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W87-1 WDCR Successes and Lessons Learned (SNL DA perspective)

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Topics

- Lessons learned from prior programs & implemented on the W87-1
  - WDCR Requirements Documentation
  - Cross site Teams
- Successes & Challenges in WDCR development
  - Cost
  - Schedule
  - Risk
- Conclusions

WDCR Requirements Documentation

- Cost Estimation Analysis Group (CEAG) led team stood up to develop W87-1 WDCR Requirements document (FPM request)
  - Broad representation across NNSA and NSE sites
    - Sub Teams created across key areas
      - Ability to share lessons learned across sites
  - Improved documentation over past program guidance
  - Established a set of well documented core requirements which can be used on all future programs
  - Added FPM training at the beginning of estimation process
- In parallel M&O Cross Site teams were able to provide feedback to this team which was included in final guidance document
- Opportunity to include additional guidance on the following:
    - LOE percentages
    - Consistency in development of future CSF/NIMS
    - SCURA guidance

Lessons learned from prior programs & implemented on the W87-1

- Cross site Teams
  - Hardware Management Team
    - Joint Materials Requirements Schedule (MRS) Activity list format that defines MRS categories and definitions
    - Integration of LLNL/SNL MRS activity lists will allow for coordinated hardware requests to the PA
    - Common MRS change control process which allows all impacted stakeholders an opportunity to provide an impact analysis prior to implementation of changes in each site MRS – aids in keeping LLNL and SNL MRS demands aligned (Joint change control process)
    - SNL DA MRS included PRT hardware needs
  - Scheduling Task Team
    - Common coding and definitions of Key Milestones to include all NIMS, DA/PA handoffs and site specific milestones
      - Improved ambiguous definitions, missing milestones
    - Review site schedule templates to support site schedule integration
      - Align schedule needs and expectations
      - Improved path toward schedule integration

Lessons learned from prior programs & implemented on the W87-1

- Cross site Teams
  - DDP & Production Strategy Task Team
    - All PRT's used the same DDP and Production Strategy templates updated to incorporate lessons learned from past programs
    - PRT's shared a common set of assumptions that were uniformly applied to the WDCR
    - CSRE process resulted in improved rigor, consistency, accountability, and coordination of PRT assumptions across DA & PA
      - Great coordination between SNL DA and KCNSC with last minute changes/updates
  - Basis of Estimate Task Team
    - Common BOE template with cross site inputs improves ability to accurately capture scope and assumptions prior to W87-1 WDCR kickoff
    - Standardizing BOE template early on prevents rework from template changes
    - Drives consistency in reviewing scope and requirements within BOE template
    - PRT Checklist
    - Design Basis & common assumptions aligned between DA & PA (CSRE)
    - Scope will be properly accounted for (i.e. not double counted or missed)
    - M&O's will cost WDCR to a single defined design
    - Hardware will be properly accounted for in BOE

Lessons learned from prior programs & implemented on the W87-1

- Cross site Teams
  - Funding Task Team
    - Single unfunded Contract Purchase Agreement (CPA) was established to serve as the master ICO to cover all W87-1 ICO work between SNL and KCNSC
    - One CPA covers all SNL PRTs for work/scope going to KCNSC
      - CPA can be adjusted to add more PRTs or raise ceiling limit at any time
    - CPA allows work to start immediately upon receipt. A formal quote is completed in parallel, as work begins, to provide forecasted cost and delivery and formalizing the contractual obligations between the issuing and receiving agencies (saves 6 weeks lead time per order)
  - Risk Task Team
    - Comments/Suggestions on ROMP based on lessons learned from previous programs
      - ARM data fields
      - Increase DA/PA collaboration and risk planning
      - Leverage lessons learned and best practices to minimize implementation risk

Successes in WDCR development

- Cost
  - Relatively stable NWBS/CWBS (locked down NWBS/CWBS early)
  - Early training on Cost Estimation
    - Analogous & historical data
  - Recurring Check ins
  - BOEs
    - Multiple Iterations
    - Used as basis for Resource Loading
    - Quality of BOEs has improved significantly due to implementation of best practices from previous programs
    - Process established to burden raw BOE cost data to generate early estimates for cost validation and comparisons
  - Deep Dives into all areas ahead of final submittal
    - Director level reviews
    - Internal Strike Team support
  - Tools
    - Early implementation of Cobra
      - Used for final burdened costs
        - Source for draft and final DIT submittals
      - EV requirements & roadmap
        - Leveraged W80-4 infrastructure for consistency across SNL ND portfolio

Successes in WDCR development

- Schedule
  - Teams had a strong basis from BOE
  - Technical Reviews held with PRTs in October
    - Checklist for quality and logic
    - Review of MRS, System Test links, Trainers, Testers, Tools & Gages
  - TRL milestones reflected in schedule
  - MISE/MAT
  - Leveraged templates & activities from previous modernization programs
- Risk
  - Leveraged SCURA experience from other programs
  - Availability from FPO to clarify confusion or ambiguous requirements w/r to SCURA.
  - Partnering with other sites (NSE) to identify efficiencies in our SCURA Process.

Challenges/lessons learned on the W87-1 to help future WDCRs

- Collaboration
  - COVID-19 impacts
    - Pre-COVID in person tag ups valuable to all sites
    - Focused topics and output
  - Virtual meetings allowed continuation of collaboration
    - Took longer to make a decision
    - Competing priorities
  - Cross site teams throughout the process
    - Monthly Tag ups -rotate at each site

- Cost
  - Use of previous FYNSP submissions as basis for early year planned costs
  - Establish targets on Total Cost early on
  - EMAC/SCORE model – alternate cost estimate reconciliation
    - Reference Systems
    - Complexity
  - Phasing of hardware commitments & costing

Challenges/lessons learned on the W87-1 to help future WDCRs

- Schedule
  - Master Scheduler part of “Core” WDCR team
  - Top down flow down from NIMS
  - Requirements (constrained vs unconstrained)
  - Mutually agreed upon due dates (M&O , NNSA DOD) for schedule development and completion
    - JIMS – more inputs from M&O
    - NIMS -> JIMS alignment
      - Flight Tests
  - Quality checks (incorporate SCURA)
  - Early review internally and with external partners

Challenges/lessons learned on the W87-1 to help future WDCRs

- Risk
  - Experienced risk managers needed from the beginning
    - Quality of Risk inputs
      - P6 trigger ID included and valid to logic should risk be realized
      - Mitigation plans driving correct Target score (mitigated SCURA)
    - Approval process (internal)
  - SCURA
    - SCURA POC involved early on as part of “Core” WDCR team
    - Uncertainty training incorporated into schedule training from the beginning
    - Improved quantification of cost and schedule impacts in Risk
    - Additional partnering with NNSA and other sites to leverage knowledge on SCURA inputs and outputs
      - Define MR calculation in WDCR Requirements (mitigated vs unmitigated)
    - Opportunity to grow expertise for this competency

Conclusion

- The WDCR is one of the largest and most intensive Phase 6x deliverables
- Cost, Schedule & Risk all intersect in final product – early integration is critical
- Efforts by all teams across the NSE is reflected in the detailed artifacts provided to NNSA
- W87-1 applied WDCR lessons learned from prior modernization programs
    - NWBS/CWBS - lock down early, mitigate changes
    - DDP/CSRE process - improved rigor, guidance and consistency
    - BOEs - template, training, multiple iterations, early cost validation
    - Schedule integration
    - Hardware management

Conclusion (continued)

- WDCR Opportunities for continuous improvement
  - W87-1 WDCR experienced challenges in the areas of cost, schedule and risk
    - Implementation of W87-1 WDCR lessons learned into future modernization programs
  - Opportunity to build on SCURA competency
    - Continued collaboration and partnering across sites and NNSA
      - Establish Community of Practice
  - Opportunity to continue partnering into 6.3 for consistency across sites
    - CSF/NIMs
    - MRS updates and implementation
    - Coordinated guidance and practices in preparing Baseline Cost Report into 6.4