Replanning the Performance Measurement Baseline

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Definitions

- Performance Measurement Baseline
  - *The time-phased budget plan against which all work performance is measured*
- Over Target Baseline
  - *A new performance measurement baseline resulting from failure to meet the original objectives*
  - *Exceeds the original target costs and requires customer approval*
- Over Target Schedule
  - *A revised schedule baseline with new activities and milestones extending beyond the contractual completion*

Definitions

- Reprogramming
  - *A comprehensive replanning of remaining contractual effort that results in a total budget and/or total schedule greater than the contractual requirements*
  - *Process that results in an OTB or OTS*
- Replan
  - *A change in the original plan for accomplishing authorized contractual requirements that stays within the existing constraints of the contract*

A few reasons for updating the plan…

- Estimate at completion (EAC) is less than actual costs for some elements
- Existence of zero budget work packages
- Cost and schedule variance explanations are no longer meaningful
- Inability to effectively use the performance data
- Unrealistic activity durations and relationship logic
- Depletion or rapid use of management reserve
- Lack of confidence in contractor’s EAC

Contributors to reprogramming
~A few experiences ~

- Launch dates were changing and remaining schedule was no longer achievable
- Original spacecraft integration & test schedule durations were unrealistic
- Earned Value information was unreliable:
  - *Cost and schedule variances were not meaningful*
  - *Contractor was unable to forecast performance because of flawed data*
  - *Difficulty determining causes of performance problems due to lack of understanding of basis of estimate*
- Depletion of all management reserve

More experiences…

- Disruption from major contractor relocation greatly increased contractor risk and changed significant assumptions relating to basis of estimate
  - *Loss of technical experience base*
  - *Almost 100% turnover in first level managers*
  - *Change from non-union to union shop*
  - *New systems (engineering, quality, accounting)*
  - *New senior management chain*
  - *New manufacturing & test facilities and procedures*

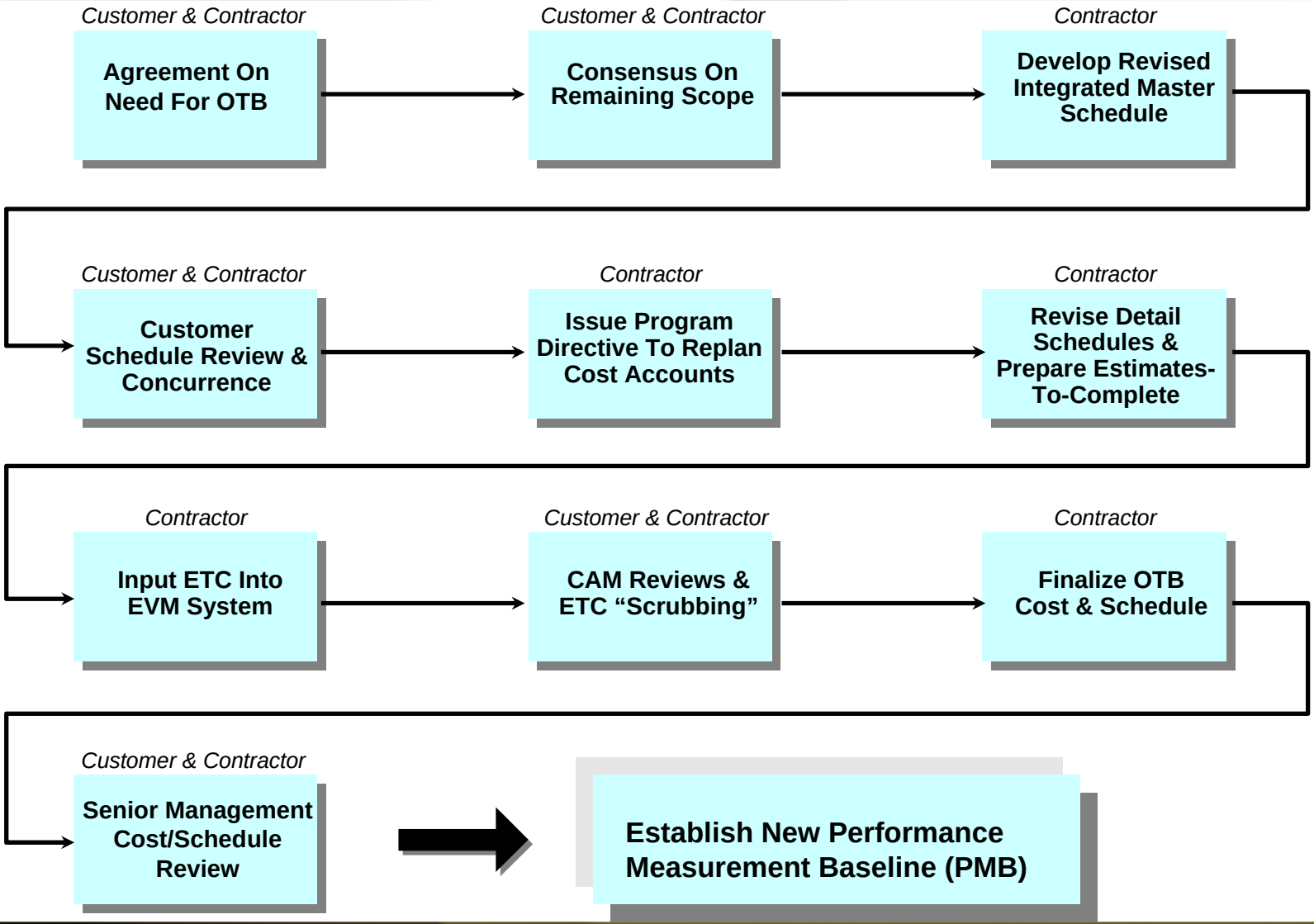
And more experiences…

- Major technical problems
  - *Design errors*
  - *Human errors on factory floor*
  - *Material shortages*
- Escalating cost overruns (40%)
- Significant contract change order traffic
  - *Contractor often slow preparing proposals and revising plans*
  - *Failure to identify “end-of-contract” or program extension impact of changes on cost and schedule*
  - *Customer directed task orders*

A few thoughts before committing to a replan

- A contract should be greater than 20% and less than 85% complete before considering a replan
- Projected cost growth should be greater than 15% for the remaining work
- At least a year of work should be remaining
- Conduct a benefit analysis to make sure the cost of implementing a replan is not greater than the benefits
- Some historic cost and schedule data could be lost from an OTB/OTS implementation

The OTB Process Flow



1. Agreement On Need For An OTB/OTS
(Customer & Contractor)

Process Steps

- Contractor evaluates remaining budgets and schedule to determine need for a formal reprogramming
- Contractor notifies customer
- Customer & contractor assess realism of current baseline and discuss ground rules for proceeding with the replan
- Customer notifies contractor to proceed with OTB through contracting officer

Lessons Learned

- Customer and contractor need to establish “partnership” in OTB process up front
- Customer needs to independently develop a cost & schedule estimate of the OTB in order to assess realism of contractor EAC

2. Consensus On Remaining Scope
(Customer & Contractor)

Process Steps

- Customer & contractor identify problems that caused the need for a new baseline
- Customer & contractor identify and document scope to be included in OTB (e.g. list proposals, task orders)
- Customer & contractor verify and agree on new scope to be included in the OTB

Lessons Learned

- Contractor must adhere to SOW
- Customer must avoid giving, and the contractor must avoid accepting, verbal direction
- Contractor must maintain detailed proposal status log
- Contractor must carefully account for scope in/out of schedule & undistributed budget (UB)
- Customer keep careful records regarding future scope items not included in OTB (future changes/revisions)

3. Develop Revised Integrated Master Schedule (Contractor)

Process Steps

- Contractor verifies schedule activities, durations & logic
- All planning should be based on a valid and realistic schedule
- Contractor confirms facility and resource availability will support schedule
- Contractor documents programmatic and schedule assumptions and constraints

Lessons Learned

- Contractor must ensure its contract documentation is up-to-date
- Contractor should utilize logic network
- Contractor should utilize project scheduling professionals
- Contractor must incorporate realistic constraints, reserve, etc. into schedule
- A good schedule promotes communication & coordination among contractor team
- Contractor should maintain only one set of schedule “books”

4. Customer Schedule Review & Concurrence
(Customer & Contractor)

Process Steps

- Assess logical sequencing of work in schedule
- Validate activities, durations & logic based on historical actuals and current approach
- Verify horizontal & vertical schedule integration & traceability
- Identify differences from prior schedule forecasts
- Check for conflicts
- Gauge adequacy of reserve

Lessons Learned

- Review schedules from a “partner” perspective
- Independent assessment provides good schedule sanity check
- Customer and contractor can resolve schedule issues before, not after, ETC pricing
- Facilitates schedule agreement between customer and contractor

5. Issue Program Directive To Replan Cost Accounts
(Contractor)

Process Steps

- Contractor documents OTB master schedule and ETC preparation guidelines
- Contractor provides guideline on contract scope to include in OTB (e.g. list of outstanding proposals)
- Contractor lists assumptions (e.g. schedules, accounting calendar, etc.)
- Contractor issues directive to start the OTB effort

Lessons Learned

- Contractor must maintain an OTB schedule/calendar to establish & track deadlines
- OTB guidelines & assumptions must be clearly understood by the Cost Account Managers (CAMs)
- An experienced contractor business manager facilitates the OTB process
- All CAMs and project managers must be actively involved in process

6. Revise Detail Schedules & Prepare ETCs
(Contractor)

Process Steps

- CAMs modify detail schedules
- CAMs prepare “bottoms-up” staffing, material, travel, etc. ETCs phased against schedules
- CAMs review ETCs & schedules with functional, program & business managers
- Finance reconciles remaining UB

Lessons Learned

- CAMs should not start detail scheduling & ETCs until master schedule is “firm”
- Contractor must clearly document content of UB
- Contractor should not “force” changes approved after replan process has begun into the new plan ~ handle as future changes to baseline

7. Input ETC Into EVM System
(Contractor)

Process Details

- CAMs submit ETCs to program finance on time
- Contractor finance inputs data into EVMS
- Contractor finance coordinates review and error correction with CAMs

Lessons Learned

- CAMs must meet ETC submittal deadline
- Contractor must allow sufficient time to price OTB for accuracy
- Experienced contractor EVM personnel are vital
- Contractor must thoroughly review OTB internally before providing final program level cost to Customer

8. CAM Reviews & ETC “Scrubbing”
(Customer & Contractor)

Process Details

- Customer reviews schedules and ETC with CAMs
- Customer provides feedback to contractor business manager on findings
- Customer and contractor hold strategy discussions (staffing, schedule, issues, workarounds, management reserve levels, etc.)
- If done at appropriate level, these meetings eliminate the need for an Integrated Baseline Review at a later date

Lessons Learned

- Customer involvement demonstrates importance of OTB ~ CAMs take process seriously
- Customer independent assessment often surfaces overlooked items, issues
- Customer must have technical team involvement (not just finance & scheduling)

9. Finalize OTB Cost & Schedule
(Contractor)

Process Details

- Contractor modifies budget & schedule per CAM reviews
- Contractor conducts final project-level review with Customer
- Contractor issues Work Authorizations & budgets to CAMs

Lessons Learned

- Contractor must allow time to resolve errors and discrepancies
- Customer & contractor concurrence needed on results of OTB effort
- Integrity of historical actuals is easily lost in contract re-locations and accounting system changes
- Contractor needs a formal system to track Work Authorizations to discourage verbal direction

10. Senior Management Cost/Schedule Review
(Customer & Contractor)

Process Details

- Contractor presents final results of OTB (overruns, schedule impacts) to customer senior management
- Contractor affirms commitment to complete effort within cost & schedule plan
- Replan results in identifying contract schedule & value for OTB
- Customer adjusts incentive plans as necessary

Lessons Learned

- Goal/threat of a major management review good motivator for contractor (and Customer)
- Contractor senior management involvement ensures adherence to replan deadlines

Summary of Key Lessons Learned

- Consensus on realistic master schedule needed up front
- Customer and contractor must work together on the OTB
- Contractor business staff and CAMs need EVM experience
- Changes and revisions must be carefully controlled
- Contractor's senior management participation in replanning process promotes objectivity and urgency
- Direct Customer "dialogue" with CAMs instills importance of proper planning and control
- Customer must independently validate the realism of the replan (ETC & schedule) ~ integration of cost & schedule is paramount

A reprogramming isn’t the total solution!

- A new baseline will not:
  - *Prevent future cost growth*
  - *Contain cost or schedule overruns*
  - *Improve management commitment*
  - *Force the earned value management system to work properly*

Managing the new baseline

- Several months after the replan, the statistical EAC formulas may be used again
- Pay particular attention to the areas that caused the replan to ensure that the new plan is reliable
- Analyze the use of the management reserve to determine if the new estimates are realistic or if new risks have occurred
- Monitor the contractor’s discipline in maintaining the earned value system, as well as the tracking the data

Conclusion

- A customer/contractor collaboration in the reprogramming process results in a realistic cost & schedule plan against which:
  - *performance can be measured*
  - *forecasts can be made*
  - *changes can be assessed and incorporated*
  - *milestones can be achieved*