DIB SWAP Study
Recommendations "Cheat Sheet"
V0.1, 14 Jan 2019

This page contains a list of the *preliminary* recommendations for the Defense Innovation Board (DIB) Software Acquisition and Practices (SWAP) study.

Note (14 Jan 2019): The SWAP team is working through input from a large amount of data gathering and expert conversations to develop its recommendations. The attached list has a number of working suggestions based on those efforts to date. Those who have followed the software landscape at DoD and the various prior studies that have been commissioned will see many items here that are not new. The particulars of how to "do" modern software have been articulated before and we will, most certainly, reinforce many of these prior recommendations. Others will note that some items shown on the list make more philosophical statements about the way almost everybody outside DoD executes software development, rather than actionable recommendations for DoD. In many cases these are summary recommendations that have more detailed sub-recommendations required to implement them and we plan to turn those into more specific, actionable recommendations in the final report. The intent of distributing this list at this point in our deliberations is to provide some insight into our current state for the purpose of continuing our dialogue with stakeholders and obtaining additional input.

As the study continues this work and solicits broader input, we are also working to clarify specific recommendations in several key areas, including: an acquisition pathway that enables lifecycle funding for certain types of ongoing software capability needs, the use of pre-validated software development platforms and accredited components, movement to time- and capability-based metrics with continuous user feedback, and a very strong focus on identifying software as a critical career specialty that requires active management to ensure available talent.

ID[1]	Potential recommendation
1	Create, pilot, and use pre-validated software development platforms & accredited components (e.g. containers, VMs) that permit continuous integration, automated T&E, and continuous deployment (including IA certification)
2	Revise JCIDS guidance and regulatory pathways to separate high variability functionality from "stable" functionality (e.g. signals to analyze vs. allowable space for antenna)
3	Remove earned value management (EVM) requirement for software systems
4	Provide training to COs, PMs, and Leadership to understand the value and methods associated with agile and modular implementation of software
5	Create standardized regulatory and IP language for open source, proprietary, and government-funded code that allows DoD to maintain appropriate control of its code base
6	Redefine vendor selection guidelines to prioritize ability to rapidly deploy software to the field using platform-based architectures that facilitate continuous improvement
7	Plan and fund computing hardware as consumable resources, with continuous refresh and upgrades to the most recent, most secure OS and platform components

[1] Order is arbitrary and the ID number is solely for ease in referring to a specific entry in the table.

8	Allow time-efficient methods for information assurance (IA) certification to ensure that the most secure software is running in the field at all times
9	Create streamlined authorization and appropriation processes for *non-business system* development projects that are optimized for modern software practices
10	Create streamlined authorization and appropriation processes for defense *business systems* that use commercially-available products with minimal (source code) modification
11	Clarify statutory and regulatory language to allow development of new functionality and capability for fielded systems w/out requiring establishment of a new program
12	Create a mechanism to manage (appropriate types of) software as a *single budget* item, with no separation between RDT&E, production, and "sustainment" funding lines
13	Pilot and then scale methods for appropriating software budgets as an ongoing, regularly evaluated expense, rather than large, multi-year development contracts (multi-year service contracts are OK)
14	Use modern (and automatically generated, where possible) metrics to provide (continuous) insight into software development progress and use those metrics for cost estimates and program decisions
15	Use time-to-field and other speed/agility metrics as primary metrics for SW performance assessment
16	Improve recruiting strategies to better compete for important software expertise, and hire them into positions that have less of a disparity with commercial sector positions (both in terms of salary and portfolio)
17	Create a software development career track for government employees and invest in developing our existing workforce
18	Focus on retaining development talent within the DoD by improving career development opportunities, merit-based promotion and raises, and retention incentives.
19	Establish software development as a military operational specialty, with capability to man, train, and equip software squadrons within the Services
20	Require software acquisition professionals to have relevant software experience (or training) and specialized acquisition training tuned for software development
21	Create training programs for DevSecOps (developers, program managers, acquisition professionals)
22	Parallelize the use of regulatory sign-offs to avoid slowing down delivery of software to the field and exploit the iterative nature of software as an alternative
23	Require that all software development data from DoD systems be available to the DoD for use in program analysis and management
24	Create and implement DevSecOps instructions, including direct feedback from users, as the default development process for DoD software
25	Refactor and streamline DoD oversight, management and strategic planning of software-related processes and capabilities to focus on the ability to rapidly deploy software to the field
26	Create an OT&E infrastructure (modeling, computation, facilities) that is capable of synchronized testing of relevant software systems at the speed of relevance
27	Perform OT&E testing using full access to source code and software development environments, and integrate contractor testing, developmental testing, and operational testing

	as a tiered process with high levels of automation
28	Change 10 USC 2399 to require DOT&E oversight on a selected (rather than default) basis
29	Establish stronger public-private partnership model for software development
30	Remove cost, schedule, and scope triggers that cause software to get categorized as hardware
31	Exempt the DoD from the Clinger Cohen Act (to remove unnecessary bottlenecks for the use of modern IT systems for combat systems)
32	Replace Nunn-McCurdy thresholds with metrics based on cycle time, lead time, fallback rate, and ratio of bugs caught in testing vs field use
33	Allow the use of working capital funds for software development, deployment, and sustainment
34	Allow software development, deployment, and sustainment to be funded across multiple program elements
35	Allow selection of software companies to be more consistently based upon their technical competency, qualifications, and experience rather than by price
36	Waive the requirements of the Antideficiency Act to enable to use of software as a service (SaaS) contracts for DoD systems
37	More frequently use "challenge based acquisition" to promote a competitive environment, demonstrated performance, and an increased partnership with industry
38	Create new pathways via 2016 NDAA Sec 805 for streamlined software acquisition (develop/procure, field, sustain)
39	Establish an R&D strategy (new appropriation) for software (new technologies, new methodologies, etc); what's after agile
40	Develop an acquisition and contracting mechanism to maintain modern development environments that provide a constantly updateable set of tools for use in software development activities
41	Co-locate contractors and government engineers in a manner to provide greater insight during software development and sustainability via mixed contractor/organic expertise
42	Develop and make available (as GFE, funded via a POR) validated software development platforms that permit continuous integration and evaluation, and thus support rapid deployment of capability to the field (including by small and medium-sized enterprises)
43	Provide program offices for software programs with the expertise, authorities, and budget required to make and implement decisions on program development and deployment
44	Require regular, automated testing of code on authorized and maintained digital infrastructure to oversee progress, drive program decisions, and perform acceptance testing
45	Software programs should include budget and plans for managing lifecycle costs, including maintenance, infrastructure upgrades, interoperability upgrades, and added functionality
46	Application software programs should prioritize use of existing commercial services, including SaaS, and develop a process for continuous opportunities for competition
47	Embedded software programs should operate using a DevSecOps approach once the initial hardware on which they are deployed is available in the field
48	Pilot and then establish a "Department of Defense Rapid Software Development Fund'' to provide multi-year funds for acquisition programs making use of rapid software development pathways