



Masters Forum 20

Passing the Torch

Phil Sumrall

Advanced Planning Manager
Ares Projects Office

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Introduction



◆ Knowledge Management (KM) approach

- In the past ...
 - KM focused on gathering lessons & documenting
 - Passive **knowledge capture**
- New emphasis ...
 - KM focus on doing something before lessons shelved or people move on
 - More active ... **knowledge implementation (infusion)**



Overview



- ◆ **The Ares project implemented a new KM approach making Lessons Learned (LL) actionable by creating a systemic method to infuse captured knowledge into working documentation**
- ◆ **3 Methods for Data (Knowledge Object (KO)) Capture were used:**
 - **Workshops** – group activities using ThinkTank tool, 38 conducted resulting in 1732 KO's
 - **KID form** – web based individual input, 65 submitted resulting in 56 KO's
 - **Harvesting** – gathering data from LL Reports, 8 harvested resulting in 138 KO's
- ◆ **Data Integration/Distilling**
 - KO's were sorted, combined, and dispositioned via the Distilling Team – a forum consisting of engineering, S&MA, and project representatives, chaired by Chief Engineer
 - The Distilling Team met 2/week from 11/10 - 3/11; currently being performed virtually
 - To date, 1392 KO's (LL'd) have been distilled into 72 Knowledge Items (KI's); KI's may include multiple KO's; KI's document actions required for resolution
 - Distilling assigns actions to MSFC discipline leads for implementation
- ◆ **Ares Project Lessons Learned Report is being generated; due date May 27, 2011**
- ◆ **Ares KM approach is being considered for Center adoption**



“Key Themes” from Ares



- ◆ **Many knowledge items (lessons) trace back to the following “Key Themes”:**

1. Experience

- Coupled with or amplified by limited resources
- Most of our experience comes from operational systems or concept development & analysis ... few of us have done cradle-to-grave (especially larger systems)
- Learning curves cost money
 - Get the most experienced people in development and design integration into leadership roles,
 - Or develop a plan to get leaders the experience needed or a mentor to help them
- Do not get caught by, “we won’t make the same mistake” ... **Make good use of the last guy/gal that bumped their heads on an issue** – they are highly motivated to improve



“Key Themes” from Ares



2. Emphasize the end product

- Arguably, one of our toughest challenges & hard wired to our experience
- Balance tipped toward process focus, away from end product
 - Or “hammers looking for nails to drive”
 - Symptoms:
 - Bureaucracy ... not sure why, but “we have got to do all of these things” or “it’s always been done that way”
 - Adding to the process ... never quite ready or robust enough ... never enough requirements, plans, etc.
 - Not sure of when ... everyone needs done now... not every requirement, process, plan, or function needs to be done up front
- Rebalance ... more toward end product
 - Work back from the end game – what is needed?
 - Understand what absolutely needs done and the impact to the end product ... know what you need & what you deliver
 - Know when is the appropriate time
 - Value added ... MUST be able to defend each step, task, function, process



“Key Themes” from Ares



3. Planning

- Emphasis on detailed planning up front to avoid “ready, fire, aim”
- Argue requirements & rules of engagement very early in the process

4. Leadership

- Develop clear, concise, well communicated definitions of responsibility & authority
- Need “benevolent dictator” – groups recommend & then the leader listens & decides ... cannot always have consensus



“Key Themes” from Ares



5. Communication

- Clearly denoted & easily accessed authoritative data.
- Get the word out. Lot's of informal conversations are good, but must re-double effort on getting decisional data to decision-makers and decisions/direction back to the implementers
- Continually remind people of the org structure, who owns what, & who has authority to decide ... should be the intro on every management briefing

6. Discipline

- Once agreed to, we must follow the rules, requirements, & guidance
- Work issues / decisions at the appropriate level ... tie issue or decision to a singular person with responsibility & commensurate authority at lowest level that can handle the issue / decision
- Efficient decision-making ... focus on getting to decisional “nugget” and getting that to the agreed-to authority ... no arguing back-and-forth (interfaces, across centers)



“Key Themes” from Ares



7. CM & DM

- The impact of establishing strong Data & Configuration Management was underestimated early in the program.
- Recommend standing up CM & DM as center-level functions (in work) & negotiate appropriate support across projects/programs

8. Design & analysis integration

- Design & analysis cycles were not integrated between project & element levels
 - Disconnects were evident between elements & between projects
- Design & analysis did not link at times
 - Need the “on-design” analysis for configuration in design reviews (PDR & subs)
- Recommend walk-thru planning of design cycles & analysis cycles
 - Number & type of cycles
 - Design & analysis team clearly define how they will work together
 - Plan in appropriate hard linkages between the current design input into the analysis cycle, with design reviews & long-lead efforts in mind
 - Supported by projects & elements



Next Steps



◆ Near term ... Ares to SLS transition

- Ares will have to “hand off” soon
 - Get info to appropriate actionee (authority / leader)
 - Document KI’s (lessons) & recommended actions
- CE office focus
 - Completing “distilling” and disposition of lessons (aka KI’s) and actions
 - Increase emphasis on getting info to actionees & help work agreed-to actions with:
 - Go-do’s ... engineering disciplines (branch/division level)
 - Tactical decisions ... new SLS Program
 - Strategic decisions ... MSFC leadership & CE Office ... policy, procedures, etc.

◆ Mid-term ... Decide on continuous process for MSFC

- Kaizen event held February 22-24 for the Ares Project & MSFC Office of Chief Engineer
- Recommended MSFC develop & maintain a simplified continuous Knowledge Implementation Process, potentially lead out of CE Office
- Next evolutionary step for existing Lessons Learned Information System (LLIS)