DoD’s Software Acquisition Pathway
Digital Delivery at the Speed of Relevance
Jan 2022

https://aaf.dau.edu/aaf/software/
Software Pathway Background

USD(A&S) Signed DODI 5000.87 on 2 Oct 2020

Newest AAF Pathway

Enabling DoD to deliver better software faster

Lifetime of growth ahead
Software Acquisition Pathway (SWP)

Programs Rapidly Joining SWP

- Radical departure from status-quo
- 21st century digital product delivery based on Silicon Valley business models
  - Programs transition to SWP from legacy 5000 model for speed & agility
    - 60% in Execution Phase to rapidly, iteratively deliver software
- A&S SWP Team develops innovative strategies, cuts red-tape, and accelerates program entry

**SWP Team creating unity of effort to reform DoD processes and culture for modern SW.** Partnerships w/ OSD, JS, CAPE, T&E, and Services to optimize entire SW acquisition system; key reforms:

- 21st century SW Requirements process
- Interoperability reform > operationalize DSD Data Decree
- Cost Estimation Reform • T&E Modernization
- New Biz System sub-path • Weapons guidance

Enabling DoD to Deliver Better Software Faster

https://aaf.dau.edu/aaf/software/
Diverse Mix of SWP Programs Across DoD

- Navy: 29%
- Air Force: 26%
- Army: 17%
- Other DoD: 14%
- SOCOM: 14%
- Diverse Mix of SWP Programs Across DoD: 4%
Paths Within The SWP

- Application: 86%
- Embedded: 14%
SWP Lessons Learned After 1 Year

- Faster is possible (SW planning and deliveries)
- Hybrid pathway use (MCA + SWP; MTA + SWP) is possible
- DBS use is possible
- Accelerate transition using functional equivalence for artifacts and OSD/AE support
  - Go direct to Execution Phase if mature
- Get stakeholder buy-in on new approaches
- Need to modernize requirements, interoperability, cost estimation, T&E for SW
- Drop old tools / Need to unlearn: No APBs; avoid EVM, KPPs, big docs
  - Pick up new tools: educate your PEO on Value Assessment, Agile Metrics, UAs
- Portfolios: leverage common strategies, platforms, contracts for speed and flexibility
- Continuous improvement (of SWP and programs)
  - New Templates & Guidance: Value Assessments, CNS, UA, Estimation, Deployment Frequency, and more
  - Metrics: lightest set in the AAF; focused on insights
  - Partner with AE SWP Team to cut red tape and accelerate into SWP

In April, Kessel Run All Domain Operations Suite (KRADOS) was declared a minimal viable product (MVP), in accordance with the definition outlined in the new DoDI 5000.87. “This is a huge milestone for Kessel Run, ACC and our users...”
Mission Focused

We enable programs to deliver better software faster

Quick Review of Artifacts
Consult / Co-develop innovative strategies
Strategic Outreach
Advocate for Buy-in / Support

Growth mindset: learning while leading
FY22 focus:
Scale Transformation (Fusion cell - spread TTPs across DoD)
Optimize / Modernize Remaining Bottleneck DoD Processes
Outreach: PEO Roadshows, Targeted Discussions, Coaching

Guidance and Playbooks: Interoperability, DBS, XaaS, Deployment Frequency, APB, EVM, RAI, Metrics, Value Assessment, etc.

Vignettes: Portfolio adoption; MTA-to-SWP transition; MTA + SWP adoption

Web: SWP website, FAQs, welcome kit, COI, templates
Ignite Innovation and Execution

Requirements | Cost Estimating and Budgeting | Test and Evaluation | Weapon and Business SW

Ruthlessly Focused on DoD *Unity of Effort* to *Dominate Digital Product Delivery*

Strategic Partnerships to Reform, Streamline, Tailor DoD Environment for Software
Understanding the Software Pathway
Directed DoD to create two software acquisition pathways

Applications and Embedded Systems

• Software programs shall not be treated as an MDAP

• Exempt from JCIDS (unless VCJCS, A&S, SAEs agree on new process)

• Streamline SW requirements, budget, acquisition processes

• Demonstrate viability and effectiveness of capabilities for operational use within one year after funds first obligated

Key Elements of SW Acquisition Pathway

- Modern SW development practices
- Human-centered design
- Active, committed user engagement
- Enterprise services/platforms
- Rapid and iterative deliveries
- Gov’t-industry software teams
- Automated tools

Source: DODI 5000.02 Section 4.2
Software Acquisition Pathway

https://aaf.dau.edu/aaf/software/
Planning Phase

Focuses on understanding the users’ and systems’ needs and planning the approach to deliver capabilities to meet those needs

Key Artifacts

• Capability Needs Statement
• User Agreement
• Program Strategies
  ▪ Acquisition Strategy (AS)
  ▪ Contracting Strategy + IP Strategy
  ▪ Test Strategy + Cybersecurity Strategy
  ▪ Product Support Strategy
• Cost Estimate

https://aaf.dau.edu/aaf/software/planning-phase/
Execution Phase – Key Activities

- Product Roadmap
- Program Backlogs
- Active User Engagements
- Develop, Deliver Software
- Track Metrics
- Value Assessments

Continuous improvement to maximize mission impact.

https://aaf.dau.edu/aaf/software/execution/
SWP Interplay of Key Elements

CNS

“I need a C2 system for X mission.”
High-level, enduring needs

Product Roadmap
FY FY FY FY FY FY
- Major features planned
- Legacy and peer systems

Program Backlogs
1. Dynamic prioritized user needs for upcoming sprints and releases

Acquisition Strategy
How you plan to deliver needed software capabilities

Develop/Deliver SW
Active User Involvement
Small, frequent releases

Value Assessment
Report card on software delivered and value based on $$ and mission impact

User Agreement
Commitment of users during development and requirements management

Cost Estimate
Rough at start, refined over time with actuals

Program Budget
Evolved based on performance and feedback from initial developments
What Should a SWP AS Contain
Minimum Elements

- High-level User Needs
- Operational Context
- Initial Program Roadmap
- Business Case Summary
- Iterative Approach
- Team Roles and Responsibilities
- SW Development Method
- Architecture/Design
- Enterprise Services/Tools
- Metrics
- Competition Plan
- Incentives
- Progress Measures
- Interoperability
- Definition of Done
- Operational Fielding
- Prioritization Schema
- User Engagement Plan
- Value Assessment Approach
- 5-Year Plan
- Infrastructure + Labor
- Appropriations
- IP Strategy
- Organic Resources
- Transition Plan

Acq Strategies can cover most required info vice many standalone docs
Key Players in Software Acquisition Pathway

Integrated Teams Across Operations and Acquisition; Government and Vendors; All Functions and Levels
Benefits of Software Acquisition Pathway

• Tailored acquisition processes for modern software development
• No formal milestones – Delegated decision authorities
• Exempt from JCIDS (new streamlined process coming soon)
• Streamlined reviews and documentation – No MDAPs
• Leverage enterprise services and not “rebuilding the SW factory”

Software Acquisition Pathway and DevSecOps provide the framework that prioritizes speed, flexibility, and rigor
APB vs Superior Insights/Value from SWP

Single OODA - early decisions with the least knowledge lock in requirements

Frequent OODA cycles so programs can be responsive! Rapid feedback/decision-making driven by new info

Adaptive, Iterative & User-Focused Documentation
Why are Program Management Metrics Important?

Leverage the right automated metrics driven by real-time data to improve value delivery, investment decision-making!

• To inform decision makers to take-action, guide decisions, and solve problems!

• To improve the process for value delivery, deliver greater value faster

• To provide areas of focus for continuous improvement experiments

• To highlight areas of great success to mimic with other teams and programs

Note on Agile Program Metrics:

• Agile metrics emphasize value delivered and team performance that is based on incremental value delivered and end-user assessment of working product.

• Traditional waterfall metrics focus on delivering to planned schedule and cost because working product isn’t available for assessment and won’t be until the very end.
How is Software Different?
Software Requirements

- Scope is flexible
- Requirements details are dynamic
- Responsive to changes in operations, threats, technologies, performance, and USER FEEDBACK
- Address priority needs or critical risks first
  - Don’t just do the easy stuff
Product Roadmap

• High-level, adaptable visual summary

• Maps out the vision and direction of product offerings over time

• Illustrates the planned capabilities and delivery timelines

• Regularly updated with inputs from key stakeholder groups to ensure alignment with priorities, budgets, platforms, and related systems

Consider multiple roadmap views:

• 3-5 Year Long-Term (FYDP) and
• 6-18 Month Detailed
How Software Is Different

Traditional Acquisition (Hardware Centric)

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define all requirements</td>
<td>IOC</td>
</tr>
<tr>
<td>Design system</td>
<td>FOC</td>
</tr>
<tr>
<td>Develop system</td>
<td></td>
</tr>
<tr>
<td>Test system</td>
<td></td>
</tr>
<tr>
<td>Produce system</td>
<td></td>
</tr>
</tbody>
</table>

Software Acquisition

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>High level needs</td>
<td></td>
</tr>
<tr>
<td>Iteratively define details</td>
<td></td>
</tr>
<tr>
<td>Design, Develop, Test, Deliver software</td>
<td></td>
</tr>
</tbody>
</table>

Iteratively define details
**MVP vs MVCR**

**Minimum Viable Product (MVP)**

Early version of software for users to evaluate and provide feedback.

**Minimum Viable Capability Release (MVCR)**

Fully tested set of value-added features fielded to an operational environment.

[DEMO]

[DELIVER]

https://aaf.dau.edu/aaf/software/design-and-architecture/
A high-level capture of need with enough information to define the software solution space and consider the threat environment.

- Sponsor and Requirements Manager ID operational software capabilities needed
- Draft CNS to start the Software Pathway
- Refine during Planning Phase and approve prior to entry into Execution Phase

A&S Acquisition Enablers shop collaborating with Components to encourage adoption of flexible and streamlined requirement processes for the SWP.

Clear Understanding of What is Needed

https://aaf.dau.edu/aaf/software/user-engagement/
Evolving Software “Requirements”

Evolving Mission, Adoption, Performance, Threats, Priorities, Tech

Strategic

Operations

Draft

CNS

Periodic updates

Roadmap

Active soldier engagements

Backlogs

Dynamic processes with active feedback loop

MVP MVCR Release 2 Release n
User Agreement

Agreement between the operational and acquisition communities to ensure active user involvement and informed decision making.

- Ensure proper resourcing of user involvement to support development
- Commit to active user involvement throughout design and development during planning phase
- Signed by sponsor, PMO prior to entry into Execution Phase

Establish Strong Ties to Users from Start

https://aaf.dau.edu/aaf/software/user-engagement/
<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operational Sponsor</strong></td>
<td>Overall program champion from an operational, requirements, and resourcing perspective.</td>
</tr>
<tr>
<td><strong>Product Owner</strong></td>
<td>Ensures active user engagement, shapes roadmaps and backlogs, and measures value.</td>
</tr>
<tr>
<td><strong>Users/User Reps</strong></td>
<td>Provides developers insight into operations, shapes tactical needs, feedback on interim/final software.</td>
</tr>
<tr>
<td><strong>Decision Authority</strong></td>
<td>Responsible for program oversight and key decisions. PEO for many, higher/lower official based on size.</td>
</tr>
<tr>
<td><strong>Program Manager</strong></td>
<td>Manages the program in partnership with the Product Owner to regularly deliver valued software.</td>
</tr>
</tbody>
</table>

See details at: [https://aaf.stage.dau.edu/aaf/software/user-agreement/](https://aaf.stage.dau.edu/aaf/software/user-agreement/)
User Agreement Considerations

- Who actively engages user community to get them involved?
- Who has authority over community to commit and fund users to participate in SW development activities?
- Need to ensure different user groups are represented
  - Some user groups may take priority, but need to consider others
- Critical to prioritizing needs, capability deliveries, assess value
- UAs are NOT MOAs/MOUs to cover all authorities
  - Targeted towards active involvement in shaping SW development
- Individuals for each role preferred over group/board decisions
  - Leads must be proactive to engage key stakeholder groups
- When providing developers inputs, assessing value, need to go beyond one person’s opinion.
Develop and Deliver Software

Development

- plan
- code
- test
- build

Operations

- release
- feedback

Software Development Infrastructure, Cybersecurity, and Enterprise Services

- Small, frequent releases to maximize value delivered
- Feedback is captured that changes work priorities
- Modern software practices and tools (Agile, DevSecOps)
- Automation everywhere - testing, cybersecurity, releases
- T&E/Cyber pulled as close to development as possible
- Leverage enterprise services, DevSecOps pipelines
Integrated policies, guidance, and resources to navigate the SWP with greater speed and success.

> 48,000 page views over last 12 months

What Content Do You Find Valuable? What Else Do You Want to See?

https://aaf.dau.edu/aaf/software/