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| **Table Number: PDR Facilitator Name: James Metzler** | |
| **Session 1 Part 1: Implementing Digital SETRs** | |
| For SETR processes in general, please use the space below to answer the following questions. If continuing your answers on a different page, please use the question number, e.g. 1.c, to indicate what you are responding to. | |
| **Overall SETR Process**   1. What are the current overall challenges to preparing, documenting, executing, and reviewing SETRs?  * **Interoperability** - can't establish unbroken thread from supplier to customer * RR can share with Boeing, but have to use PPT with USAF * Agreeing on data formats - No?   + Human APIs to export to Excel or PPT * Worry about others seeing changes - being able to specify what level to share * Inertia to overcome people changing what they are used to * Locking data down to export and briefing old data, even two weeks ago * **Data currency and culture** - comfortable being able to view live data * Educating people to use data in real-time * Models aren't as pretty to brief from * Governance teams that manage model don't have authority to implement a style guide for consistency and querying * Non-zero amount of labor to get model ready for presentation   + Ability to make real time updates difficult * Unraveling tool business model to get data out   + Transitioning to new tools if they are open * Finding the right information  1. What approaches (digital or otherwise) have you found successful in accelerating the SETR process while increasing (or maintaining) the efficacy of the review?  * Question from panel on scope - now or future?   + Answer: Focus on what doing now or what you know could be implemented now * Git-hub tag release approach   + SysGit has pushed Git into service because it is already approved   + Tieing together repos (Git, SVN)   + Challenge to handle diagram changes (like block movements) vs more substantial changes     - SysML V2 handles this better * Role-based access to data so user only get the right thing * Arbitor to notify stakeholders if a specific model changed that affected them * One big hammer, turning everything into a nail (e.g. Excel)   How to move away from PPT?   * Custom stereotypes in Cameo to hone in on data and execute specific queries * Digitizing SETR checklist to generate specific event queries * Tools are good for Engineers and workers, but not good for decision makers * Difference b/w briefing from the tool and pulling data out of the tool   + Understand what data is needed for decision maker then figure out where it is and how to get it     - Then can pick tool based on that requirement * Need someone who knows how to build and use the dashboard * Future: AI to summarize and review * Combine SE and modeling to make SE that can model   + Similar approach for dashboards     - Generation of too many dashboards     - Difference among approaches b/w programs * The process is continual, "living in the model", documented along the way, PDR becomes a decision (checkbox), not a 5 day event?   + Boeing and RR design teams are sharing the same models (or exchanging models)  1. What digital tools, platforms, or methods have you used in your SETR processes? Have these been sufficient? Expand on successes, failures or gaps.  * Tools are secondary or tertiary to data * Industry will not want to change tools, but if Gov set requirements industry will find a way * Will be a transitional process  1. What are the lessons learned from the approaches you've tried or participated in?  * Leadership needs to accept and use and implement digital processes  1. (optional) What specific cultural attributes need to change to successfully implement the approaches identified above? Are their risks or impediments, and how would you mitigate or overcome them? | |
| **Session 1 Part 2: Implementing Digital SETRs** | |
| For your designated SETR event, please use the space below to answer the following questions. If continuing your answers on a different page, please use the question number, e.g. 1.c, to indicate what you are responding to. | |
| **Circle your table’s designated SETR Event** | |
| 1. Systems Requirements Review (SRR)  2. Systems Functional Review (SFR)  3. Preliminary Design Review (PDR)  4. Critical Design Review (CDR) | 5. Test Readiness Review (TRR)  6. System Verification Review/Functional Configuration Audit  7. Production Readiness Review (PRR)  8. Physical Configuration Audit (PCA) |
| **Specific Digital SETR Gate Criteria (as specified by your table marker)**  For the Digital Engineering criteria proposed for your selected SETR event in the provided “Digital SETR Gate Criteria” document,   1. Do the listed digital engineering criteria make sense for your selected SETR event? 2. Are there any criteria you would add, change, or remove? (Annotate the Gate Criteria doc if helpful)   PDR Digital Engineering Gate Criteria   * *Program data is accessible to stakeholders through the digital engineering ecosystem.*   + Current ecosystem status means chucking the model over the wall   + Change "Digital Engineering Ecosystem" to "Material Management" * *The digital thread is developed in accordance with the SEMP.*   + Mapping requirements to decisions - cost, perf, schedule - **traceability**     - Snapshot of today, like a balance sheet   + What artifacts represent the digital thread   + Move definition of the digital thread to SRR; implementation is then checked at PDR * [Facilitators' note: No feedback beyond this point] * *The MBSE model is matured from SFR to include:*   + *The system’s major components.*   + *The interfaces between subsystems* * *Model and simulation development for detailed design is on schedule to support CDR.* * *Models and simulations used to develop and derive requirements have been validated.* * *Software and tools required for detailed design are available and accessible.* * *Training and experience gaps on contactor team are being addressed to support CDR.* * *Software is compliant with software development guidance (metrics, style guides, version, etc.).* * *Completed contractor Open System Management Plan (OSMP).*  1. Do the listed criteria represent a reasonable digital maturity for the SETR event?  * Challenge to DTO: For each piece of Material Management, where do we go digital?   + Expect a drop in performance over short term for learning curve   + How much time in the hockey curve can be compressed, vs directive from China | |

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| **Table Number: PDR Facilitator Name: James Metzler** |
| **Session 2: Future State of Technical Reviews** |
| Under the premise that we are now in 2045 where DMM has been actualized, what would the process of technical reviews be?  1. How would you change / eliminate / redesign the technical reviews in this new world?  2. Map out the new technical reviews process to make it a reality 1515-1540 (25 Minutes): Ideating Change  * Continuous design, review/check at any time, until design is ready   + No major milestones   + Always in review, mini-reviews when decisions are needed   + Approval authority to mediate conflicts in design changes * If change is needed: changed is modeled and analyzed, then approvers are identified and notified of need to review   + Avoid re-does of events * Gated by physical test events? * Comparison to SW dev workflow (Agile)   + Status of change: Described, in work, in review, merged (complete)   + What are automated tests equivalent to CI/CD? Red, yellow, green?   + Avoid humans checking all the red, yellow and green b/c it's not automated   + Risk implications     - Software lower risk than A/C     - How account for higher risk system?       * Digital to physical realization for test       * Physical test "flight critical" percentage, maybe only 20% of overall system * There is a sweet spot between frequency of design review cycles and overhead/workload * Notification when system is updated or test data comes back   + Sent to logistics, cost and everyone else impacted * Trust in accuracy of the model is critical   + Know that if it shows green, we are good to go   + But some things must still be tested, b/c of weird nuances in the physical word * Continuous sounds endless   + SETRs not based on dates, but readiness     - So work doesn't expand to fit the time allotted   + Event-based vs schedule based?   + Criteria-based?   + Capability based?     - I.e., Need 3 things to achieve a particular effect - once those are complete, review and then move on to next * But don't want to hold up other events   + Work in parallel?     - Move as far as you can get without impacts to other     - Identify/Accept the risk that other system may change   + PDR, CDR at macro level     - Criteria based at micro sub-system level * Can map decisions that were made along the way * How documented?   + in the model? * Performer incentivized to meet criteria before date * Data shared across portfolio for knowledge management to share potential solutions, best practices, lessons learned, re-use of ideas   + B/c no silos   + Focus on process, shared in data base, searchable by others * Currently, contractors don’t know what's really important, so they mark everything proprietary   + Equivalent to Government classification processes   + Mark only what needs to be protected (crown jewels), 60-80% (really 90%) becomes available   + Industry needs to articulate what is protected, Government needs to ensure data will be protected, everything else can be shared     - Justification should be based on why it shouldn't be shared, vs why is should be shared * What's the model equivalent of 'page count'? * We don't have case studies in government to prove the benefits of transitioning a program to digital * How does the RFP get put out, and how is contracting done?   + Capability-based solicitation?    1540-1405 (25 Minutes): Steps to Reality Authorities need to be identified   * Granular enough to not tank the project * Safety, AW and other critical stakeholders always involved   Data Access, Governance and Validation needs to be established  Criteria need to be established   * Shift workforce effort from SETR preparation to development of more thorough test processes (equivalent to software test nightly test) * Move from ICD focus to model review   Implement notification process for dependencies among sub-systems  Identify Capability-driven Review Events   * Periodic based on system characteristics * At the macro (full system level)   + Establish 'Digital Test Fixtures'   + Identify necessary Physical Tests * At the micro (sub-system level)   + Iterate faster, appropriately managing risk with moving forward ahead of other components   + Test based on level of risk   Establish Knowledge Management capabilities for input of processes, best practices, lessons learned, and for query by new teams |
| **Additional Comments/Feedback** |
| Please provide any additional comments or suggestions on SETRs, Digital Transformation, or other areas you would like to express to the Air Force Material Command.  Please also include on feedback on the workshop, or recommendations for workshops or events you would like to participate in the future. |