DCMA
14 Point Assessment

Schedule Analysis Metrics

- The **14 Point Assessment** is recommended for performing an objective and thorough analysis of the IMS
  - Provides a **consistent**, Department-wide approach to schedule analysis
  - Provides a **catalyst** for constructive discussions between the contractor, the PMO and DCMA
  - Provides a **baseline** for tracking IMS improvement over time
  - Utilizes **proven** metrics that have been successfully implemented on several different programs

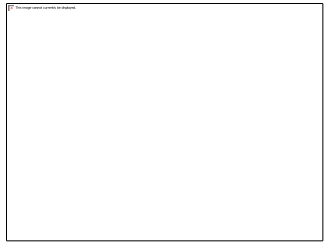
DCMA 14 Point Assessment Metrics

Metric	What it is	Goal
Logic	Predecessors and Successors	1 ea. task
Leads	Overlap/Concurrency between tasks (negative lag)	0
Lags	Delay between linked tasks	<=5%
Relationship Types	Other than Finish to Start (FS)	<= 10%
Hard Constraints	Must start or finish & no later than	<=5%
High Float	Float > 2 months	<=5%
Negative Float	Float < 0 days	0
High Duration	Tasks > 2 months	<=5%
Invalid Dates	Forecast dates prior to or actual dates after current status date	0
Resources	Hours/Dollars for each tasks	All resource loaded
Missed Tasks	Negative completion variance	<=5%
Critical Path Test	Broken logic due to missing dependencies	No large neg. float
Critical Path Length Index (CPLI)	$\frac{\text{Critical Path Length + Total Float}}{\text{Critical Path Length}}$	>= 1.00
Baseline Execution Index (BEI)	Ratio of completed tasks to tasks planned to be complete	>= 1.00

Metric #1: Logic

- **How do I identify tasks that are missing logic?**
  - Any task that meets **all** of the following criteria:
    - Is considered an "Incomplete Task"
    - And is missing a predecessor, a successor, or both

METRIC DEMO



- **What are the benefits of this metric?**
  - Helps identify how well or poorly the schedule is linked together
  - Even if links exist, the logic still needs to be verified by the technical leads to ensure that the links make sense

Primavera	• Both the predecessor and successor fields should be filled, otherwise a task is missing logic
MS Project	• Both the *Unique ID Predecessors* and *Unique ID Successors* fields should be filled, otherwise a task is missing logic
Open Plan	• Both the *Predecessors* and *Successors* fields should be filled, otherwise a task is missing logic

- **How do I calculate the percentage of tasks that are missing logic?**
  - **[(# of Tasks missing Logic) / (# of Incomplete Tasks)] x 100 = %**
  - The number tasks without predecessors and/or successors **should not exceed 5%**

All incomplete tasks should be linked

Metric #2: Leads

- **How do I identify tasks that have leads (negative lags)?**
  - Any task that meets **all** of the following criteria:
    - Is considered an "Incomplete Task"
    - And has a lead in its predecessor
- **What are the benefits of this metric?**
  - The critical path and any subsequent analysis can be adversely affected by using leads. The use of leads distorts the total float in the schedule and may cause resource conflicts. Per the IPMR DID, negative time is not demonstrable and should not be encouraged


Microsoft Project Document


Microsoft Project Document

Primavera	• Visible only in individual task view – not as a column. Ask the program scheduler to extract this information for you
MS Project	• The *Unique ID Predecessors* field, if filled, should not contain a lead (-23d, for example)
Open Plan	• The *Predecessors* field, if filled, should not contain a lead (-23d, for example)

- **How do I document the findings of this metric?**
  - Using MS Excel, count the number of "Leads" that are found
  - Leads should not be used; therefore, the **goal for this metric is 0**

Leads may distort the critical path

Metric #3: Lags

- **How do I identify tasks that have lags?**
  - Any task that meets **all** of the following criteria:
    - Is considered an "Incomplete Task"
    - And has a lag in its predecessor


Microsoft Project Document


Microsoft Project Document

- **What are the benefits of this metric?**
  - The critical path and any subsequent analysis can be adversely affected by using lags. Per the IMS DID, lag should not be used to manipulate float/slack or to restrain the schedule

Primavera	• Visible only in individual task view – not as a column. Ask the program scheduler to extract this information for you
MS Project	• The *Unique ID Predecessors* field, if filled, should contain a minimal frequency of lags and the size of the lags should be minimal (< 5d)
Open Plan	• The *Predecessors* field, if filled, should contain a minimal frequency of lags and the size of the lags should be minimal (< 5d)

- **How do I document the findings of this metric?**
  - Using MS Excel, count the number of "Lags" that are found
  - The number relationships with lags **should not exceed 5%**

The size and frequency of lags should be minimized

Metric #4: Relationship Types

- **How do I identify the relationship types?**
  - Any task that meets **all** of the following criteria:
    - Is considered an "Incomplete Task"
    - And has a predecessor

METRIC DEMO

Microsoft Project Document

- **What are the benefits of this metric?**
  - The Finish-to-Start (FS) relationship type ("once the predecessor is finished, the successor can start") provides a logical path through the program and **should account for at least 90%** of the relationship types being used. The Start-to-Finish (SF) relationship type is counter-intuitive ("the successor can't finish until the predecessor starts" – huh?) and should only be used very rarely and with detailed justification

Primavera	• Visible only in individual task view – not as a column. Ask the program scheduler to extract this information for you
MS Project	• The *Unique ID Predecessors* field, if filled, should display the relationship type (FS, SS, FF, SF)
Open Plan	• The *Predecessors* field, if filled, should display the relationship type (FS, SS, FF, SF – or it may be spelled out completely)

- **How do I document the findings of this metric?**
  - By counting the number of Start-to-Start (SS), Finish-to-Finish (FF), and Start-to-Finish (SF) relationship types, the % of Finish-to-Start (FS) relationship types can be calculated

The FS relationship provides a logical path through the program

Metric #5: Hard Constraints

- **How do I identify the constraint types?**
  - Any task that meets **all** of the following criteria:
    - Is considered an "Incomplete Task"
    - And has any type of constraint applied

METRIC DEMO

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- **What are the benefits of this metric?**
  - Using hard constraints [Must-Finish-On (MFO), Must-Start-On (MSO), Start-No-Later-Than (SNLT), & Finish-No-Later-Than (FNLT)] will prevent tasks from being moved by their dependencies and, therefore, *prevent* the schedule from being logic-driven
  - Soft constraints such as As-Soon-As-Possible (ASAP), Start-No-Earlier-Than (SNET), and Finish-No-Earlier-Than (FNET) *enable* the schedule to be logic-driven

Primavera	• Be sure to check both the primary and secondary constraint for dates
MS Project	• Check the *Constraint Type* field
Open Plan	• Check the *Target Start Type* and *Target Finish Type* fields

- **How do I document the findings of this metric?**
  - Divide the total number of "Hard Constraints" by the number of "Incomplete Tasks"
  - The number of tasks with hard constraints **should not exceed 5%**

Hard constraints prevent tasks from being logic-driven

Metric #6: High Float

- **How do I identify tasks with high float?**
  - Any task that meets **all** of the following criteria:
    - Is considered an “Incomplete Task”
    - And total float is greater than 44 working days (2 months)

METRIC DEMO

Microsoft Office Project Document

- **What are the benefits of this metric?**
  - A task with total float over 44 working days may be a result of missing predecessors and/or successors.
  - If the percentage of tasks with excessive total float exceeds 5%, the network may be unstable and may not be logic-driven

Primavera	• *Total Float* should be less than or equal to 44 working days
MS Project	• *Total Slack* should be less than or equal to 44 working days
Open Plan	• *Finish Total Float* should be less than or equal to 44 working days

- **How do I document the findings of this metric?**
  - **[(# of Tasks w/ High Float) / (# of Incomplete Tasks)] x 100 = %**
  - The number tasks with high float **should not exceed 5%**

High Float may indicate an unstable network

Metric #7: Negative Float

- **How do I identify tasks with negative float?**
  - Any task that meets **all** of the following criteria:
    - Is considered an "Incomplete Task"
    - And total float is less than 0 working days
- **What are the benefits of this metric?**
  - Helps identify tasks that are delaying completion of one or more milestones
  - Tasks with negative float should have an explanation and a corrective action plan to mitigate the negative float.

METRIC DEMO

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Primavera	• *Total Float* should be greater than 0 working days
MS Project	• *Total Slack* should be greater than 0 working days
Open Plan	• *Finish Total Float* should be greater than 0 working days

- **How do I document the findings of this metric?**
  - Divide the total number of tasks with "Negative Float" by the number of "Incomplete Tasks"
  - Ideally, there **should not be any** negative float in the schedule

Tasks with negative float should have a corrective action plan

Metric #8: High Duration

- **How do I identify tasks with high duration?**
  - Any task that meets **all** of the following criteria:
    - Is considered an “Incomplete Task”
    - And has a baseline duration greater than 44 working days (2 months)
    - And has a baseline start date within the detail planning period or rolling wave
- **What are the benefits of this metric?**
  - Helps to determine whether or not a task can be broken into two or more discrete tasks rather than one
  - Helps to make tasks more manageable which provides better insight into cost and schedule

Primavera	• *BL Project Finish* should be less than or equal to 44 working days
MS Project	• *Baseline Duration* should be less than or equal to 44 working days
Open Plan	• *Original Duration* should be less than or equal to 44 working days

- **How do I document the findings of this metric?**
  - Divide the total number of tasks with “High Duration” by the number of “Incomplete Tasks”
  - The number tasks with high duration **should not exceed 5%**

Tasks with high duration may be broken into two or more discrete tasks

Metric #9: Invalid Dates

- **How do I identify tasks with invalid forecast or actual dates?**
  - Any task that meets **all** of the following criteria:
    - Has a forecast start/finish date prior to the IMS status date
    - Or has an actual start/finish date beyond the IMS status date

METRIC DEMO

Microsoft Office Project Document

- **What are the benefits of this metric?**
  - A task should have forecast start and forecast finish dates that are in the future relative to the status date of the IMS (i.e. if the IMS status date is 8/1/09, the forecast date should be on or after 8/1/09)
  - A task should NOT have actual start or actual finish dates that are in the future relative to the status date of the IMS (i.e. if the IMS status date is 8/1/09, the actual start or finish date should be on or before 8/1/09…not AFTER 8/1/09!)

Primavera	• Does not allow *Early Start* or *Early Finish* to remain in the past
MS Project	• *Early Start* a/o *Early Finish* field dates should be in the future relative to the status date of the IMS
Open Plan	• Does not allow *Early Start* or *Early Finish* to remain in the past

- **How do I document the findings of this metric?**
  - There **should not be any** invalid dates in the schedule

Accurate dates are important for good program management

Metric #10: Resources

- **How do I identify tasks with resources (hours/dollars assigned)?**
  - Any task that meets **all** of the following criteria:
    - Is considered an "Incomplete Task"

- **What are the benefits of this metric?**
  - Provides verification that all tasks with durations greater than zero have dollars or hours assigned
    - **Note: some contractors may NOT load their resources into the IMS. The IMS DID (DI-MGMT-81650 nor the new DID, DI-MGMT 81861) do NOT require the contractor to load resources directly into the schedule.**

Primavera	• *BL Project Total Cost* field should not be empty for tasks with duration greater than zero days
MS Project	• Both the *Baseline Work* and *Cost* fields should not be empty for tasks with duration greater than zero days
Open Plan	• *Budget_At_Completion* field should not be empty for tasks with duration greater than zero days

- **How do I document the findings of this metric?**
  - Divide the number of tasks without dollars/hours assigned by the number of "Incomplete Tasks"

Resources tied to discrete tasks may be shown in the IMS or other documentation

Metric #11: Missed Tasks

- **How do I identify a missed task?**
  - Any task that meets **all** of the following criteria:
    - It is supposed to be completed already (baseline finish date on or before the status date)
    - And if the actual finish date or forecast finish date (early finish date) is after the baseline finish date

    Or
    - Finish Variance (Early Finish minus Baseline Finish) is greater than zero
- **What are the benefits of this metric?**
  - Helps identify how well or poorly the schedule is meeting the baseline plan

METRIC DEMO

Microsoft Project Document

Primavera	• *Finish Variance* field does not exist in Primavera. Subtract Early Finish minus Baseline Finish to get the Finish Variance (in days)
MS Project	• *Finish Variance* field should not be greater than 0 days
Open Plan	• *Finish Variance* field does not exist in Primavera. Subtract Early Finish minus Baseline Finish to get the Finish Variance (in days)

- **How do I document the findings of this metric?**
  - Divide the number of missed tasks by the "Baseline Count" (which does NOT include the number of tasks missing baseline start or finish dates)
  - The number of "Missed Tasks" **should not exceed 5%**

Measures performance compared to the baseline plan

Metric #12: Critical Path Test

- **What is the objective of this test?**
  - To test the integrity of the overall network logic and, in particular, the critical path
- **What are the benefits of this metric?**
  - If the project completion date (or other milestone) is not delayed in direct proportion (assuming zero float) to the amount of intentional slip (600 days ~ 3 years) that is introduced into the schedule as part of this test, then there is broken logic somewhere in the network
    - Broken logic is the result of missing predecessors and/or successors on tasks where they are needed

Primavera	• Enter "600 d" into the *Remaining Early Finish* field for an incomplete, critical task
MS Project	• Enter "600 d" into the *Remaining Duration* field for an incomplete, critical task
Open Plan	• Enter "600 d" into the *Computed Remaining Duration* field for an incomplete, critical task

- **How do I document the findings of this metric?**
  - The IMS passes the Critical Path Test if the project completion date (or other task/milestone) shows a very large negative total float number or a revised Early Finish date that is in direct proportion (assuming zero float) to the amount of intentional slip (600 days in this case) that was applied

The final task in the critical path should slip one-for-one

Metric #13: Critical Path Length Index (CPLI)

- **What is the objective of the CPLI?**
  - Measures critical path "realism" relative to the forecasted finish date

- **What are the criteria of this metric?**
  - Must first verify that the critical path makes sense and that enough of the schedule metrics have indicated that the critical path is "believable"
  - The "Critical Path Length" is always calculated from time now to the end of the program
  - Default forecast finish is "end of program"
  - Must be able to calculate total float
  - The "Total Float" variable is the least amount of total float on the software-calculated critical path that is found using the "constraint method" (detailed instructions provided later in the training)

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

- **How do I document the findings of this metric?**
  - Target is "1.00" with a threshold of "0.95"
  - Greater than 1.00 = favorable; Less than 1.00 = unfavorable

CPLI gauges the realism of completing the contract on time

Metric #14: Baseline Execution Index (BEI)

- **What is the objective of the BEI?**
  - Measures the number of tasks that were completed as a ratio to those tasks that should have been completed to date according to the original (baseline) plan
- **What are the criteria of this metric?**
  - Any task that meets the following:
    - Numerator of the ratio: Any task with an actual finish date
    - NOTE: Actual finish dates in the future (relative to the status date of the schedule), although they are considered invalid, are still counted in the numerator of the BEI equation
    - Denominator of the ratio: Any task that has a baseline finish date on or before the status date PLUS any tasks missing baseline start or finish dates
    - Tasks missing baseline dates should be included in the BEI Baseline Count until the problem is fixed

$$\text{BEI} = \frac{\text{“Complete Tasks”}}{\text{“BEI Baseline Count”}}$$

  - Analogous to EV dollarized Schedule Performance Index (SPI)

- **How do I document the findings of this metric?**
  - Target efficiency ratio is "1.00“ with a threshold of “0.95”
  - Greater than 1.00 = favorable; Less than 1.00 = unfavorable

BEI gauges the efficiency of contractor performance to plan

Don’t Forget…

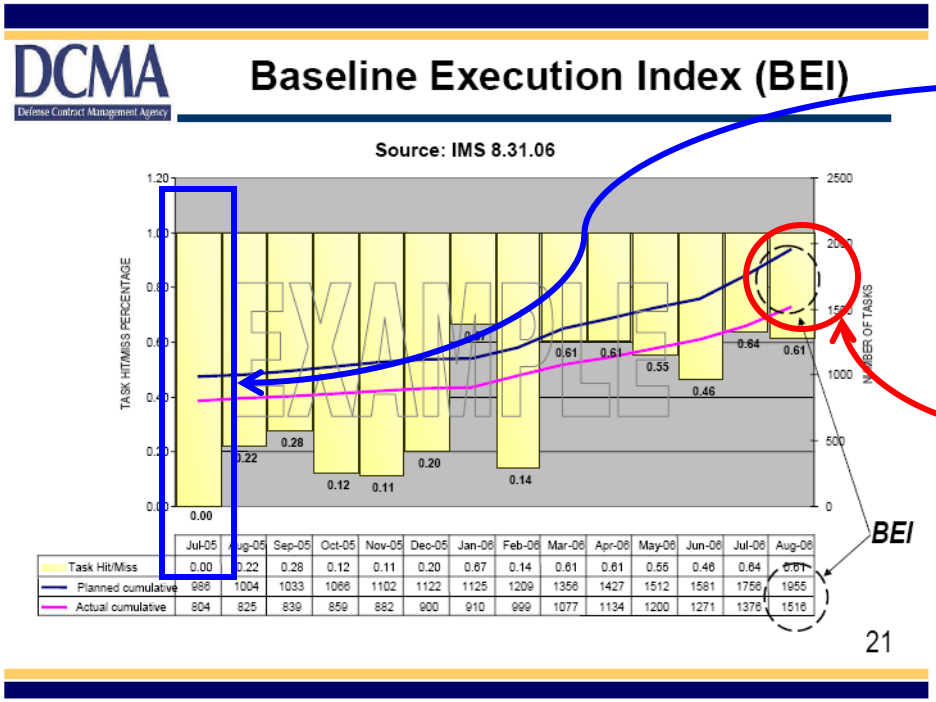
- The metrics are intended to assess:
  - the **technical structure** of the IMS
  - the Supplier’s ability to **plan the work and work the plan**
- Don’t fall into the trap of just “crunching the metrics” on a routine basis without knowing **why** the IMS has problems
- The metrics analysis does not tell you **why** the IMS has problems or **what** the program management is doing to fix those problems

Schedule Performance Metrics

Schedule performance metrics are used to indicate the efficiency with which actual work has been accomplished when measured against the baseline schedule.

- Schedule Performance Index
- Baseline Execution Index (BEI)
- Critical Path Length Index
- Hit Task Percentage

USD AT&L Schedule Tripwire Metrics



	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06
Task Hit/Miss	0.00	0.22	0.28	0.12	0.11	0.20	0.67	0.14	0.61	0.61	0.55	0.46	0.64	0.61
Planned cumulative	986	1004	1033	1066	1102	1122	1125	1209	1356	1427	1512	1581	1756	1955
Actual cumulative	804	825	839	859	882	900	910	999	1077	1134	1200	1271	1376	1516

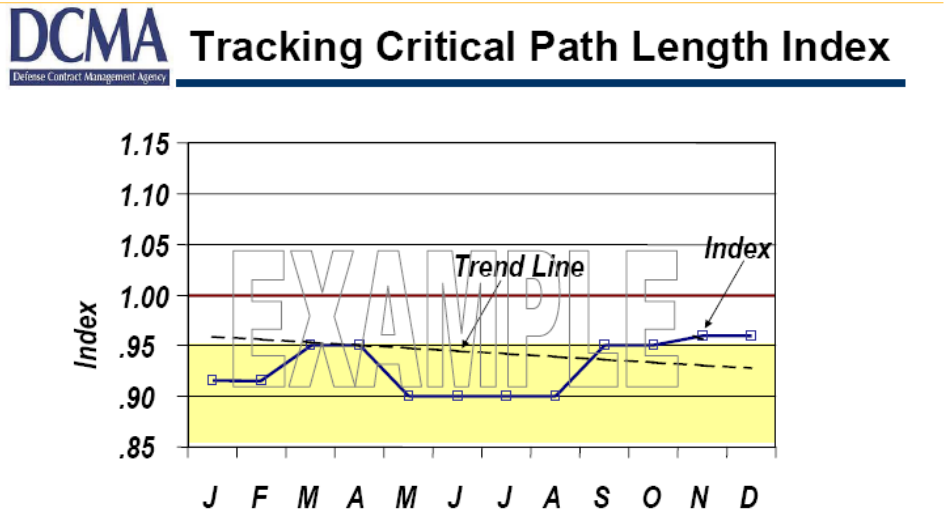
Hit Task % - Graphically displays the percentage of current month baseline tasks/activities actually completed (or Hit) on or ahead of their baseline schedule.

Baseline Execution Index (BEI) - Indicates the efficiency with which actual work has been accomplished when measured against the baseline.

$$\text{Hit Task \%} = \frac{\#\text{ of THIS month's tasks completed on or ahead of their baseline schedule}}{\#\text{ of THIS month's tasks scheduled to be completed in the baseline schedule}}$$

$$\text{BEI} = \frac{\#\text{ of Baseline Tasks Actually Completed}}{\#\text{ of Baseline Tasks Scheduled for Completion}}$$

USD AT&L Schedule Tripwire Metrics



Critical Path Length Index – Indexes the remaining critical path duration plus float duration to the baseline finish against the remaining critical path duration

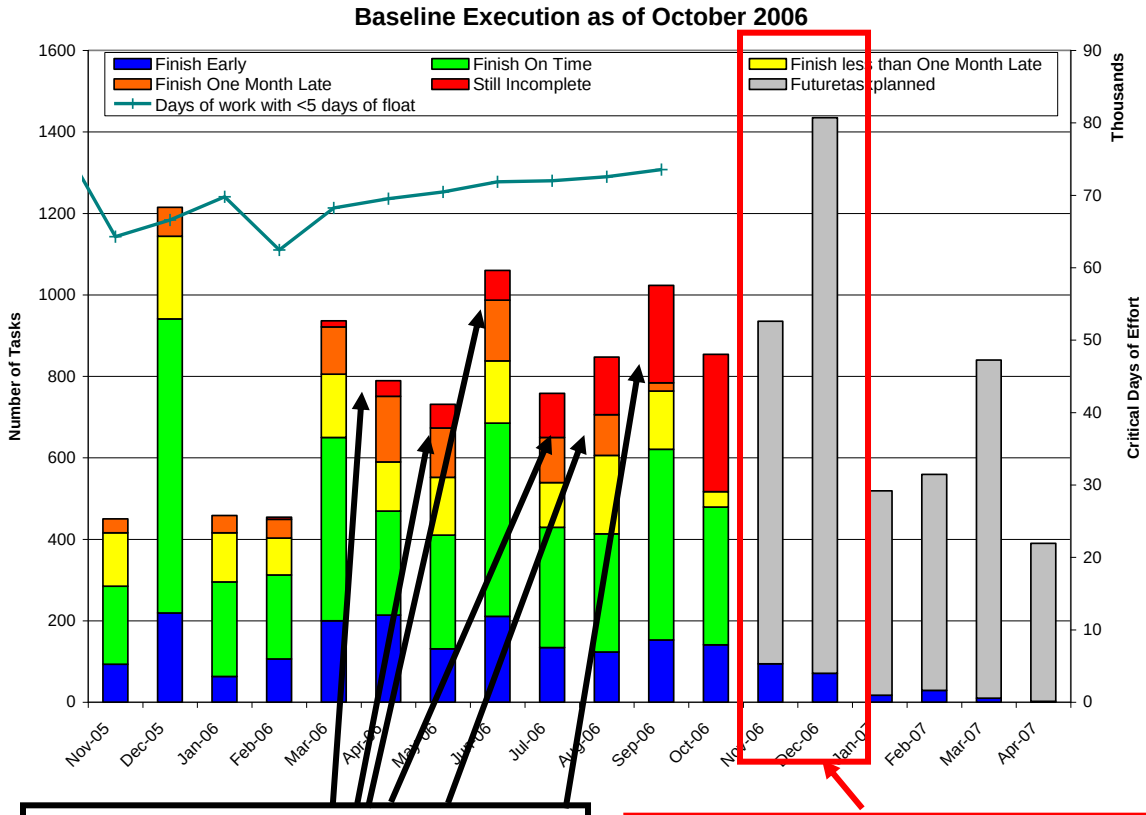
Schedule Performance Index – The earned value metric that measures work accomplishment efficiency.

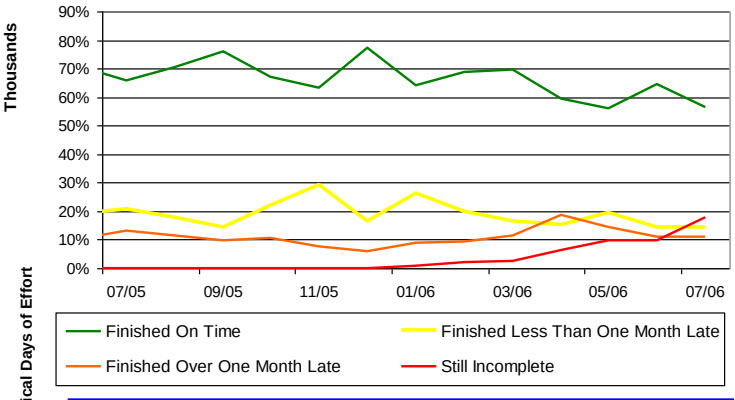
$$\text{CPLI} = \frac{\text{Critical Path Duration + Float*}}{\text{Critical Path Duration*}}$$

$$\text{SPI} = \frac{\text{Budget Cost Work Performed}}{\text{Budget Cost Work Scheduled}}$$

* The float value is based on the float measured to the baseline finish date

Baseline Execution Analysis: Example





A different view of the same data by percentage of tasks. It shows whether the contractor is improving or degrading in performance. Number of tasks finishing on time are decreasing!

Why are so many tasks delinquent? What is the contractor doing to mitigate these issues/roadblocks?

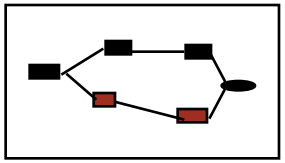
The contractor is expecting a high volume of tasks to complete in 2 months, is this realistic planning based on past performance?

Schedule Risk Assessment

What is an SRA?

- A Schedule Risk Assessment is a process which uses statistical techniques to identify technical, programmatic and schedule risk in a program and quantifies the impact of those risks on the program's schedule
- Required by the IMS DIDs – DI-MGMT-81861 IPMR and DI-MGMT-81650 IMS
- SRA Benefits
  - Provides a means to identify and manage program risk / opportunities
  - Quantifies individual schedule risk
  - Forecasts completion costs and schedules when things not going according to plan

SRA Process

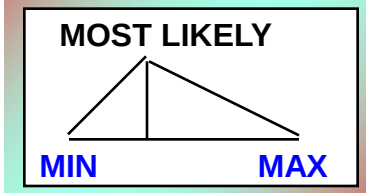


1. Develop a complete critical path network

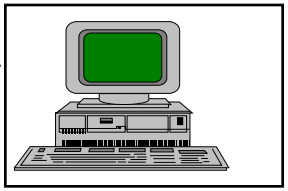
TECHNICAL RISKS:
- •EMC TESTING
- •S/W CODING
- •FLIGHT TEST

2. Identify reporting tasks and risk candidates

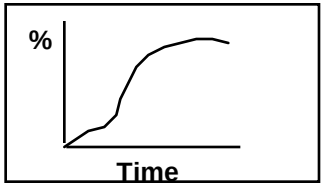
Contractor CAMs responsibility



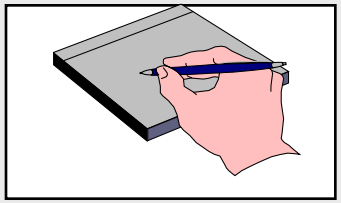
3. Enter risk parameters



4. Run Schedule Simulation & Quantify Impact of Risk on Schedule



5. Analyze Schedule Results & Integrate Into Cost Estimate



6. Document Results

SA RISK ACTION PLAN

ISSUE -- ACTION -- DATE

7. Present to Program office and IPTs Develop Risk Mitigating Actions

As part of final process steps, the analyst prepares the report and presents a SRA position.

Pre-Assessment Checklist/ CAM Questions

- To perform a proper SRA the following questions should be satisfied:
  - Does the schedule reflect all the work to be done?
  - Is work sequenced logically?
  - Are interdependencies planned in a logical manner?
  - Are constraints, leads, and lags justified?
  - Are duration estimates meaningful? (Also see duration metrics)
  - Are resource estimates reasonable and available?
  - Does the critical path make sense?
  - Does the scheduling software calculate it? (Also see CP analysis)
  - Does the schedule provide logical current status and forecasts of completion dates for all authorized work?

Risk Tool Entrance Criteria Goals

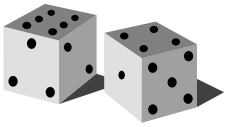
- Greater than 90% precedence logic
- Greater than 80% finish to start relationships
- No (or very few) constraints - most tasks must be able to start and finish “as soon as possible”
- Identify reporting tasks
  - Risk candidates
  - Reporting tasks (or key events)
- CAMs develop three point estimates for “Remaining Duration”
- Review which tasks to apply global (group) edits
- Distribution Curve set as Normal for default, also use Triangular, Beta, Uniform

Who Attends An SRA?

- Government Participants
  - Program Office EV Analysts
  - Staff Scheduler experienced in the SRA process
  - Program Office Systems Engineering Lead
  - Program Office IPT Leads on the selected critical paths
- Contractor Participants
  - Project Schedulers
  - Selected critical paths CAMs

Monte Carlo Simulations

- The following input is required from Control Account Managers (CAMs) or the technical reps during Interviews:
  - Best Case ≈ Minimum Duration - *The minimum number of days that the task can be completed in*
  - Most Likely Duration - *The most likely number of days that the task can be completed in*
  - Worst Case ≈ Maximum Duration - *The maximum number of days that the task may be completed in*
  - *Curve to be associated with task(s)*
  - *Rationale for the selections*
- During the simulation, the Risk software will pick one duration for each activity that is somewhere between the minimum and maximum estimate.
- The program will then plug it into the schedule and see how it affects schedule completion date. The result is stored and the process is repeated.

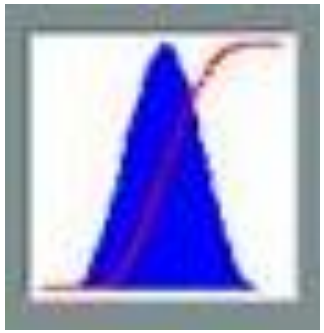


Assigning Distributions to Represent Risk

Uniform

Normal

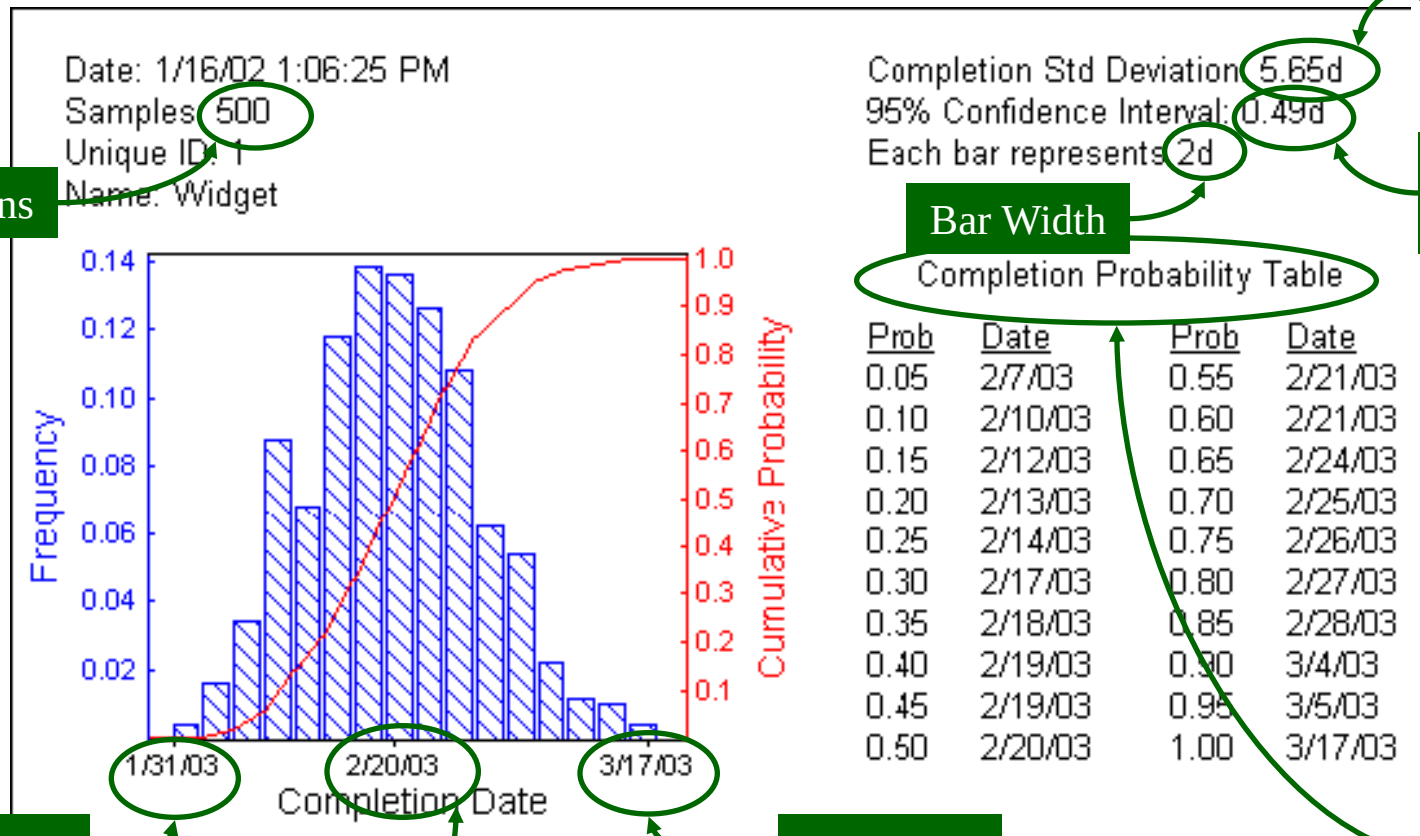
Triangular



Beta

Risk Histogram

This example is from MS Project, Risk + add-in tool



Completion Probability Table

Prob	Date	Prob	Date
0.05	2/7/03	0.55	2/21/03
0.10	2/10/03	0.60	2/21/03
0.15	2/12/03	0.65	2/24/03
0.20	2/13/03	0.70	2/25/03
0.25	2/14/03	0.75	2/26/03
0.30	2/17/03	0.80	2/27/03
0.35	2/18/03	0.85	2/28/03
0.40	2/19/03	0.90	3/4/03
0.45	2/19/03	0.95	3/5/03
0.50	2/20/03	1.00	3/17/03

Standard Deviation

95% Confidence Interval

Iterations

Bar Width

Earliest Completion

Expected Completion

Latest Completion

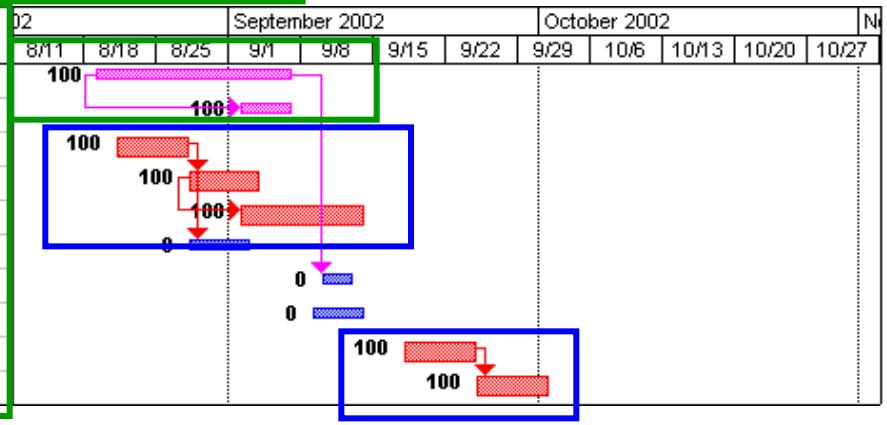
Cumulative Probability Table

Criticality index, risk critical tasks

Previously (and remaining) critical

Risk critical tasks

ID	Task Name	Total Slack	Critical	% Critical	Risk Critical
67	Build remaining garage wall:	7 days	No	100	Yes
68	Garage finish work	7 days	No	100	Yes
71	Install wall, ceiling insulation	0 days	Yes	100	No
72	Measure, prepare, cut dryw	0 days	Yes	100	No
73	Hang drywall, inside, outsid	0 days	Yes	100	No
75	Finish (paint) ceiling pipes, s	6 days	No	0	No
82	Prepare soil, rototilling, etc.	31 days	No	0	No
83	Receive plants, trees, shrub	20 days	No	0	No
77	Install floor boards, moulding	0 days	Yes	100	No
78	Misc. interior finish work	0 days	Yes	100	No

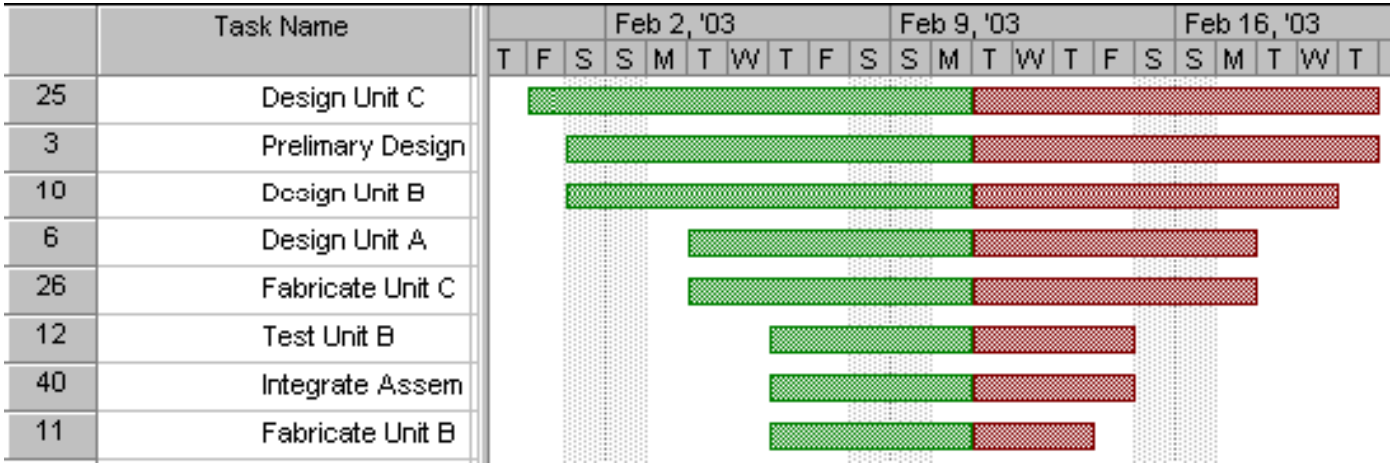


Risk Critical Index is assigned to each task, and displayed directly to the left of each Gantt bar = represents the percentage of times that task appeared on the critical path after risk was introduced.

Default Risk + © color-codes the tasks to represent different conditions. Tasks colored **blue** represent tasks that do not appear on the critical path, tasks in **red** are tasks that are on the critical path, if everything proceeds as planned, and **magenta** tasks are tasks that appear on the critical path after risk is introduced.

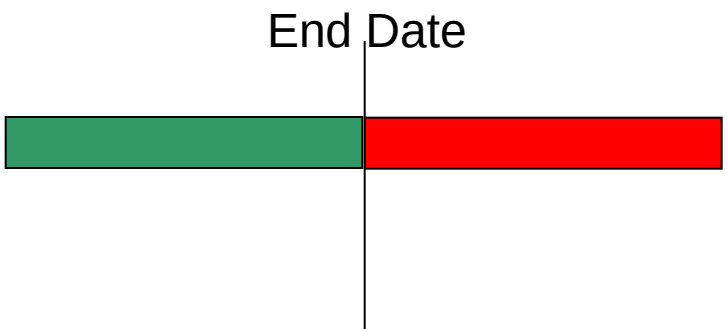
NOTE: There are some user defined fields associated with this criticality index, such as days of float or defining magenta as appearing on the critical path in greater than X% of the simulations. Left alone, defaults are zero float and 75% for magenta.

Sensitivity analysis



- This analysis determines each tasks' impact (via forward/ backward pass calculations) on the end date if the minimum (optimistic) thru the maximum (pessimistic) durations come true

If the contractor took action to ensure that the minimum duration came true, they could shave off the amount of time equal to the green bar off the end date of the program.



If the worst case ended up occurring for this task and the maximum duration came true, the contractor could expect the end of the program to push out by an amount of time equal to the red bar.

Schedule Risk Assessment Benefits

- Promotes diligent, continuous schedule maintenance
- Provides a means to identify and manage program risk / opportunities
- Quantifies individual schedule risk
- Forecasts completion costs and schedules when things not going according to plan

Summary

- Schedule Health Assessment
- Schedule Performance Metrics
- Schedule Risk Analysis
- Other Resources
  - EVM 263 Principles of Schedule Management
  - EVM 201 Intermediate Earned Value Management
  - Targeted training for Schedule Mgt/Analysis
  - IBR Training Workshop
  - Planning & Scheduling Excellence Guide

Questions?