

Appendix B: PEO LS S&T “Concept to Capability” Process

The ATIP sets in place the actions and activities PEO LS S&T Directorate employs within the “Concept to Capability” process to identify and resolve the top PEO LS PM technical issues. The collaborative partnerships in Figure 13 (“Concept to Capability” S&T Partnership) reflect the activities within the process framework and are also intended to inform and align potential stakeholder support, leverage all available resources, resolve technical issues, and close capability gaps by rapidly transitioning technology to PoR.

The PEO LS S&T “Concept to Capability” Process is a repeatable process with ongoing review and focused feedback. The process actions begin with an in-depth understanding and alignment to the overarching concepts identified in Marine Corps Vision and Strategy 2025 and capstone concepts for the future. It is critical to employ these guiding documents and concepts to inform and align the capability requirements, guide technical development and provide best value investing. An understanding of the Warfighters’ Concepts and the core-capabilities required to enable those concepts is the next step in the process. Also critical is an understanding of the top level strategic and operational service issues (listed below) that rely on material solutions for resolution.

- Lightening the MAGTF Load
- Increasing Energy Efficiency
- Reducing the Sustainment Footprint in the Expeditionary Environment
- Increasing Ground Tactical Vehicle Survivability & Mobility

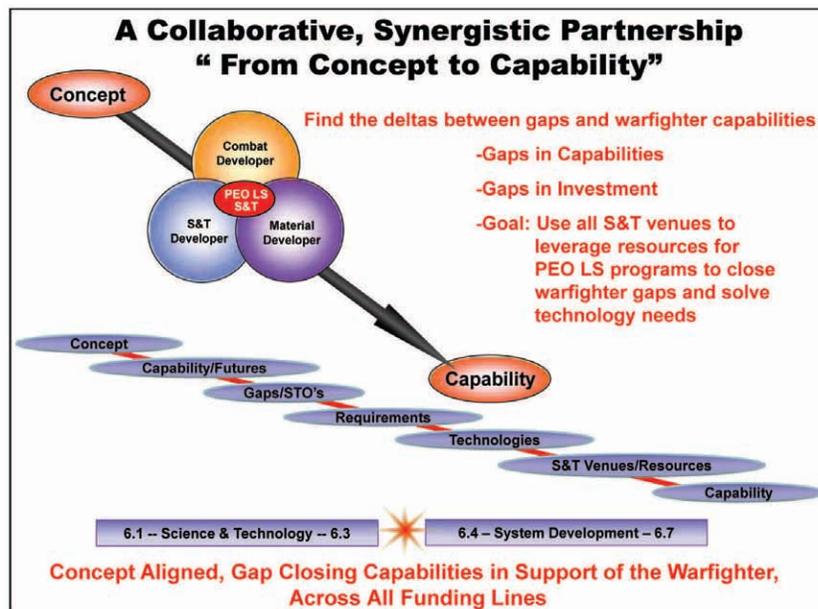


Figure 14 – “Concept to Capability” S&T Partnership

Once the operational concepts and capabilities are understood, an analysis is performed to identify the MAGTF capabilities and technology gaps. These capabilities and gaps are codified in the MAGTF Capability List (MCL) and MAGTF Gap List (MGL), as well as the Solutions Planning Directive (SPD) and the MAGTF Requirements List (MRL).

A review is conducted to align any and all applicable Science and Technology Objectives (STOs) to the technology issues/capability gaps. This alignment of STOs with high priority gaps ensures traceability of PEO LS S&T investments and enables stronger support within the POM process. Without funding there is no capability transition.

Once the alignment is complete, a thorough review of current S&T initiatives is conducted to highlight those initiatives that have potential to resolve the identified technology issue/capability gap. If it is determined a “delta” exists and no current S&T initiative is in place to address/resolve the gap, then potential S&T venues are evaluated and a “new” S&T initiative is submitted via the appropriate forum – matching gaps in technology to the appropriate venue able to best align resources to resolve the program technical issue and schedule.

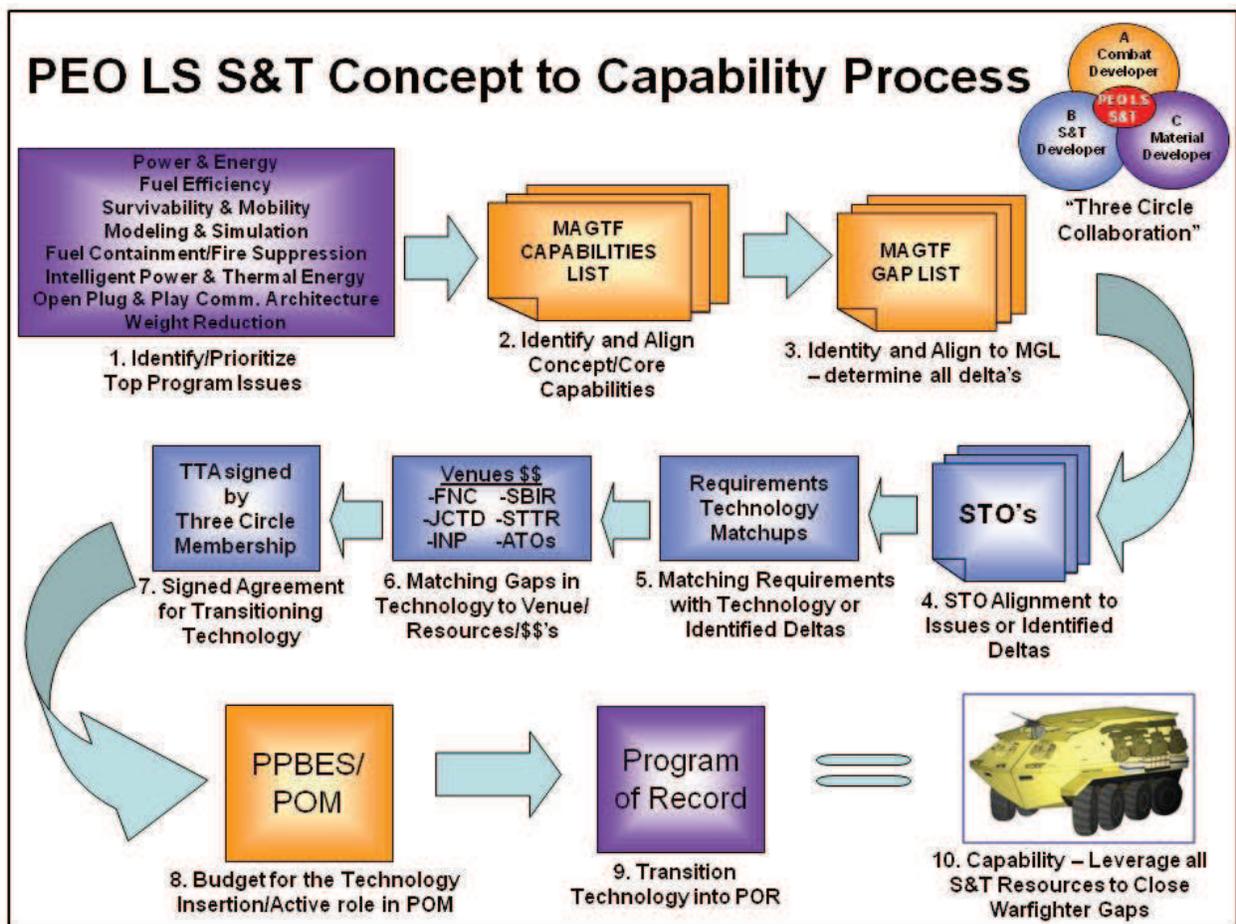


Figure 15 – PEO LS ATIP “Concept to Capability” Process

Upon approval of the new S&T initiative, the PM, as well as all “3 Circle” members capture the shared commitment within the framework of a formalized Technology Transition Agreement (TTA). After the TTA is signed by the appropriate level of “3 Circle” leadership, the S&T Representative continues to work closely with the PM to ensure funding support is available (in the POM) to integrate and transition the technology to the appropriate PoR and close the associated Warfighter gap.

By working through the “Concept to Capability” process (Figure 15) potential S&T opportunities and solutions are identified, enabling PEO LS S&T Representatives to better inform requirements, provide “best value” S&T investing and transition gap closing technologies to Programs of Record.

Program Objective Memorandum (POM)

Planning and funding today’s diverse and sophisticated weapons systems presents many difficult challenges. Complex program requirements, shrinking budgets, and competing resources can exponentially increase the challenge. In an effort to effectively execute programs, every funding and solution opportunity needs to be exploited. The PEO LS S&T Director will maintain an active awareness of S&T opportunities both for technical solutions as well as funding possibilities.

The chart below depicts the dollar value of the S&T resources of the Army, Navy and DARPA (currently \$11.7B per year).

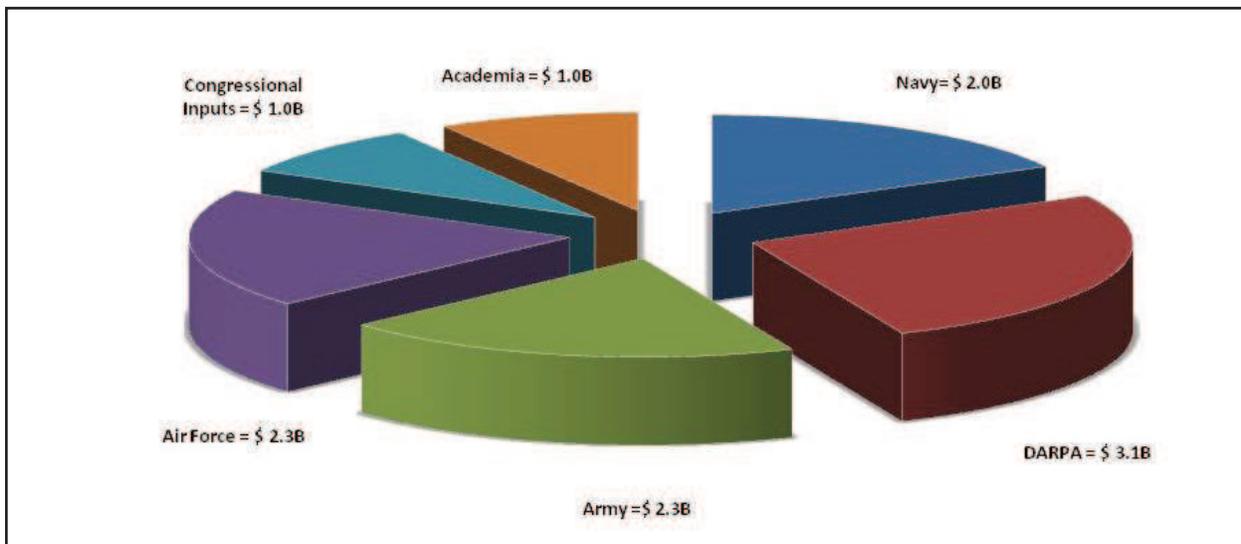


Figure 16 – Available S&T Funds in FY 12 = \$11.7B

The best way to leverage this funding is through consistent, informed engagement across all “3 Circle” partners.

Transition of S&T initiatives into Programs of Record is the goal.

The Expeditionary Force Development System (EFDS)

Expeditionary Force Development System (EFDS) is the current Marine Corps process designed to allow for equipment fielding or doctrine/training changes. The goal of EFDS is to provide prioritized responsiveness in meeting the needs and challenges of modern day Warfighters. EFDS incorporates a phased approach encompassing “cradle-to-grave” methodology. EFDS may begin with a developmental concept and result in doctrine/training changes; or a material requirement that ends with the fielding of new equipment.

The EFDS process phases are: Capabilities Analysis; Solutions Analysis; Program Development, and Capabilities Implementation and Transition. Each phase has critical time periods when informed participation with key stakeholders and gatekeepers can shape the direction of program efforts and future POMs, providing a direct effect on capabilities. PEO LS will ensure active participation in all phases of the EFDS process.

Planning for Transition

In order to transition S&T capability initiatives, engagement within the total EFDS process is necessary. Through this informed engagement, PEO LS representatives will build program issue and situational awareness, support, and sponsorship with the key POM decision makers. By ensuring issue and program awareness among “3 Circle” members, PEO LS S&T representatives will better ensure that technology transition is planned and accounted for at the appropriate point in the program schedule, limiting funding shortfalls and missed technology transition opportunities.

Total Ownership Cost (TOC)

Total Ownership Cost (TOC) is a concept designed to determine the true cost of design, development, ownership, and support of DoD weapons systems. At the DoD level, TOC is comprised of:

- The Costs of Research and Development
- The Cost to Acquire, Own and Operate
- The Costs to Recruit, Retain, Separate, and Support Military and Civilian Personnel
- The Cost of Disposing Defense Systems, Other Equipment, and Real Property
- All Other Associated Program Business Operations Costs

At the individual program level, TOC is synonymous with the Life Cycle Cost (LCC) of the system.

Over 85% of total program costs are incurred post Milestone C.

Traditional acquisition programs (Figure 17) incur the majority of their TOC costs post milestone C. This is a result of modifications, changes, technology insertions and in some cases Pre-Planned Product Improvement (P3I) efforts. Though necessary to extend the life and increase capabilities of programs, costs incurred to integrate technologies at the later stages of a program can be significant.

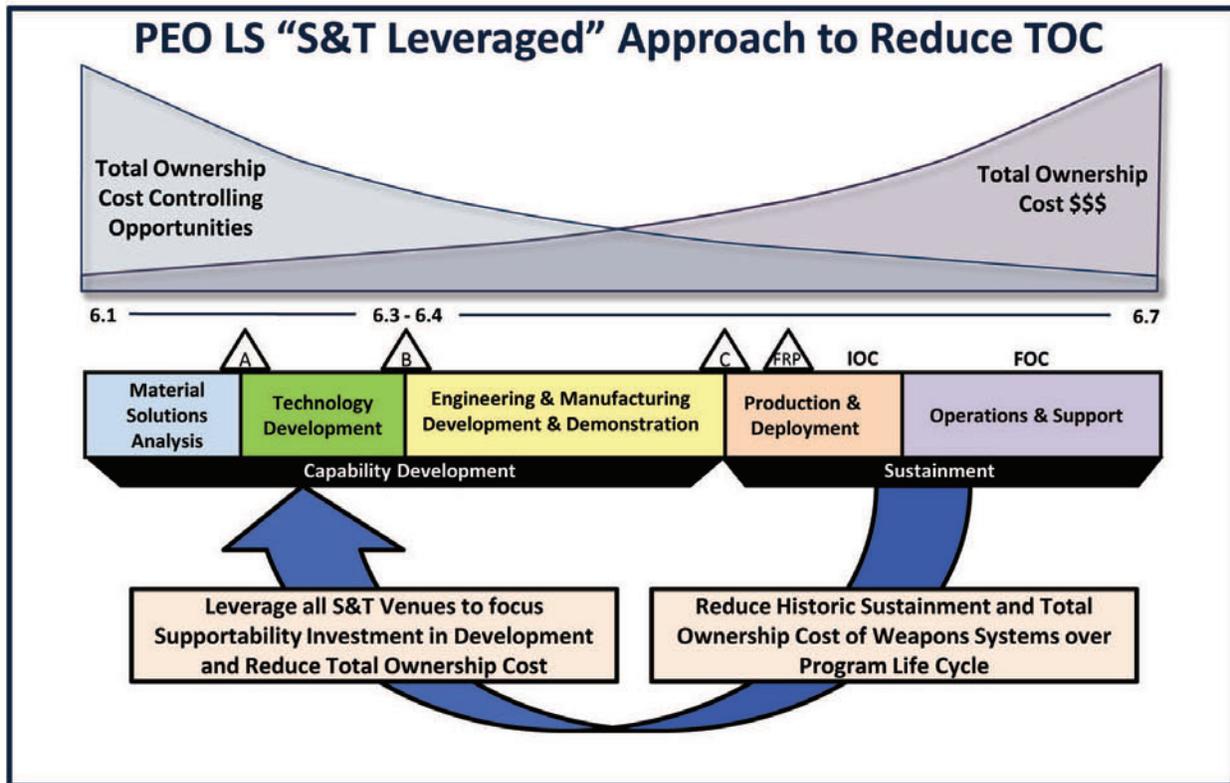


Figure 17 – PEO LS is Moving to a Focus on Total Ownership Costs.

S&T’s impact on TOC

Through effective engagement of the S&T process, PEO LS S&T representatives can help identify initiatives that result in solutions to problems and challenges not currently being explored by the programs. By identifying initiatives such as Modeling and Simulation (M&S) efforts and potential capability enhancements, design changes can be implemented early in the manufacturing process, thus limiting the costs of re-tooling and significantly reduce the cost of design changes commonly associated with modifications occurring post Milestone C.

In some cases, S&T technology insertion may help to reduce TOC of post MS C programs through upgrades and technology enhancements. An example would be a technology enhancement that improves the reliability of a vehicle. Besides increasing reliability, technology enhancements could also reduce maintenance (man hours), decrease the number of parts required to support a less reliable system (inventory) and extend the vehicle’s useful life.

Keeping Program Managers informed of emerging technologies can further influence TOC by allowing PMs to design-in modular applications that will better facilitate technology insertion and integration upon maturity, negating the need for major system redesigns.