Presentation to DAPA

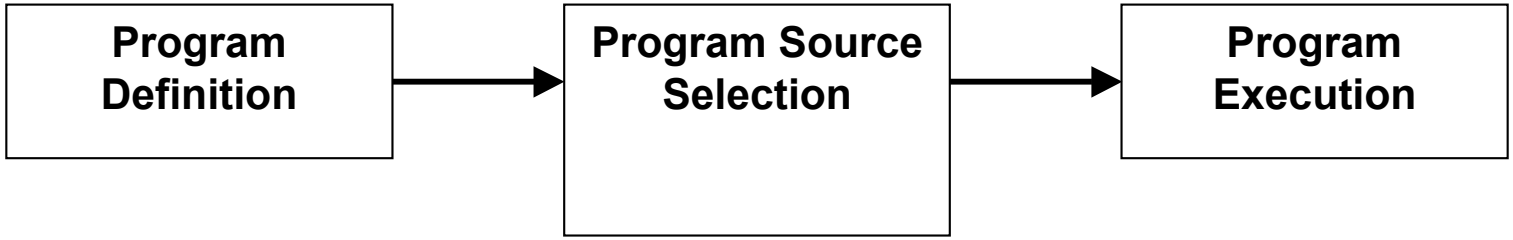
“A Better Way to Start a Program”

October 6, 2005

Tom Heinsheimer
Brian Arnold

Colbaugh & Heinsheimer Consulting, Inc.

IRT Meeting Minutes Overview



Problem – No overarching system engineering authority to balance program objectives

Solution – Create a collaborative SE process to certify program executability at the start

Problem - Process encourages a game of "Liar's dice"

Solution - Use risk-based source selection criteria to focus buyers and sellers on program realism

Problem – Parties have no commitment to implement the proposal

Solution – "Covenant" approach with one year milestones to keep parties focused on what was promised

The following briefing expands upon this idea

Multiple DoD Acquisition Programs Suffering from Cost Over-runs and Schedule Slips

- **Problem is especially prevalent in space acquisition programs**
  - SBIRS, FIA, AEHF
- **Creating loss of confidence in DoD ability to acquire increasingly complex, net-centric military systems**
  - SBR, GPS III, TSAT/TMOS
- **Process needs a certification of program executability prior to initiation**
  - Dedicate 1% of program cost to a formal SE process that defines optimum program balance point in a non competitive environment
    - Trades cost, risk, schedule, and requirements
  - Create a Program Executability Certification (PEC) document before M/S B
  - All parties sign the PEC indicating their commitment and accountability
  - Then select contractor(s) by compliance to PEC
    - All competitors bid to the PEC mission, cost and schedule baseline
    - Government makes the source selection based only on risk
- **Program is evaluated annually by progress against PEC**
  - No re-baselining!

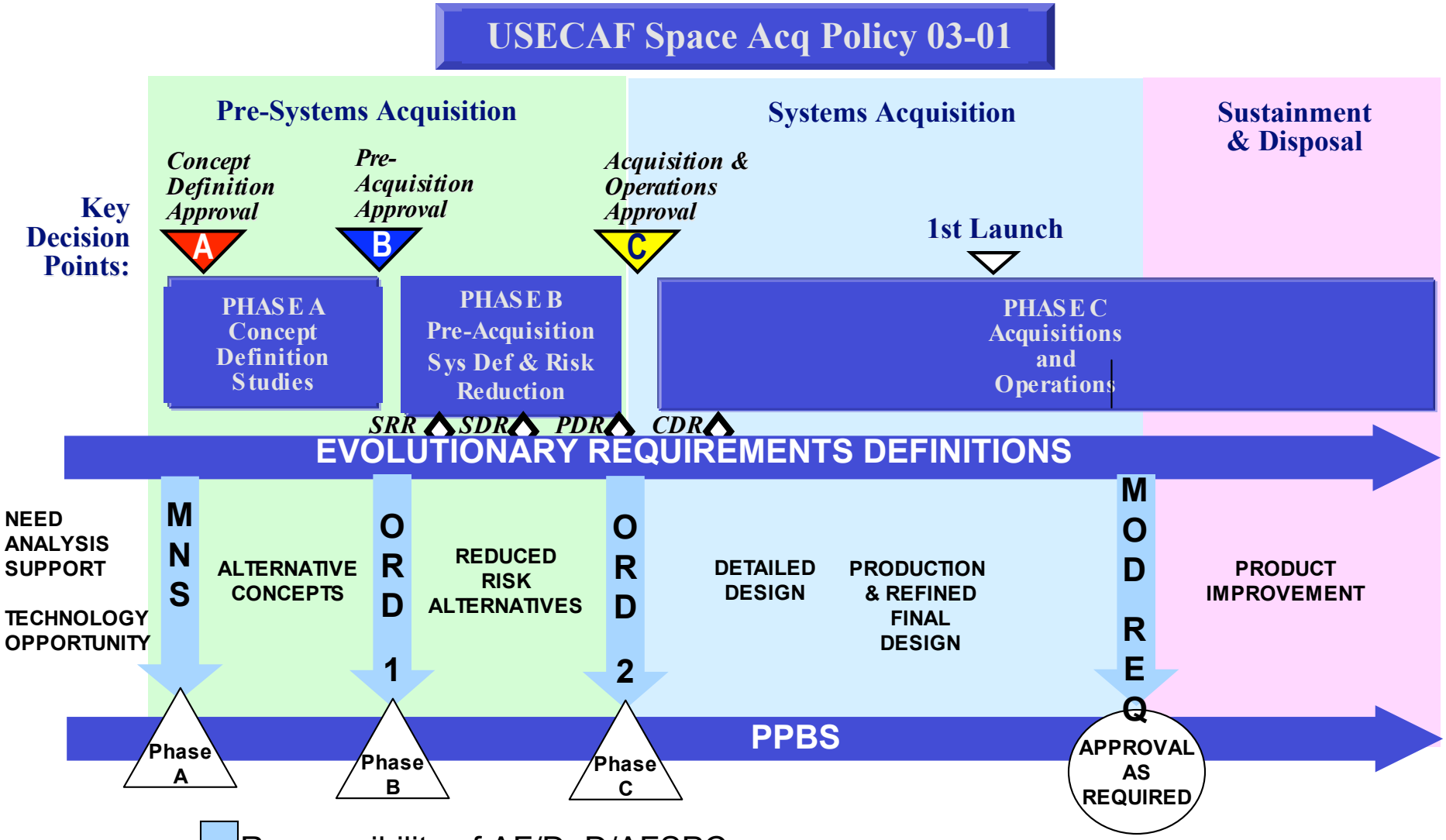
Apply the SMC/Aerospace System Engineering (SE) Process early, to apply best practices to choose the optimum program balance point

What is a Program Executability Certification (PEC)?

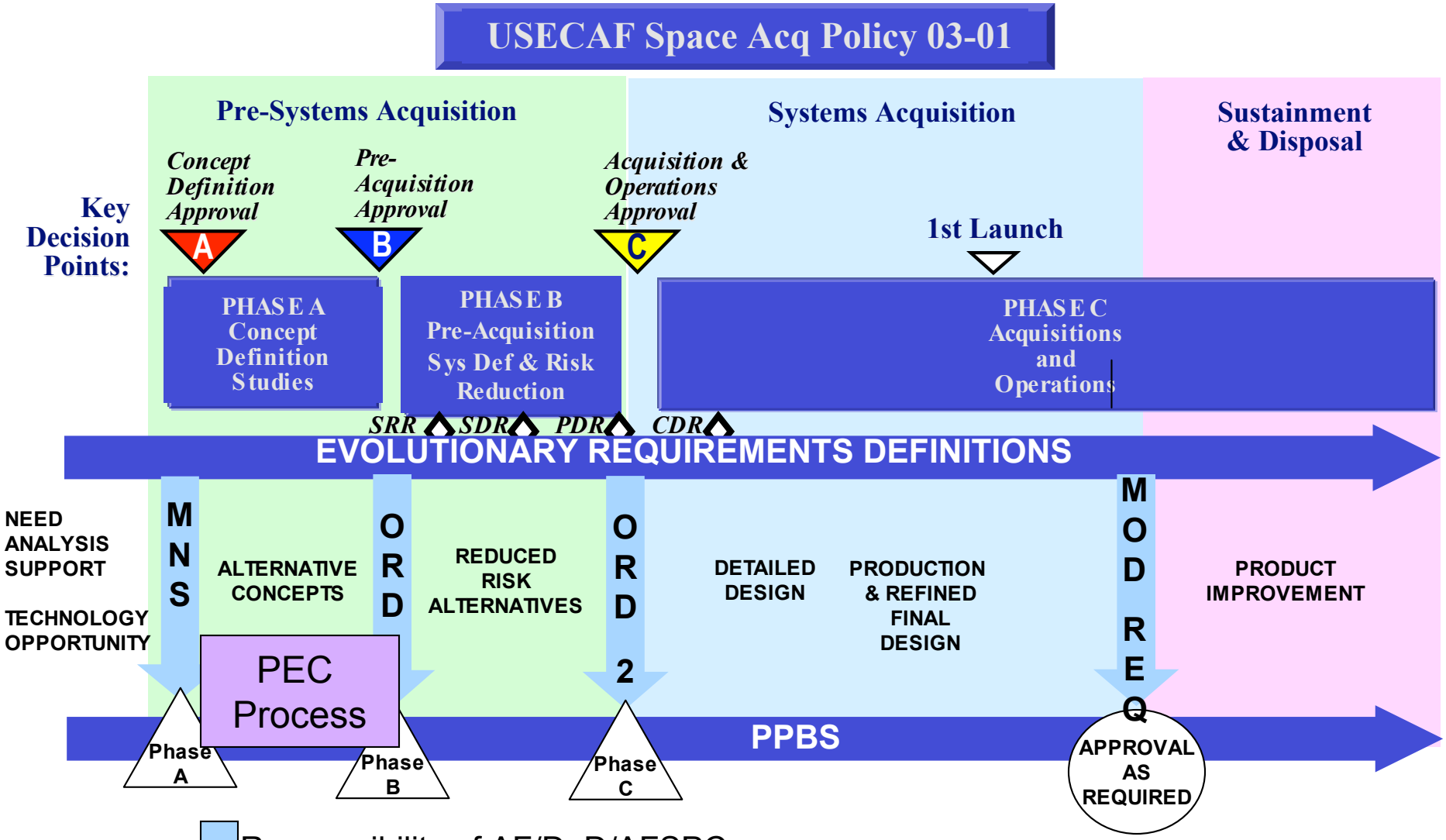
- **The PEC is a document that ties all elements of a new program initiation together to ensure program is executable with respect to a detailed cost estimate, trades, risk assessment, schedule and technology readiness to meet the needs of the war fighter**
- **The PEC is signed by the PEO, Aerospace CEO, and likely bidding Primes to indicate their commitment and accountability**
- **Brings the contractor formally into the early program definition to ensure program success**
- **PEC is vetted with the Using community, Air Staff, OSD, and Congress**
- **Finally the PEC is briefed to the Milestone Decision Authority prior to formal program initiation**

PEC Creates Ownership and Accountability from the Start

Today's Process can be improved on the Front End



Better Process Inserts PEC Early



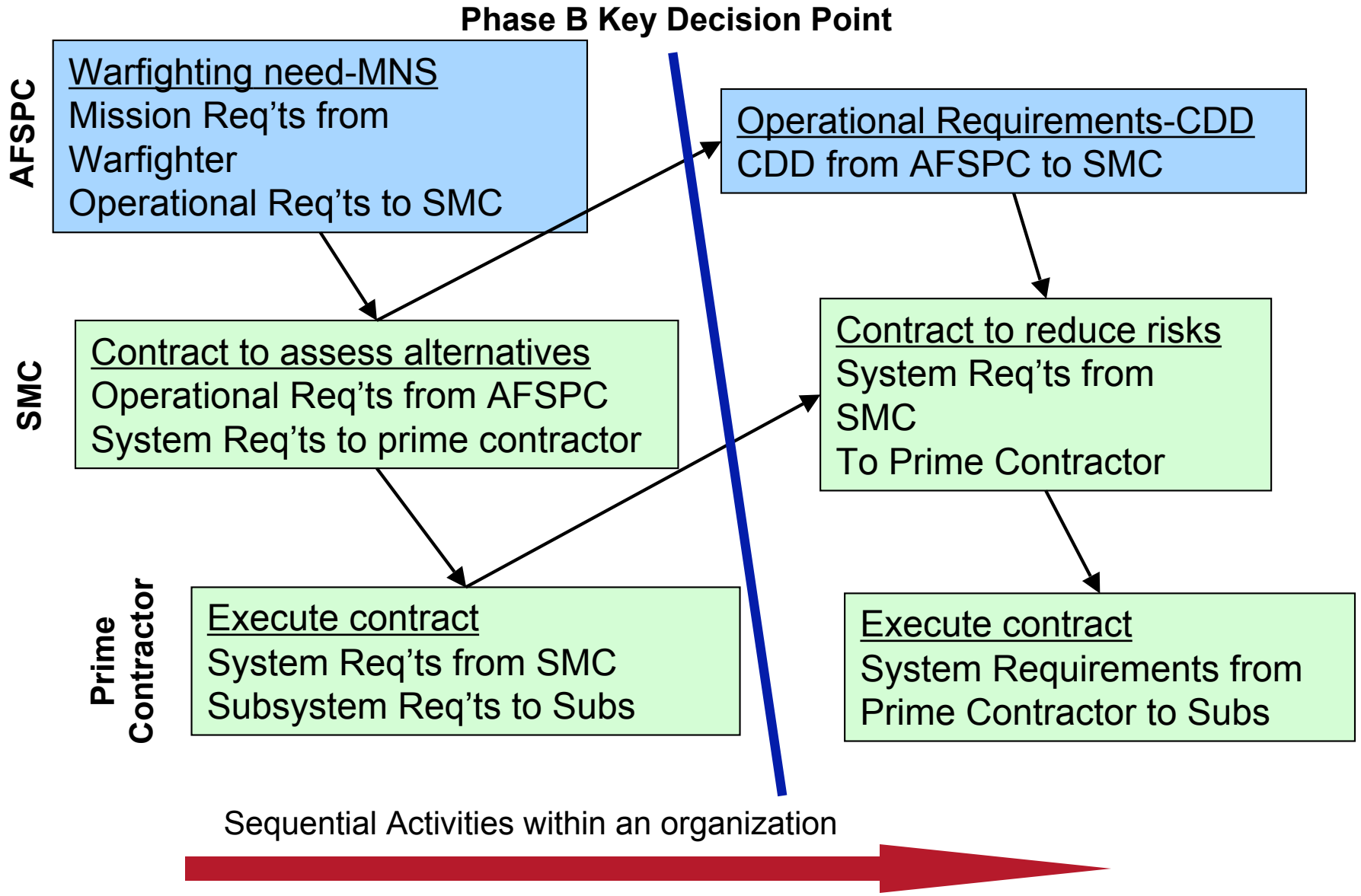
Responsibility of AF/DoD/AFSPC

Responsibility of SMC and any contractor

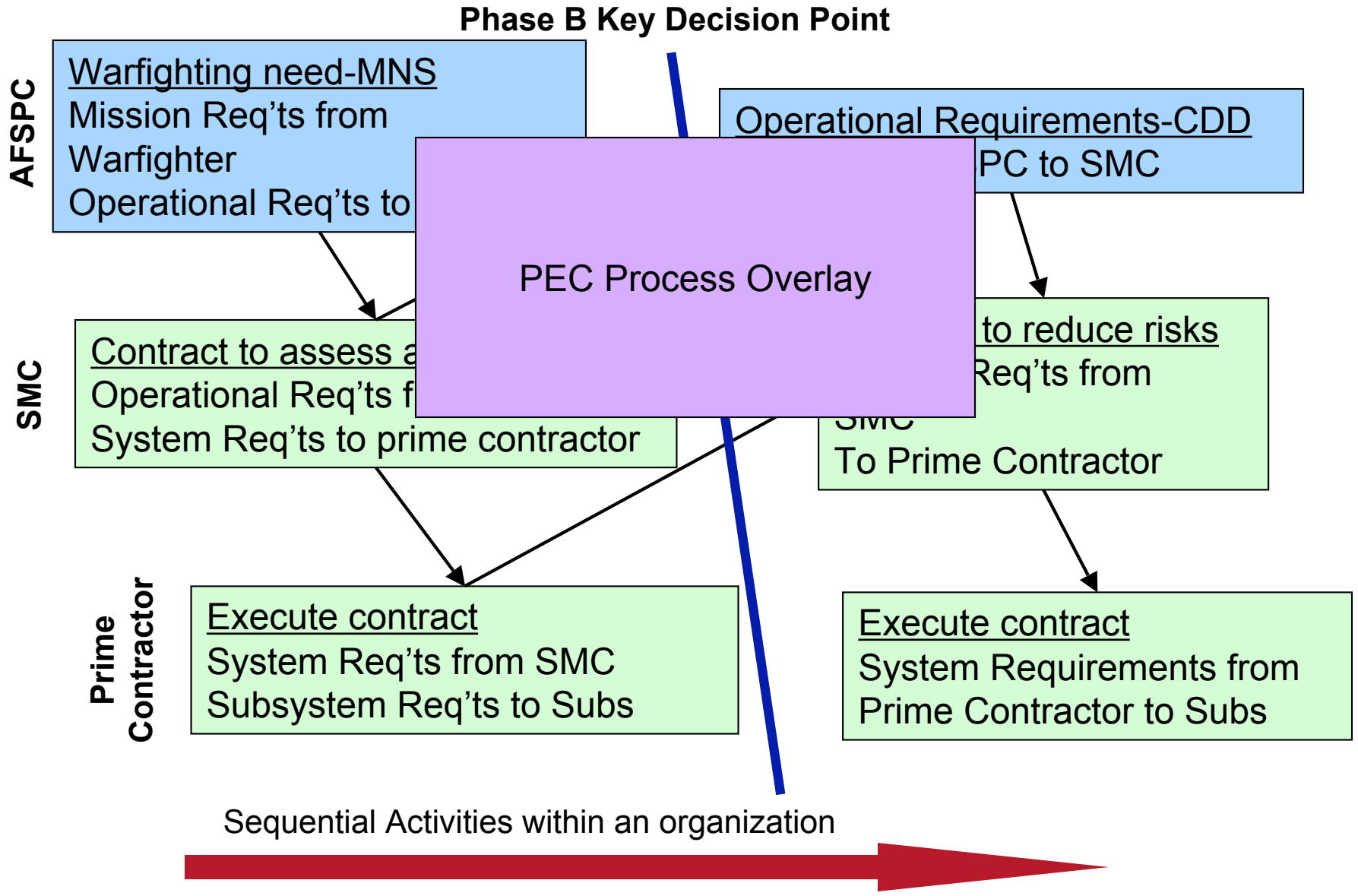
Add implementors involvement earlier

- **The implementing team (SMC/Aerospace/AFSPC/contractors) is a part of the early program trades and definition**
  - Applies SE formalized early
  - Done in a non-competitive environment
- **All parties work together to choose selected balance point of cost, schedule, risk and mission capability**
- **PEC is signed by all government parties, and all prospective bidding primes**
- **Contractors that participate early are incentivized to create a realistic PEC -- because they will bid to its criteria**
- **The source selection competition is cheaper, faster and more accurately selects the best contractor**
  - Technical, cost and schedule are pass/fail against PEC
  - Critical selection criteria becomes risk

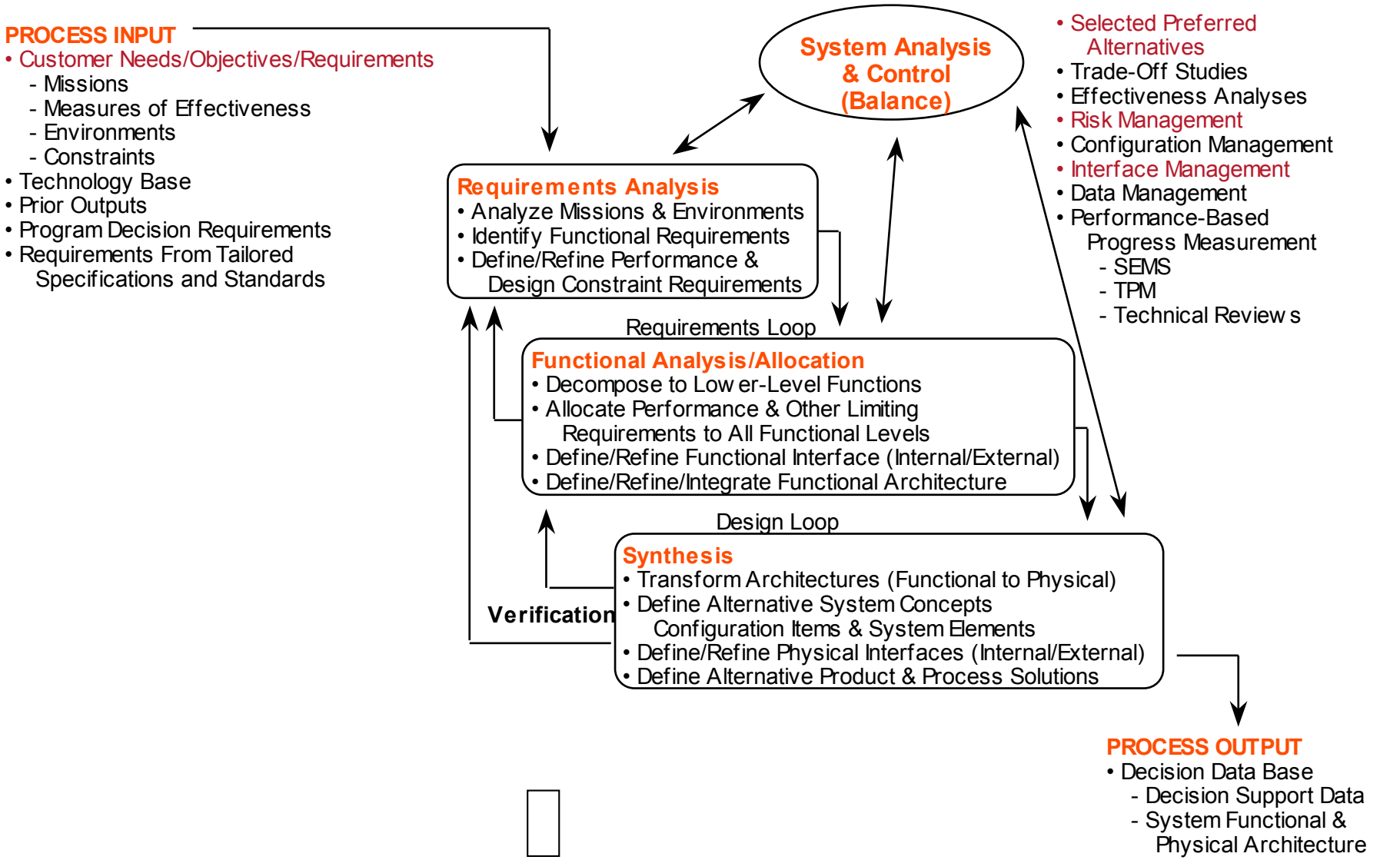
Present Process is Requirements Driven -- Cost and Schedule are Dependent Variables



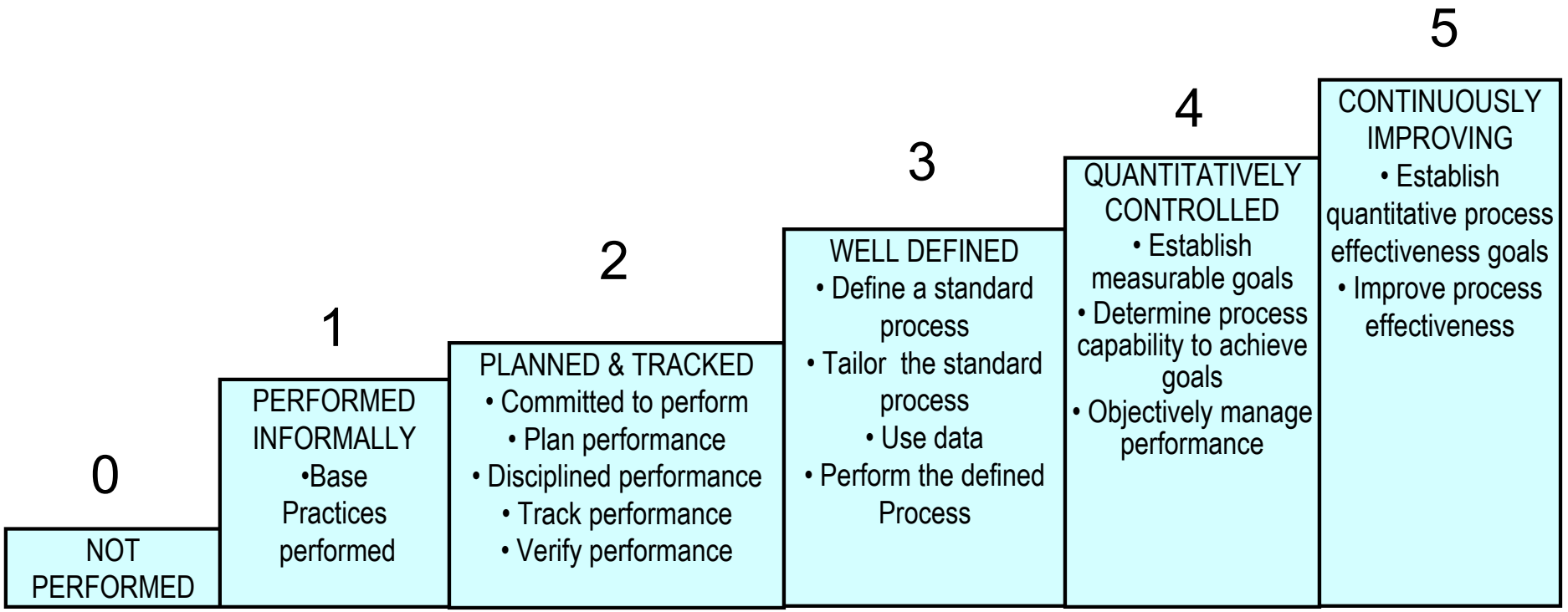
Better Process Uses Strong SE Team to Balance Mission, Cost, Schedule Risk -- Early



PEC Approach Uses Proven SE Processes

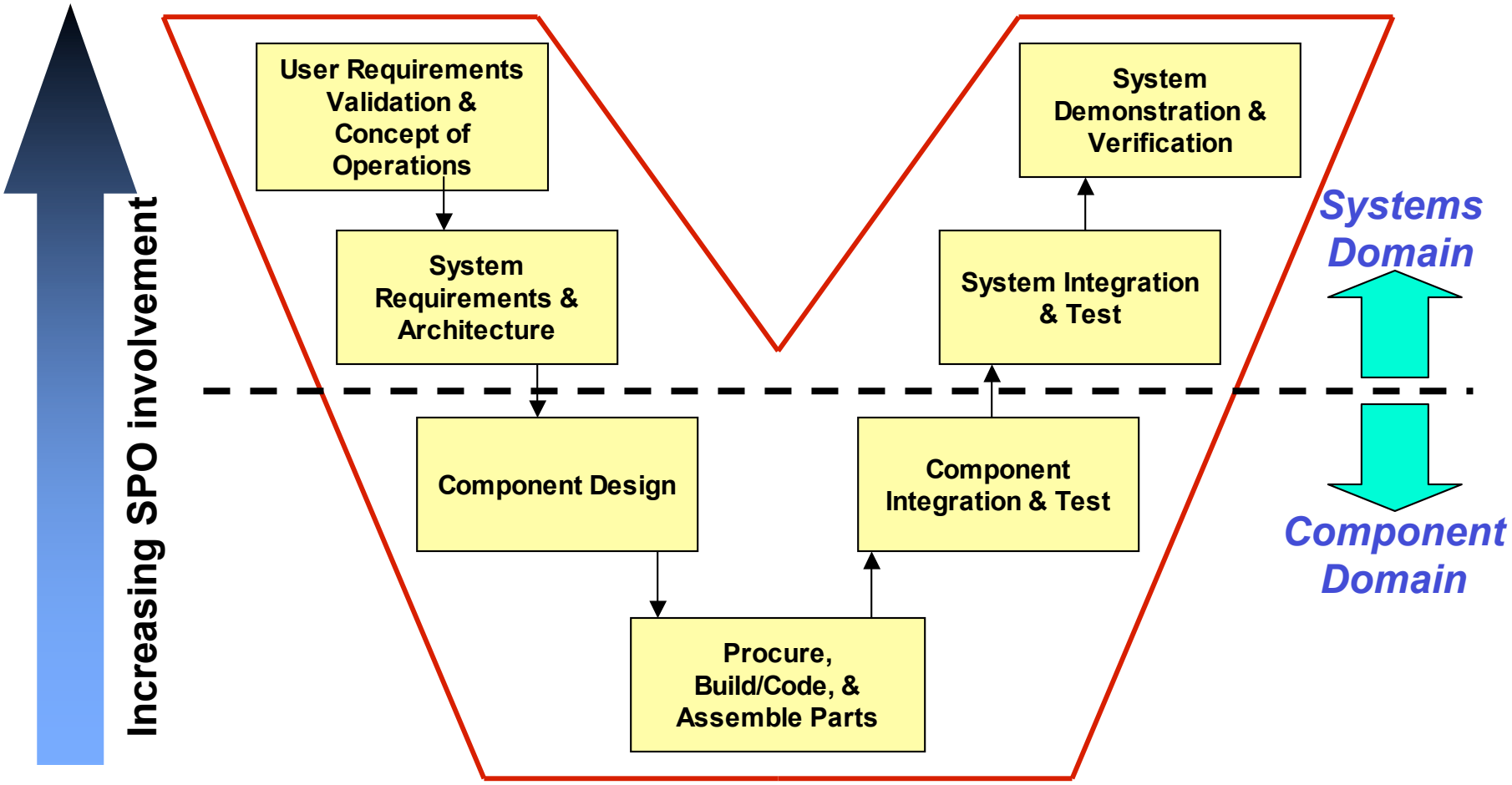


High CMMI Processes Exist to Perform the PEC



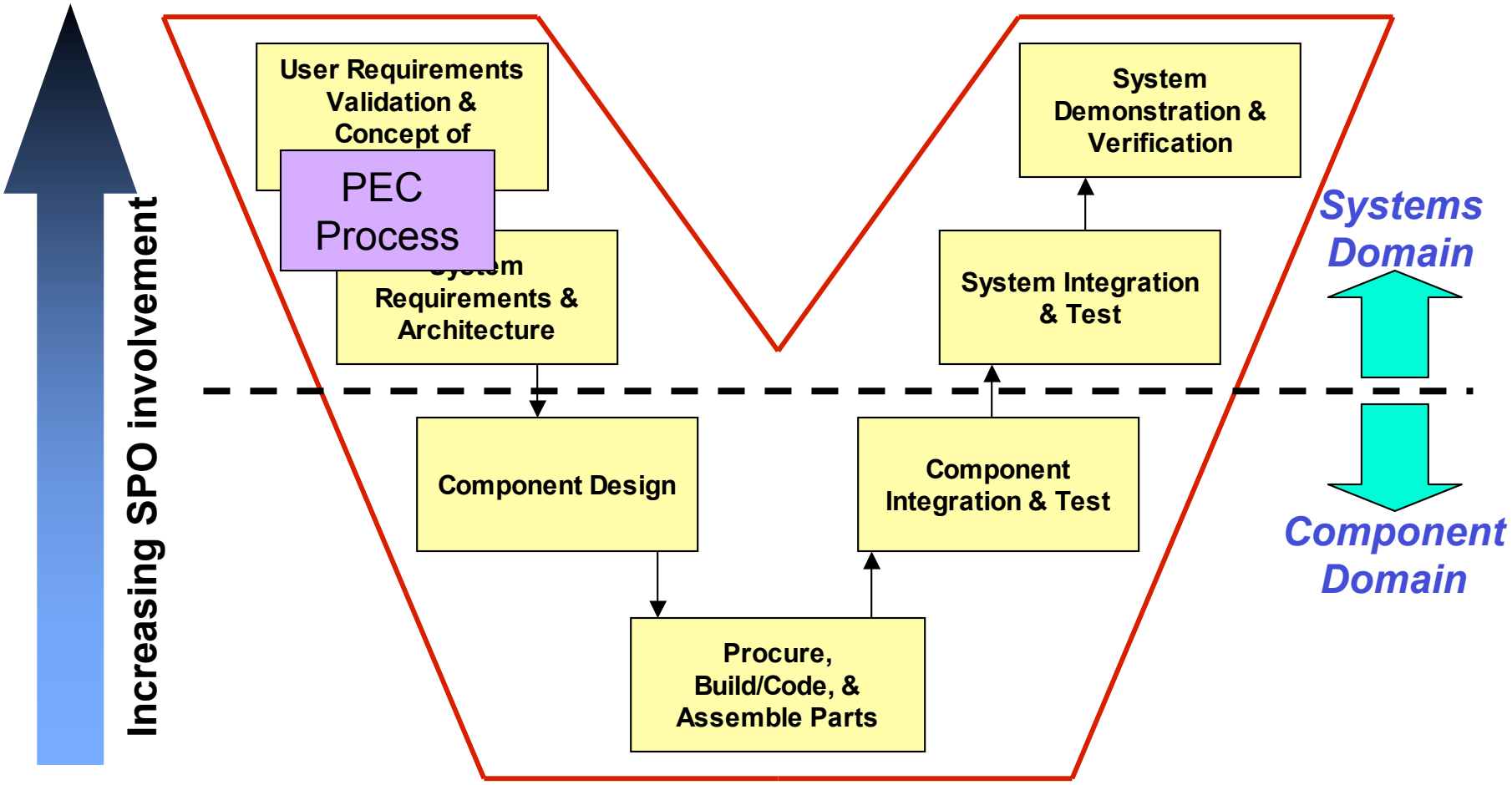
The Carnegie-Mellon Capability Maturity Model Integration (CMMI)* is a reference that can be used to assess organizational SE capability

Present Process -- PEC is Missing



"Vee" Model of System Development does not use SE processes early enough
To temper requirements against cost, risk and schedule

PEC Process Enhances Program Credibility



PEC Process defines a realistic program before it is too late

Conclusions and Recommendations

- **Lock down best balance trades point of requirements, risk, cost and schedule before promises are made**
  - Spend 1% of estimated program cost to create the PEC…drill down on the cost and schedule
  - Take the analysis and acquisition strategy to all concerned parties and brief prior to RFP release
- **Have government sign the PEC prior to RFP release**
  - Buyers, builders, operators, maintainers
  - Share it with Users, Air Staff, OSD, Congress
- **Have prospective bidders sign the PEC upon RFP release**
  - All primes and significant subs
  - Take the spin out of the process
- **Simplify the source selection process**
  - Easy RFP
  - Selection based upon risk
- **Build ownership and accountability back into program execution**