Session 2.0
Motivation for SE Revitalization

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Recent Problem Attribution Results in Government Need to Revitalize SE

- 1998-2002 launch failures, mishaps, cost overruns, schedule slips, external criticism, internal retrospect
- Studies point out basic reasons why systems get off track:
  - Poor acquisition strategies
  - Unstable funding
  - Program management inadequacies … including weak/undisciplined execution of key technical oversight/SE management activities
    - Unstable/unclear requirements
    - No agreed-upon SE mgm't standards or stable reference point
    - No buy-in to test plans
    - Ineffective program reviews
    - Inadequate risk assessments
    - Faulty cost estimates or policies
    - Inadequate configuration management

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Recent Problem Attribution Results in Government Need to Revitalize SE

(continued)

- **Need for SE Revitalization Effort**
  - **Erosion of governmental oversight for space programs**
  - **"Systems Engineering" identified as underlying contributor to erosion in program management (BARs, AFMC ORI, IRT's, Congressional Language)**
  - **SMC must be proactive to restore credibility … demonstrate AF's ability to be the DOD Space Exec Agent in the National Security "Big Picture"**

With Space Business , It's Often One Strike and You're Out

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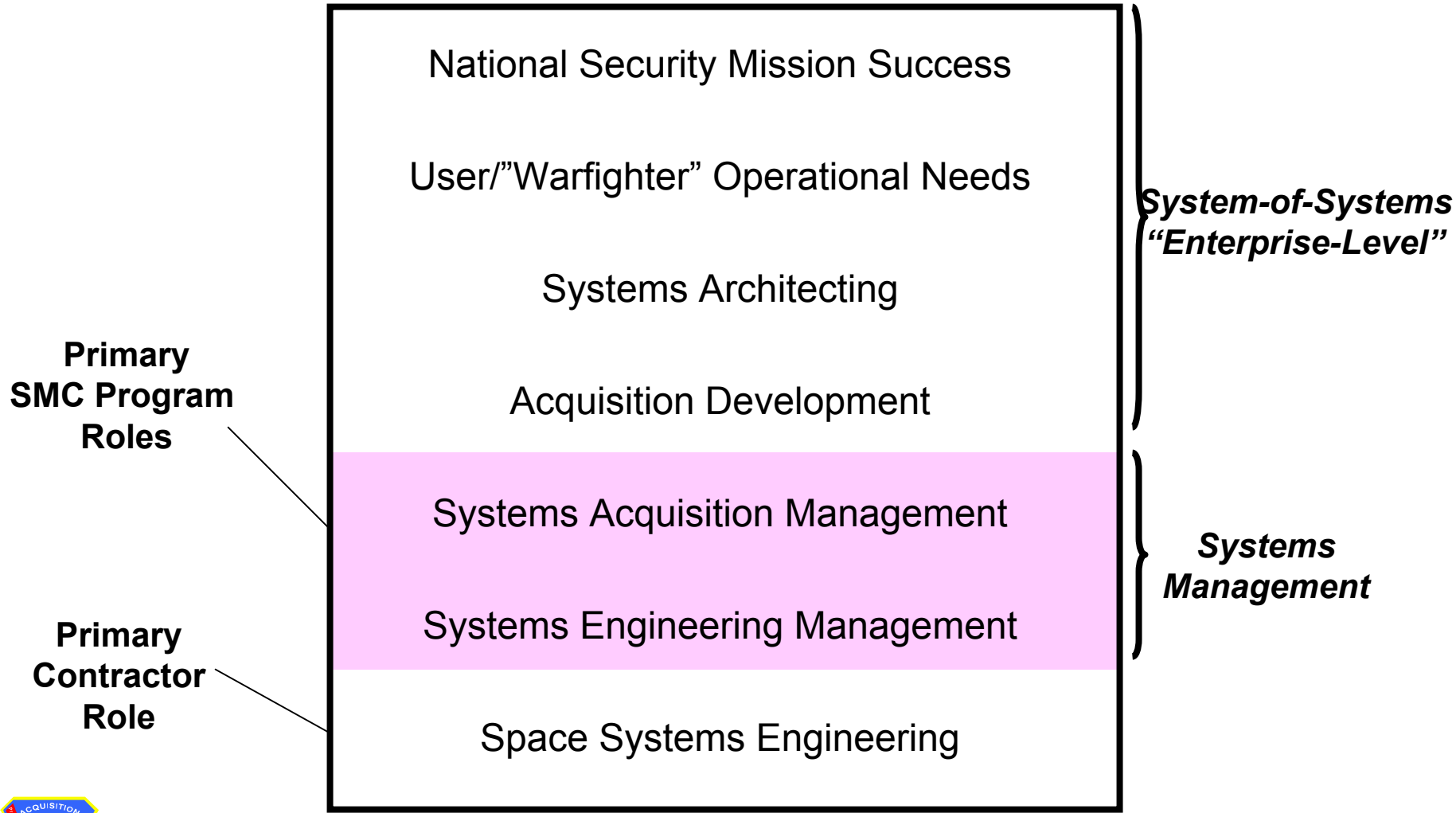
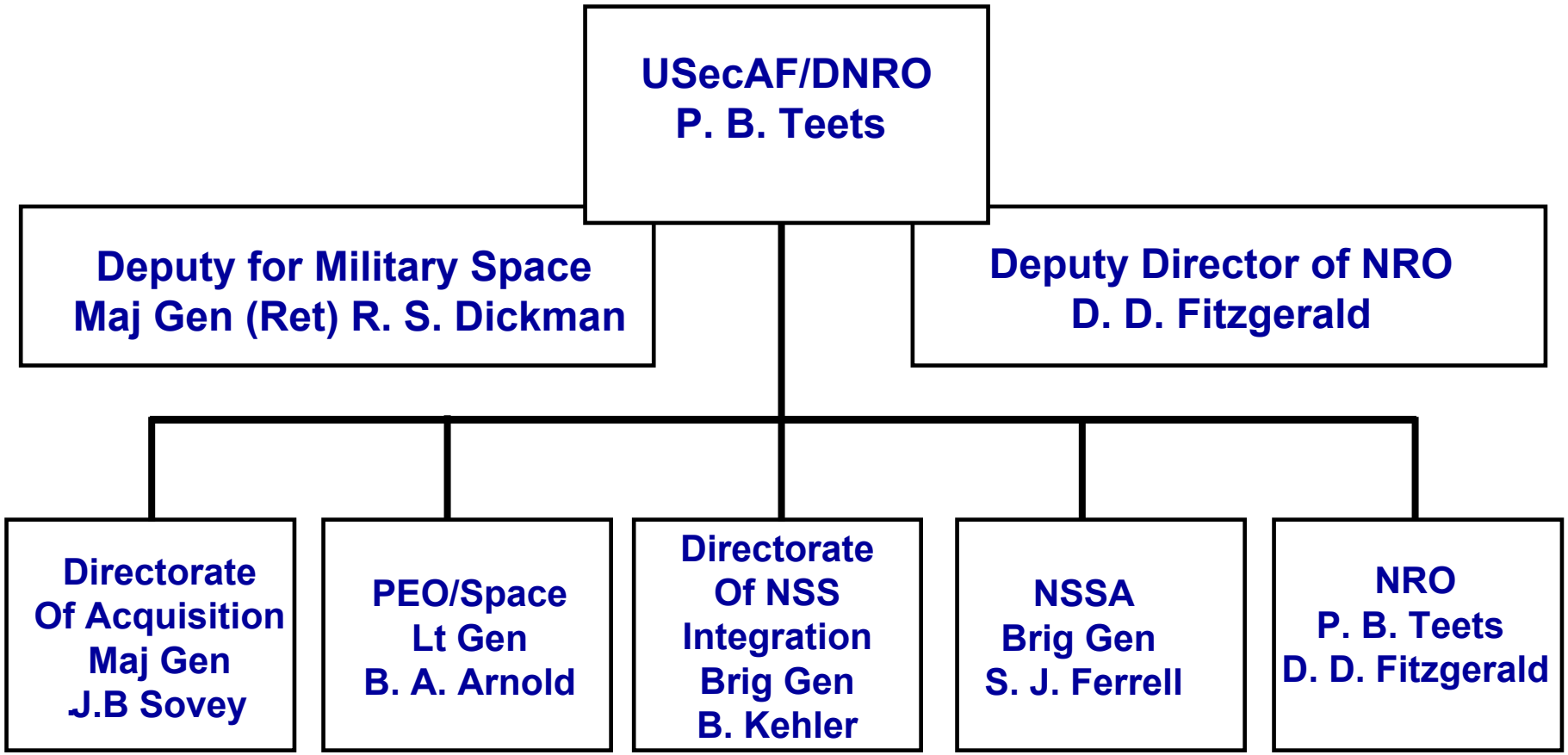
Directives for SMC SE Revitalization

- SMC Commander's policy letter
  - http://ax.losangeles.af.mil/se_revitalization/arnold.pdf
- Draft DoD Space Acquisition Policy
- AFI 63-101 Reality Based Acquisition
  - http://afpubs.hq.af.mil/pubfiles/af/63/afi63-101/afi63-101.pdf
- Chief of Staff Air Force Capabilities Review Process (Secretary of Defense 6 Transformational Goals)
  - http://www.defenselink.mil/speeches/2002/s20020409-depsecdef2.html

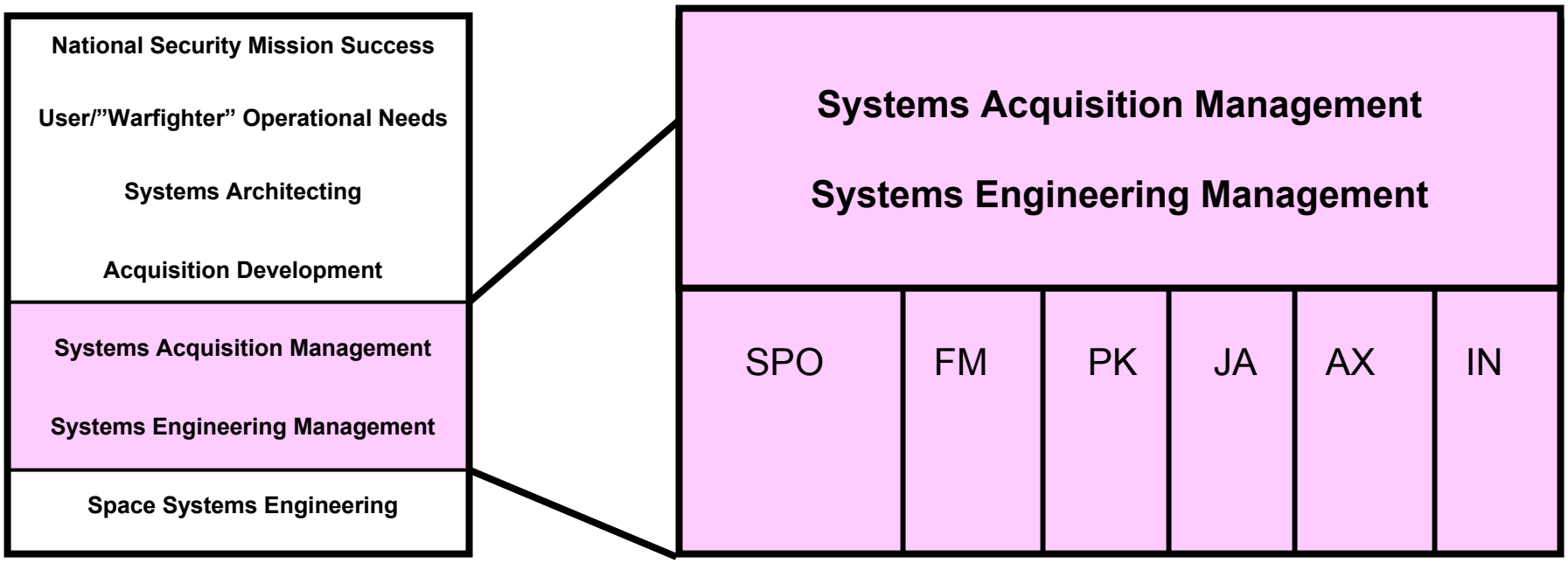
SMC Job in the National Security Big Picture



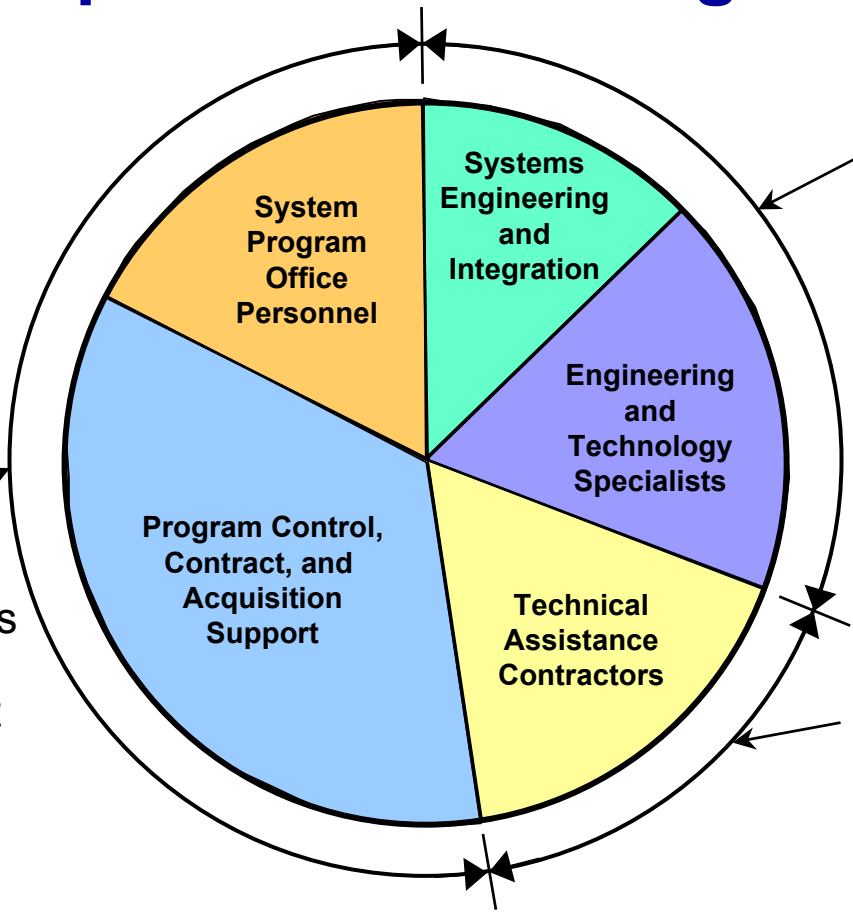
Organization Chart



All SMC Personnel Contribute



The Current SMC Space Systems Acquisition/SE Management Team



Aerospace
- Systems engineering and architecture
- Technical expertise and capabilities
- Corporate memory
- Broad range of skills
- Shared experience across programs
- Rapid response to priority problems

SMC
- Requirements
- Program management
- Costs
- Schedules

SETA (Systems Engineering and Technical Assistance)
- Computer support
- Database management
- Cost analysis
- Focused technical tasks
- Configuration management
- Briefing support

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Total System Performance Responsibility (TSPR)

- **TSPR Intent: deliver an end-to-end system of best value to the government**
- **Details**
  - Government accountable for system performance
  - Government defines “what” they are buying in a system level functional performance specification
  - Government/contractor are jointly responsible for system requirements adherence to the performance baseline
  - Government verifies contractor adherence to system performance

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Understanding Systems Engineering at SMC

- **What is "Systems Engineering"? … 3 definitions**
  - **1st Definition (Mil-Std-499B):**

    The application of scientific and engineering efforts to (a) transform an operational need into a description of system performance parameters and a system configuration through the use of an iterative process of definition, synthesis, analysis, design, test and evaluation; (b) integrate related technical parameters and ensure compatibility of all physical, functional, and program interfaces in a manner that optimizes the total system definition and design; (c) integrate reliability, maintainability, safety, survivability, human engineering, and other such factors into total engineering effort to meet cost, schedule, supportability and technical performance objectives.

Understanding Systems Engineering at SMC

- **What is "Systems Engineering"? … 3 definitions (continued)**

  - **2nd Definition: (From DSMC SE Fundamentals Handbook)**

    The Systems Engineering Process (SEP) is a top-down, comprehensive, iterative, problem solving process, applied sequentially and concurrently through all stages and development that:

    - Transforms needs and requirements into a set of system product and process descriptions
    - Generates information for decision makers
    - Provides input for the next level of development

    Systems Engineering Management (SEM), is the integration of development phasing, base lining, SEP, teaming, planning, other considerations to reach solutions to satisfy customers' needs.

Understanding Systems Engineering at SMC

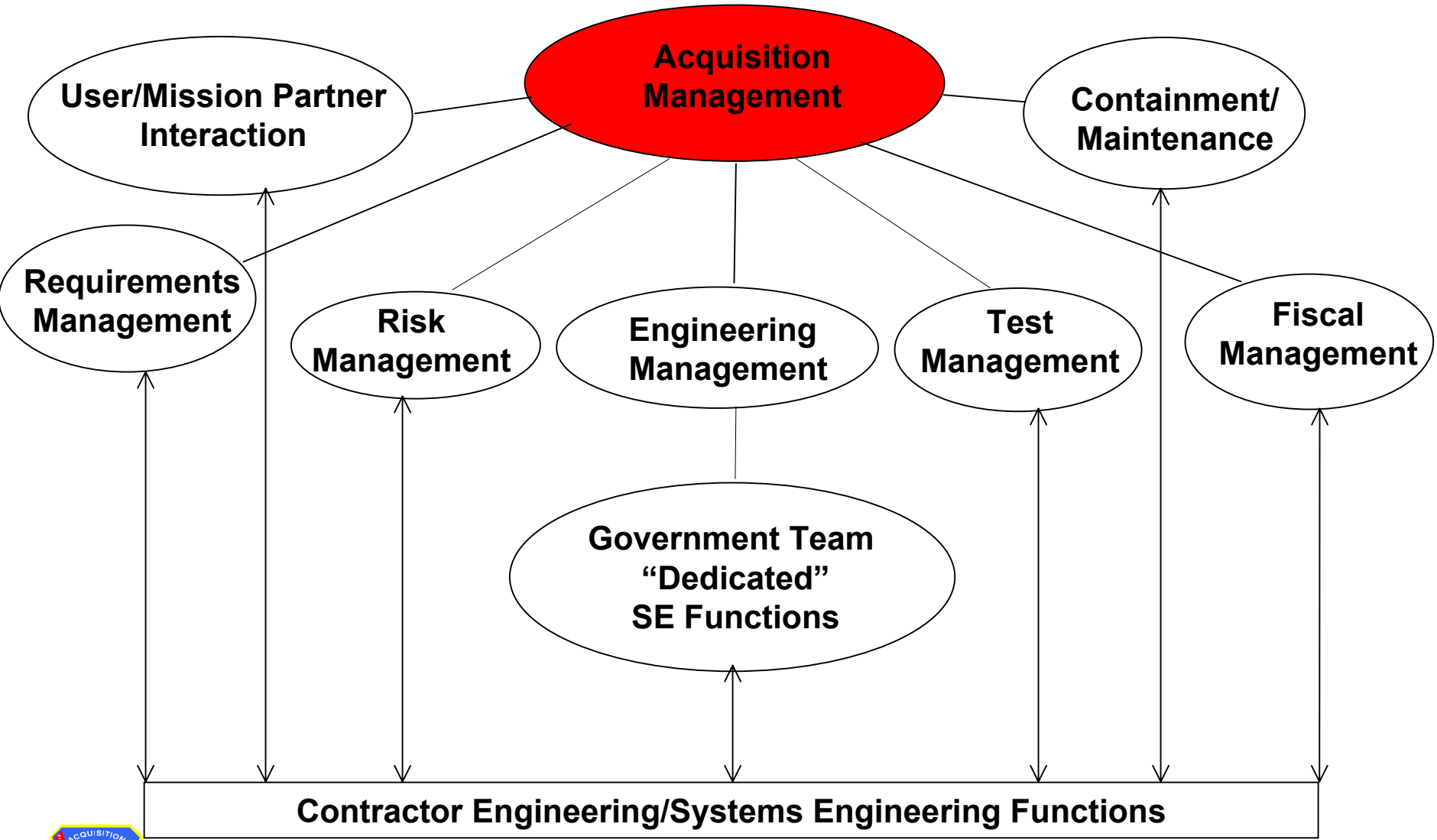
- **What is "Systems Engineering"? … 3 definitions** (continued)

Focus Of this Course

– **3RD Definition: (DSMC Systems Engineering Management Guide modified)**

SE involves both technical and management processes. SE is the management function which controls the total system development effort for the purpose of achieving an optimum balance of all system elements. It is a process which transforms an operational need into a description of system parameter and integrates those parameters to optimize overall system effectiveness over the lifetime of the system.

SMC Systems Management "Big Picture"



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Understanding Your Part in SMC SE Revitalization
(What about me? I'm not a "true" Systems Engineer!)

All Government Team Members can benefit by:

- Understanding the changing acquisition environment and how the government is again chartered with Total Systems Performance Responsibility
- Understanding how your specific job/technical competency fits into the overall SMC acquisition management/SE "big picture"
- Understanding what's expected of you (and why) in terms of the disciplined application of key "systems principles" and core systems management competencies (knowledge, attitudes/behaviors) to SMC's major acquisition/technical oversight functions
- Understanding how key acquisition management/technical oversight activities are/can be performed most effectively by Government Team members
- Knowing how to improve your own personal acquisition/SE competency by taking advantage of the additional learning resources we're making available to you.

Total Team Involvement ….

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Frequently Asked Questions About the SMC SE Revitalization Effort

- **What is the Overall SMC SE Training Curriculum Plan?**
  - **Conduct Center-level training:**
    - 1-Day SE Revitalization training for all SMC/Government Team acquisition personnel
    - SE "Experiential Workshop" for SMC/ Government Team Systems Engineers
  - **Reissue former guides etc., provide compendium of local tools, etc.**
  - **Encourage/incentivize acquisition/SE continuing education through TAI, DSMC, INCOSE, academia etc.**
  - **Validate SE certification/training as keys to Individual Development Plans and career development activities**

- **What are the Specific Desired Outcomes of Overall SMC SE Training?**
  - **Enhanced understanding of personal roles/responsibilities in SMC's acquisition/SE management job**
  - **Improvement of SMC acquisition/systems engineering management and "classical" systems engineering skills (capability *and* application)**

SMC SE Orientation
Course Learning Objectives

- **At the conclusion of this one day course, you should be able to:**
- **Explain the present challenges faced by our national security space systems and understand the shift where the government is again chartered with total system performance responsibility**
- **Understand what is expected from you and why it's expected**
  - Disciplined application of key "systems principles" and core systems management competencies
- **Understand how key technical oversight/SE management activities are/can be performed most effectively by Government Team members**
- **Begin the work to improve your personal competency in SMC SE**
  - Take advantage of resources
  - Outline a personal action plan to help you determine next steps in learning about concepts from this course or acting upon them to be more effective on the job

Assume personal responsibility for SE revitalization at SMC