



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS SPACE AND MISSILE SYSTEMS CENTER (AFSPC)
LOS ANGELES AIR FORCE BASE CALIFORNIA

MAY 06 2002

MEMORANDUM FOR SMC ALL

FROM: SMC/CC

SUBJECT: Systems Engineering

1. The Air Force and DOD are exploring promising initiatives that will alter the way we team with prime contractors and war fighters to acquire systems. These new ways are outlined in drafts of USECAF Space Acquisition Policy 02-01, AF Instruction 63-101 Reality Based Acquisition, and the evolving CSAF capabilities review process based on the Secretary of Defense's six Transformational Goals. You have most likely heard about some of these. Each is synergistic and being staffed throughout the AF. Nevertheless, there are actions and a mindset that I need you to adopt right now which are foundational, regardless of the prevailing acquisition management policies. Simply put, we must remember that at the core of effective program management is disciplined technical oversight and systems engineering. It is not something we can expect our contractors to do for us. Technical oversight and systems engineering are not only for program managers and engineers, but for everyone involved in acquisition.

2. We need to be proactive in revitalizing our commitment to world-class systems engineering and program management at SMC. This is where you and the actions found in Attachment 1 come to bear. Our Board of Directors recently reviewed these and I approved them. I'm committed to this policy letter and a new Center Operating Instruction on Systems Engineering that will be forthcoming. I want to get the message out to all of SMC regarding my expectations for your role in systems engineering.

3. Attachment 2 describes various training opportunities for our people in the coming months. The initial training described will be mandatory for all SMC acquisition persons. This training will reinforce the behavior and attitude I expect of those in program management. The focus will be on the importance of our government role in working with our customers and contractors to weigh cost, schedule, performance, supportability, program protection, risk, and all the specialty core competencies that comprise systems engineering.

4. I would ask that you not focus on the training outline, but instead on the mindset shift I am asking you to make! This is important! We are all shaping the direction of space operations and development. Our future promises to be exciting--with great opportunities for all. Thank you for your continuing support and dedication to the SMC mission.

//SIGNED

BRIAN A. ARNOLD
Lieutenant General, USAF
Commander

Attachments

1. List of Key Actions
2. Training and Education Plans

**LIST OF KEY ACTIONS TO HELP REVITALIZE SYSTEMS ENGINEERING
AS PART OF OVERALL CENTER PROGRAM MANAGEMENT
IMPROVEMENTS**

- Get systems engineering and program management revitalization strategy out to all of SMC through articles and other publications
- Publish policy letter and an SMC Operating Instruction explaining system engineering and its important role to overall program management
- Establish metrics to track progress and help determine success of our actions
- Establish formal initial and recurring SE training programs
- Solicit graybeard advice on our strategies
- Make sure industry understands this "shift" by incorporating basic principles into Center briefs etc.
- Continue to work with AFMC and NRO on their evolving SE initiatives
- Build off existing SE framework at SMC, the Aerospace Corporation, our SETA team and Detachments to improve SE contributions to overall program management
- Target specific improvements in the SMC talent base, and show a visible leadership commitment to SE revitalization
- Make prudent investments to fill gaps and exploit corrective actions, as required
- Reissue/update former guides, provide a compendium of local tools to support individual self-improvements
- Encourage/incentivize SE continuing education through AI, DAU, academia and professional associations
- Seek additional DAU SMC billets and/or create local equivalency courses that are available to more of SMC population
- Baseline SPO SE maturity
- Leverage Aerospace Corporations Strategic Initiatives for Program Executability
- Use Chief Engineers Council more effectively as a SE focused forum
- Better allocate tasks between existing Center organic, FFRDC and SETA resources
- CC Policy letter re-emphasizing SE principles

DRAFT TRAINING GAME PLAN

- AX and Aerospace will host an initial one day systems engineering orientation course which is currently under development
 - o This training is mandatory for all SMC and Detachment personnel who are involved in acquisition management (Aerospace and SETA encouraged to attend)
 - o First beta session on 30 April 02
 - o This session will be offered to Chief Engineers or their reps, and a small set of select CGOs, some junior and senior military and civilians, Aerospace personnel, and reps from other functionals.
 - Purpose of beta session is to hone material and presentations--to make the course of the greatest value possible by getting early feedback
 - Course will give background as to why SE is important to overall program management, help attendees understand the "mindset" shift we are asking them to make, to go over various SE definitions, SE core competencies, available help tools that already exist to support their SE development, and to provide them with some application examples of SE principles which will help them work with primes, subs and other government agencies.
 - 1 day course will not create system engineers, but will give oversight into the many courses, web-based training and literature that they can take or visit to complement the knowledge base they already have
 - o After revising the beta course from lessons learned, on 20 May, we will go to mass exposure and training sessions with a series of briefs to get the word out to all SMC, Aerospace and our detachments, as quickly as possible
 - Target audience for training is all acquisition personnel in Detachments, 2-Ltrs, PK, FM, AX, and other staffs to include Aerospace and SETA
 - Since target audience is almost 2500 persons, we will have as many as 3 sessions per week in a group settings of 25-100 persons
 - 25 is good for interaction, but not optimal for reaching people quickly: therefore, initial training may be in groups as large as 100
 - A list of times and places for the training will be published and each person can determine the best time to take the training for their schedule
 - However, records of attendance will be maintained and cross-checked to ensure the entire target audience actually gets the training

- This course will be revised, as required, and tailored versions will be presented to all new SMC personnel within 6 months of arrival on station
 - This may be done by extending the SMC Business of Space Course, for appropriate persons, by one day
- A special recurring training briefing will also be given to SMC personnel on an annual basis
 - As with the initial training this will also reside on the internet as a web-based training course
 - Recurring training will be approximately one-half day and on a selected basis may be accomplished via the web-site and/or included in annual Acquisition Training Week opportunities
 - All training should be documented in Individual Development Plans
- Statistics on training progress will be included in the overall matrices being developed for tracking the total SMC revitalization effort
- A second, more extensive, part of the SE training will be targeted for a more select group of SMC personnel
 - Each SMC acquisition organization will provide 1-3 persons to be part of another beta training session to be held in conjunction with similar NRO SE revitalization efforts
 - This course is being tailored from a highly successful course being offered by Cal-Tech. There is no long-term commitment to Cal Tech at this time.
 - Attendee's feedback, on the value of this more extensive course, will be a factor in whether we continue this activity with Cal Tech, other universities, or if we pursue with internal SMC instructors. In which case we would use the Aerospace Institute [AI], and/or ask for a DAU courses in this area
 - This course is already in existence and being offered on a regular basis to industry and others by Cal Tech
 - Its advantage is that it is already fully developed and can be tailored quickly and at low cost to meet the urgent need the Center has for more in-depth SE education and training--now
 - In addition, the course taught by former industry and government persons, is practical and not purely academic. The government will work with AI and Cal Tech to add space instructors and tailor the course further to our specific needs
 - The plan is for this training to run approximately 9 months
 - Persons would attend a full day session once a month for about 7 months, either here or at an NRO site
 - These offerings are run concurrently, each tailored to SMC and/or NRO environments
 - However, the last 2-3 classes would be held in combined sessions with the final class being a practical exercise, applying class accumulated knowledge into a working exercise at the Concept Development Center

- The class sessions are focused around modules, with an emphasis on producing real documents and solving real SE problems by focusing around a specific project--similar to those done at DSMC in the Mousetrap exercises. However, this application does not focus on actually building a system, but the documentation, trades and analysis it takes to development one. Students will actually have to write documents and this course will be more rigorous than similar pure "gentlemen's courses". There is homework!
- If this beta course is also successful, we will then run one or more sessions per year to get a larger part of the SMC engineering population through the course
- There is great value in having SMC and NRO persons interact and receive similar systems engineering foundations
- Concurrent, with teaching of this course, we will continue to explore with DAU picking up this training and/or tailoring the traditional DSMC program manager's course to focus on space specific applications, our evolving new regulations, and to potentially provide similar training in our local area.