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2.6 Solution Implementation Revised 4/2013

Solution implementation begins at the final investment decision when the Joint Resources Council approves and funds an investment program or segment, establishes the acquisition program baseline for variance tracking, and authorizes the service organization to proceed with implementation. Solution implementation ends when a new service or capability is commissioned into operational use at all sites.

Detailed program planning, including the solicitation and evaluation of offers for prime contract(s), occurs during final investment analysis and before the final investment decision. This ensures accurate contract costs, risks, and schedules are reflected in the acquisition program baseline and program planning documents. These plans and baselines are revalidated, and updated if necessary, after contract award to ensure they can realistically serve as the management construct for program implementation. They are kept current throughout solution implementation.

The overarching goal of solution implementation is to satisfy requirements documented in the final requirements document and achieve the benefit targets in the business case. To achieve this, the service organization must work with users and stakeholders throughout solution implementation to resolve issues as they arise. Actions outside the direct control of the service organization (e.g., regulatory changes) are recorded in the implementation strategy and planning document and tracked at program reviews throughout solution implementation.

The activities undertaken during solution implementation vary widely and are tailored for the solution or capability being implemented. FAST contains tailored process flowcharts for representative types of investment program (systems and software, facilities, services) and functional disciplines (e.g., human factors, information systems security, configuration management, integrated logistics support). These flowcharts identify actions and activities the service organization may need to execute to achieve projected capability, value, and benefits. Instructions, templates, best practices, good examples, and lessons-learned are attached to many activities in the flowcharts to assist lifecycle management specialists as they plan and execute activities that make sense for their investment program.

Although service organizations are empowered to implement investment programs and manage them over their lifecycle, they must adhere to built-in checks and balances. The acquisition program baseline establishes the performance, cost, schedule boundaries within which the service organization is authorized to operate. The service organization must report all negatives variance from cost, schedule, and performance baseline measures and undertake corrective action in accordance with AMS Section 1.2.3. The assessment of critical performance requirements must be regularly reported during solution implementation and at completion.

The service organization monitors cost, schedule, and performance status against targets in the acquisition program baseline on a continuing basis, and takes corrective action when variances from planning objectives arise. The service organization also reports program status at acquisition quarterly program reviews. The focus of these reviews is to identify high-risk issues requiring resolution and to ensure all actions necessary to achieve projected value and benefits are being executed satisfactorily, particularly those outside the control of the service organization. The service organization applies the principles of earned value management to development, modernization, and enhancement investment programs, and when applicable, uses audits to

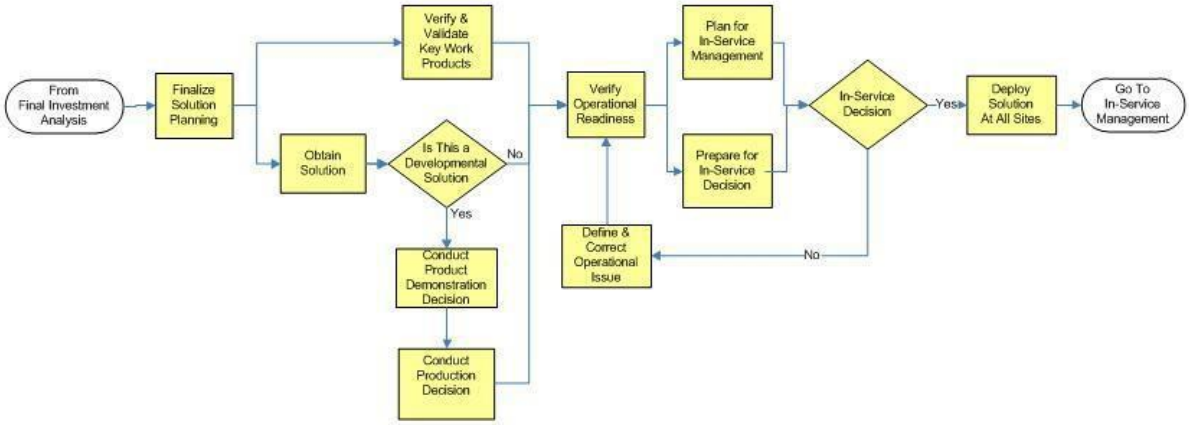
ensure contract costs are proper and allowable.

The service organization captures expenditures consistent with the program baseline work breakdown structure fashioned during final investment analysis.

For those NAS investment programs progressing through solution implementation as elements of an operational capability, capture team members assess and report progress of each investment increment monthly to the portfolio manager. The portfolio manager reports status of the overall capability to the NextGen Management Board quarterly. These reviews focus on cost, schedule, or performance issues associated with every element of the operational capability. The portfolio manager recommends action for correction of cost, schedule, or performance shortfalls, and may propose the transfer of funding from one investment increment to another when necessary to improve the health and prognosis of the overall capability. The Joint Resources Council evaluates proposed baseline changes among investment increments at acquisition quarterly program reviews. Each service team or program office works with the capture team to ensure each investment increment provides the functionality and performance necessary to achieve the operational capability.

Solution implementation is organized into the activities shown in Figure 2.6-1.These activities are tailored to the special requirements of each investment program.

Figure 2.6-1 Key Activities of Solution Implementation



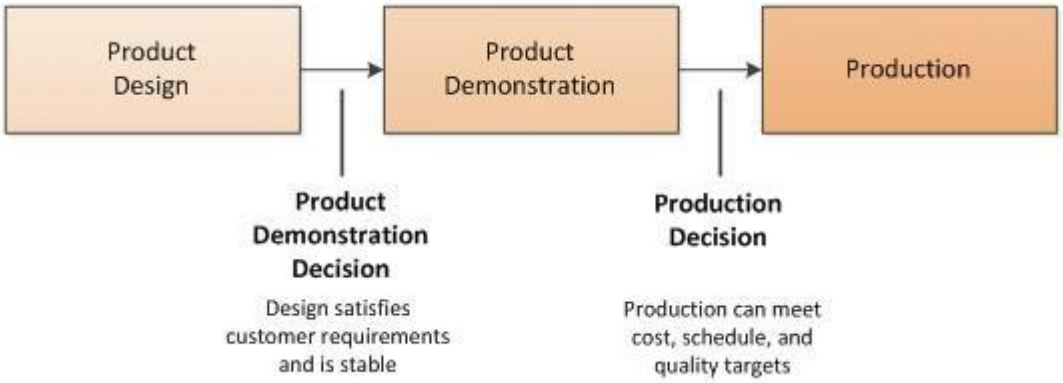
2.6.1 What Must Be Done Revised 4/2013

- **Finalize Solution Planning.** The service organization or program office reviews and updates program planning completed during final investment analysis (i.e., implementation strategy and planning document, work breakdown structure, ISR checklist). Key stakeholders participate in this activity to ensure planning is complete and realistic. For example, if new systems are to be installed or existing facilities modified, service organization planners work with service-area offices so people and resources will be available when needed.
- **Obtain the solution**. The service organization or program office oversees and coordinates execution of tasks and activities necessary to achieve the benefits projected for the

investment program within approved cost and schedule baselines. This includes such activities as contract award, contract administration, program management, resource management, risk management, systems engineering, logistics support, test and evaluation, and site acquisition and adaptation. It may involve developing operational procedures and standards; obtaining physical, personnel, and information security; modifying the physical infrastructure; and coordinating collateral action by the aviation industry.

- **Is This a Developmental Solution?** Investment programs that develop, modernize, or enhance systems or software follow the knowledge-based product development process shown in Figure 2.6.1-1. The following two decisions are intended to ensure the knowledge base is sufficiently mature to warrant proceeding to the next stage of implementation.

Figure 2.6.1-1 FAA Knowledge-Based Product Development Process



- **Conduct Product Demonstration Decision.** Table 2.6.1-1 defines the timing, decision authority, and decision criteria for authorizing full development and demonstration of the product.

Table 2.6.1-1 Timing, Decision Authority, and Decision Criteria for the Product Demonstration Decision

Timing	Decision Authority	Decision Criteria
After critical design review	Vice President or Director of the implementing service organization	Key product characteristics are defined Stakeholders agree that product design and functionality satisfy program requirements System design reviews are complete Engineering drawings are complete Detailed software/firmware design is complete, including critical software processes and threads RMA goals are defined and planning is complete Failure modes and effects analysis is complete Critical manufacturing processes are identified

- **Conduct Production Decision.** Table 2.6.1-2 defines the timing, decision authority, and decision criteria for authorizing full production of the product.

Table 2.5.1-2 Timing, Decision Authority, and Decision Criteria for the Production Decision

Timing	Decision Authority	Decision Criteria
After completion of operational testing	Vice President or Director of the implementing service organization *	First-article satisfies program requirements in an operational environment Data demonstrate that critical manufacturing processes and components will achieve RMA goals • First-article achieves contract RMA requirements • Stakeholders agree design is producible

***** Unless otherwise designated by the Joint Resources Council at the final investment decision.

- **Verify and Validate Key Work Products and Products.** The service organization or program office incrementally verifies and validates key work products and products of solution implementation, including the contract to obtain the capability, design documents, specifications, and actual product/product components. Verification and validation activity supports contract award, product demonstration decision, production decision, product acceptance, and the in-service decision.
- **Verify Operational Readiness.** The service organization or program office manages all activities necessary to install the solution at a designated test site(s) and test it thoroughly to verify operational readiness. Operational readiness encompasses operational effectiveness and operational suitability. Operational effectiveness measures how well the solution satisfies mission need and operational requirements. Operational suitability measures how well a product can be integrated and employed for field use, considering such factors as compatibility, reliability, human performance factors, maintenance and logistics support, safety, and training. For designated programs, operational readiness is also assessed by an independent operational assessment. The solution may be installed, as necessary, at the FAA Academy, FAA Logistics Center, and William J. Hughes Technical Center before the in-service decision. In rare cases and with proper justification, the service organization may request authority to install at other specific sites. This authorization does not affect the regular in-service review process culminating in a final in-service decision, which must be adhered to before a product can be placed into operational service through the declaration of operational readiness date (ORD) and commissioning.
- **Plan for In-Service Management**. The service organization or program office plans how it will sustain and manage deployed assets throughout their full lifecycle. This includes in-service logistics support, post implementation review, and other evaluations of operational assets to measure performance, collection of performance data in support of acquisition quarterly program reviews, product sustainment strategy and actions, service- life extension, and eventual removal from service including site restoration.
- **Prepare for In-Service Decision.** The service organization or program office completes

all activities necessary for the in-service decision. This includes resolution of all support issues identified by the operating service organization and integrated logistics management team; completion of management actions arising from the in-service review checklist and the independent operational assessment report (designated programs only); resolution of stakeholder issues; development of the in-service decision briefing and action plan; and concurrence of key stakeholders.

- **In-Service Decision Approved?** The in-service decision authority reviews operational test results, the status of in-service checklist items, the independent operational assessment (designated programs only), the perspective of key stakeholders, and other information deemed relevant to the in-service decision. If the in-service request is approved, deployment of the solution may begin. If the request is not approved, the service organization must correct any deficiency and return for the in-service decision upon verification that all outstanding issues have been resolved.
- **Define and Correct Operational Issues.** The service organization or program office takes whatever corrective action is necessary to resolve all remaining operational issues. This may involve a return to concept and requirements definition if correcting the issue involves a change to program requirements or to investment analysis if operational issues require a change to the acquisition program baseline.
- **Deploy the Solution at All Sites.** The service organization or program office manages all activities necessary to deploy the solution at each site. This includes transportation and delivery of equipment, installation and checkout, contractor acceptance and inspection, integration, field familiarization, declaration of initial operational capability, joint acceptance and inspection, dual operations, declaration of operational readiness, and removal and disposal of obsolete equipment. Post implementation reviews are conducted at deployment sites to ensure user needs are satisfied, identify systemic problems that must be corrected, and determine whether cost, schedule, and benefits objectives are being achieved. The transition from solution implementation to in-service management extends over time, occurring at each site upon declaration of operational readiness or commissioning.

2.6.2 Outputs and Products Revised 4/2013

The primary outcome of solution implementation is a fully deployed and supported operational capability that satisfies requirements (including program requirements and designated specifications), is accepted by users, is compatible with other products and services in the field, and realizes the benefits in the final business case by fully addressing requirements in the final program requirements document. The following are typical products of solution implementation that support the fielding of a satisfactory operational capability:

- Annual updates of the OMB Major IT Business Case for designated programs;
- Continuous evaluation of progress against targets in the acquisition program baseline (including status of critical performance requirements);
- Contracts that achieve investment objectives (i.e., cost, schedule, performance, and benefits);
- Successful operational test and evaluation including a final report on the status of critical operational issues and requirements in the final program requirements document, and passing status of critical performance requirements;

- Successful independent operational assessment and report for designated programs;
- In-service decision, including the in-service decision briefing and action plan;
- Declaration of operational readiness and commissioning at each site;
- Program reviews and reports (e.g., baseline management, variance tracking; financial, schedule, performance; earned value, logistics measures, and risk management);
- In-service management plan;
- Monthly capture team assessments, when applicable; and
- Acquisition quarterly program reviews.

Key work products are verified and validated according to the FAA AMS Verification and Validation Guidelines before the in-service decision.

2.6.3 Who Does It? Revised 1/2015

Organization	Responsibilities
Performing service organization or program office	Manages all activities necessary to plan, obtain, and deploy the solution, and to obtain the in-service decision. This includes the award and management of contracts, continuing review and evaluation of progress relative to plan, and corrective action to achieve cost, schedule, and performance targets in the acquisition program baseline. Updates program planning to address how the newly fielded capability will be sustained throughout in-service management Reports status of the investment program to the Joint Resources Council at acquisition quarterly program reviews
Operating service organization	Conducts joint acceptance and inspection or service acceptance (service contracts) at each site Declares operational readiness and commissions the solution into operational use
Key stakeholder organizations	Work with service organizations to identify and resolve all issues and concerns during solution implementation up to and including the in-service decision
Vice President of the service organization	Notifies the Vice President of ATO Safety and Technical Training when the product is ready for independent operational assessment via the independent operational assessment readiness declaration (designated programs only)
Director of Policy and Performance, ATO Safety and Technical Training	Evaluates operational readiness of the product and reports findings to the in-service decision authority (designated programs only)
Information Technology Shared Services Committee	Annually reviews OMB Major IT Business Cases for designated programs as part of the annual budget process
Office of Information & Technology, Strategy &	Independently scores all OMB Major IT Business Cases that will be submitted to the Office of Management and Budget through the Office of the Secretary of Transportation

Performance Service, Investment Portfolio & CPIC Branch	
Capture team members	Assess and report monthly to the portfolio manager the status of each investment increment contributing to an operational capability
Portfolio manager	Reports status of the operational capability to the NextGen management Board (NAS only) Recommends corrective action for cost, schedule, or performance shortfalls within all investment increments contributing to an operational capability

2.6.4 Who Approves? Revised 4/2013

Artifact	Approval Authority
Acquisition program baseline changes	Joint Resources Council
OMB Major IT Business Case (designated information technology programs) OMB Major IT Business Case (designated non-information technology capital investments)	Chief Information Officer, Chief Financial Officer, Acquisition Executive Chief Financial Officer, Acquisition Executive
Product demonstration decision (if applicable)	Vice President or Director of the implementing service organization
Production decision (if applicable)	Vice President or Director of the implementing service organization, unless otherwise designated by the Joint Resources Council at the final investment decision

2.6.5 In-Service Decision Revised 7/2015

The in-service decision (ISD) authorizes deployment of a solution into the operational environment. It occurs after demonstration of initial operational capability at the key test site(s) and before initial operational capability at any non-key site or waterfall facility. The decision is made following completion of the certification of compliance with testing, information security, and safety requirements. It establishes the foundation for operational readiness to be declared at subsequent sites. The ISD uses results from test and evaluation that report on the verification and validation of performance requirements, critical performance requirements, critical operational issues, and operational readiness (e.g., safety, effectiveness, and usability). The in-service review (ISR) checklist is used by the service organization to identify and resolve readiness issues before the ISD and to obtain concurrence from stakeholder organizations.

The Joint Resources Council is the ISD authority. At the final investment decision, the Joint Resources Council may delegate ISD authority to appropriate FAA officials. For any solutions or

products that affect multiple organizations, a joint ISD authority may be designated. This decision is documented in the final investment record of decision.

Depending on the implementation strategy of the solution (e.g., phased implementation, segments, multiple releases, several smaller programs executed separately as a part of one solution), multiple ISDs may be required to ensure the operational readiness of each specific component of the overall solution. The ISD strategy is developed by the service team with help from the ISD Executive Secretariat, approved by the Joint Resources Council and documented in the implementation strategy and planning document. Follow-on revisions to the ISD strategy must be approved by the ISD authority.

The ISD is recorded in the record of decision. Action plans for resolving remaining operational readiness issues are included as an attachment to the record of decision. Status of action plans is tracked and reported to the ISD Executive Secretariat until all issues are resolved. Once all action plans are satisfactorily completed, the ISD Executive Secretariat provides a close-out memorandum.

Mission Support and Mission Support IT initiatives do not require an in-service decision nor a waiver from the In-Service Decision Executive Secretariat. Acceptance criteria will be agreed upon by the customer and the service delivery organization.

2.6.5.1 Entrance Criteria Revised 7/2013

The following artifacts are required for each in-service decision:

- Operational test report(s);
- Independent Operational Assessment Report for designated programs;
- ISR Checklist completed or action plans for those remaining open;
- Safety Risk Management Document approved;
- Information security certification and authorization or certification and authorization;
- Stakeholder concurrence on readiness for the ISD; and
- ISD briefing and action plans.

2.6.5.2 In-Service Decision Authority Actions Added 4/2013

The ISD Authority:

- Approves the ISD strategy for phased or segmented deployments;
- Agrees to the action plans;
- Makes the ISD; and
- Approves the Record of Decision.