

## Acquisition Management Policy - (1/2021)

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## 2.5 Investment Analysis Revised 01/2021

Investment analysis is a disciplined process that supports sound capital investment decisions. Investment analysis is conducted in the context of the enterprise architecture and FAA strategic goals and objectives. Such plans serve as guides to prioritize current and future investment analyses. Investment analyses, in turn, help to refine and mature those plans by providing decision-makers with a clear picture of investment opportunities and their risks and value.

NAS and Mission Support roadmaps in the enterprise architecture establish when an operational capability or service need must be in place. This, in turn, determines when investment analysis should be complete to allow sufficient time to acquire and deploy a suitable solution. The key is to balance timeliness, complexity, and size of the investment analysis with the rigorous development of quantitative data needed by the Joint Resources Council to make an informed investment decision.

Affordability and accurate cost and schedule estimates are important factors in the decision to approve a new investment program. The results of investment analysis help the Joint Resources Council determine which potential investments will improve operations across the air transportation system and by how much. The outcome of investment analysis can be used to make individual, portfolio, and prioritization decisions.

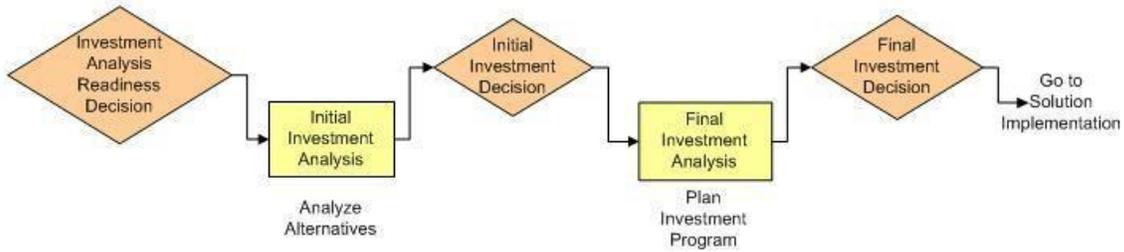
When the investment initiative is an element of an operational capability (NAS only), the management team for the capability (if established) participates in and contributes to investment analysis activity. The management team is populated with representatives from each service team or program office that will provide an increment of the overall operational capability. They ensure the alternative emerging from investment analysis for each increment fits within the strategy for obtaining the operational capability and can provide the necessary performance and functionality.

All proposed investments must answer the same following questions:

- What problem needs to be addressed or resolved?
- What is the range of alternatives that could address this problem?
- What are the costs, benefits, and risks associated with alternative solutions to the problem?
- Based on the above, what is the recommended course of action?

Figure 2.5-1 illustrates the phases and decision points of investment analysis. Initial investment analysis evaluates alternative solutions to service needs, and recommends the most promising for further development. Final investment analysis develops detailed cost and benefits estimates, detailed plans, and final requirements for the most promising alternative.

**Figure 2.5-1 Phases and Decision Points of Investment Analysis**



The level of activity required during investment analysis is based on the acquisition category assigned to the investment initiative. In general, the larger and more complex the initiative, the greater the effort required during investment analysis.

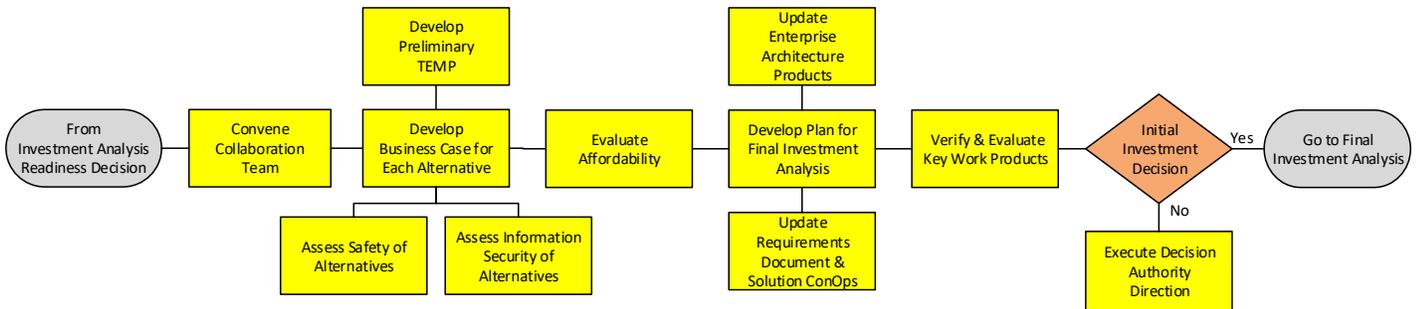
Very complex investment programs are structured into manageable, lower-risk segments and approved incrementally by the Joint Resources Council. When sequential segments are required to fully implement an investment opportunity, the program office (or service organization) conducts final investment analysis for each segment and brings planning and baseline documents to Joint Resources Council for approval.

**2.5.1 Initial Investment Analysis Revised 01/2021**

**2.5.1.1 What Must Be Done Revised 01/2021**

Figure 2.5.1-1 defines the key activities that must be completed during initial investment analysis for the New Investment Level I acquisition category which is the most complex and highest risk initiative undertaken by FAA.

**Figure 2.5.1.1-1 Key Activities of Initial Investment Analysis**



- **Convene Collaboration Team.** The collaboration team convenes to agree on the goals and outcomes of initial investment analysis and to identify participants who will work together to facilitate and contribute to the work effort. The collaboration team will typically have representatives from the program office (or service team) proposing the initiative; key stakeholder organizations such as Investment Analysis and Planning, ATO Technical Operations, safety, information security, and testing; and the AMS

policy team. The collaboration team is also available during execution of initial investment analysis to resolve issues that are delaying or affecting the quality of the work effort.

- **Develop Preliminary Test & Evaluation Master Plan.** The test service organization develops a preliminary test and evaluation master plan consistent with the initial requirements document to provide sufficient detail to define the investment program test strategy and scope prior to the initial investment decision.
- **Develop Business Case for each Alternative.** The business case focuses on key factors such as cost, benefits, schedule, and risk associated with each alternative. The objective is to determine which alternative demonstrates the most value and worth to the FAA, aviation industry, and flying public at acceptable cost and risk. When the investment initiative is an increment necessary to achieve an operational capability, the impact on achieving the capability is also a key factor of the business case. See the Business Case Analysis Guidance for more details.
- **Assess Safety of each Alternative.** The system safety organization assists in determining safety risks and the likely cost of mitigation efforts for each alternative. Results are recorded in a comparative safety analysis report in accordance with the Safety Risk Management Guidance for System Acquisitions.
- **Assess Information Security of each Alternative.** The Information Systems Security organization assists in determining information security risks and the likely cost of mitigation efforts for each alternative. Results are recorded in accordance with the Information Systems Security Guidance for System Acquisition.
- **Evaluate Affordability.** FAA Finance assesses the budget impact and relative contribution to agency goals of each alternative against other ongoing and proposed investment programs in the FAA financial baseline. The impact assessment may shape subsequent deliberations of the investment analysis team.
- **Develop Plan for Final Investment Analysis.** The plan defines work activities, resources, schedules, roles and responsibilities, and products required for final investment analysis. It also specifies exit criteria and a planning date for the final investment decision. See Investment Analysis Plan Guidance and Template for more details.
- **Update Enterprise Architecture Products and Views.** Should the results of initial investment analysis and the determination of the most beneficial and affordable alternative affect the enterprise architecture, the program office (or service organization) prepares the necessary products and views and submits them to the FAA Enterprise Architecture Board for review and approval.
- **Update Requirements Document and Solution ConOps.** The program office (or service team) updates the Program Requirements Document and Solution ConOps to reflect outcomes and trade-off decisions made during initial investment analysis and to reflect the anticipated functional and performance capability of the alternative determined to be most beneficial and affordable from the analysis.
- **Develop, Verify, and Validate Key Work Products.** Validation of the business case is described in the Business Case Evaluation and Assessment Guide. Verification and validation for all other documentation is described in the FAA AMS Lifecycle Verification and Validation Guidelines. The full list of work products that may be required for the initial investment decision is found on the JRC Secretariat website.

### 2.5.1.2 Outputs and Products **Revised 01/2021**

The principal output from initial investment analysis is information that enables the Joint Resources Council to select the alternative that best satisfies agency functional and performance requirements and offers the greatest value to the FAA and its customers. The following are required products:

- Updated program requirements document;
- Business case for each alternative;
- Safety and information security assessment for each alternative;
- Updated enterprise architecture products and views (if the recommended alternative requires change to the enterprise architecture); and
- Plan for final investment analysis.

Key work products are verified and validated according to FAA AMS Verification and Validation Guidelines before the initial investment decision.

### 2.5.1.3 Who Does It? **Revised 01/2021**

<b>Organization</b>	<b>Responsibilities</b>
Collaboration team	<ul style="list-style-type: none"> <li>• Facilitates agreement on the goals and outcomes of initial investment analysis and identifies participants who will work together and contribute to the work effort</li> <li>• Assists in resolving issues delaying or affecting the quality of the work effort during initial investment analysis.</li> </ul>
Investment analysis team	<ul style="list-style-type: none"> <li>• Performs work activities and prepares the outputs and products of initial investment analysis</li> </ul>
Implementing service organization or program office	<ul style="list-style-type: none"> <li>• Typically leads the investment analysis team</li> <li>• Works with stakeholder organizations to ensure their essential needs are integrated into the analysis of alternative solutions</li> </ul>
Investment Planning and Analysis organization	<ul style="list-style-type: none"> <li>• Verifies and validates the business case for both NAS and Mission Support initiatives</li> <li>• Provides standards, guidance, training, and consulting services to ensure consistency in the conduct of investment analysis</li> <li>• Provides analysts who may lead, conduct, or review business cases as agreed in the investment analysis plan</li> </ul>
Stakeholder organizations	<ul style="list-style-type: none"> <li>• Represent their organizations on the investment analysis team and contribute to the products and outcomes of initial investment analysis</li> </ul>
Capability management team (NAS only)	<ul style="list-style-type: none"> <li>• Ensures the recommended alternative emerging from initial investment analysis can provide the performance and functionality necessary to obtain the overall operational capability ( when the initiative is a building block of an operational capability)</li> </ul>

#### **2.5.1.4 Who Approves? Revised 01/2021**

Approval authorities for the outputs and products of initial investment analysis are found in the document template for each artifact located on the initial investment analysis page of the FAST website.

#### **2.5.1.5 Initial Investment Decision Revised 01/2021**

The Joint Resources Council makes the initial investment decision. The decision applies to the following acquisition categories:

- New Investment Level I
- Prototype

##### **2.5.1.5.1 New Investment Level I Added 01/2021**

For a New Investment Level I initiative, the Joint Resources Council selects the best alternative for the required capability or rejects all alternatives and specifies what action is needed. It uses the following criteria when making the investment decision:

- Lifecycle costs;
- Benefits;
- Risk;
- Benefit to cost ratio;
- Consistency with the FAA enterprise architecture; and
- Impact on FAA strategic goals.

If the Joint Resources Council approves an alternative, it:

- Approves entry into final investment analysis;
- Approves funding for any analytical or developmental work related to the selected alternative; and
- Designates a service organization or program office to lead final investment analysis.

Alternatives can be rejected if the technology is not mature, when requirements are not sufficiently defined, or when relative costs and benefits of the initiative are not favorable. If rejected, the Joint Resources Council can approve such actions as research, further analysis, development, or termination.

When the initial investment decision involves an investment initiative that is an element of an operational capability, the capability portfolio manager attends the JRC decision meeting to explain the interrelationships among capability elements and the impact on the overall operational capability of not approving the initiative.

##### **2.5.1.5.2 Prototype Added 01/2021**

For a Prototype acquisition category, the Joint Resources Council may:

- Approve the prototype concept to continue to final investment analysis;
- Continue prototype development and evaluation;

- Continue to initial investment analysis with the prototype concept as an alternative for a New Investment initiative; or
- Terminate the initiative.

The Joint Resources Council uses the following criteria when determining the course of action following completion of the prototype demonstration:

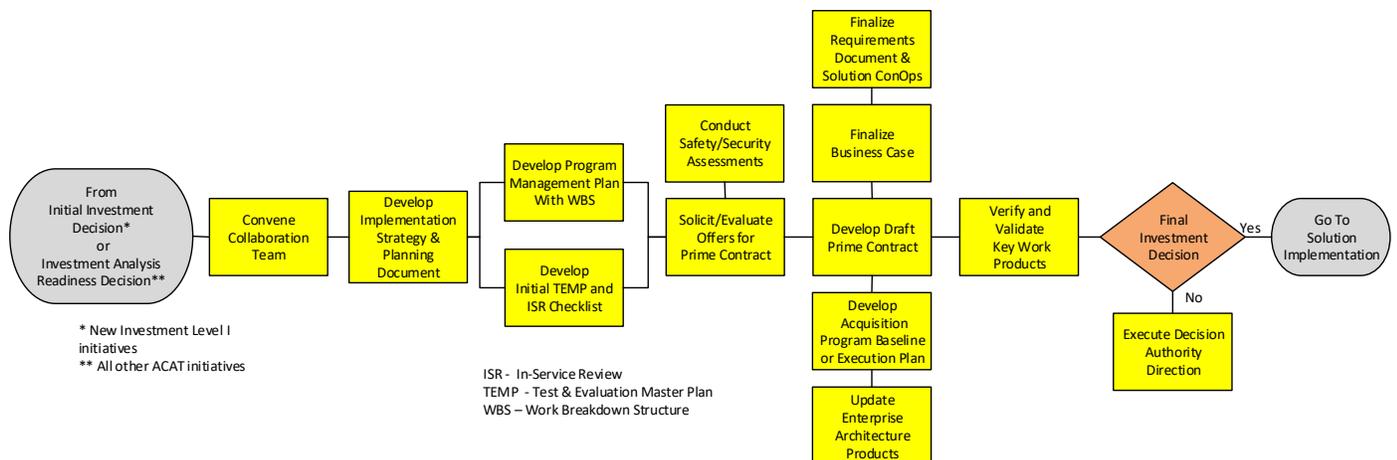
- Cost/risk/performance assessment;
- Safety assessment;
- Information security assessment;
- Maturity of the technology base;
- Maturity of functional and performance requirements; and
- Degree to which the demonstrated capability satisfies priority agency service needs.

## 2.5.2 Final Investment Analysis Revised 01/2021

### 2.5.2.1 What Must Be Done Revised 01/2021

Figure 2.5.2.1-1 defines the key activities of final investment analysis for a New Investment Level 1 acquisition category, which is the most complex and highest risk investment initiative undertaken by the FAA. For other acquisition categories, these activities are adjusted based on artifact requirements in the ACAT table. The flow of activities in Figure 2.5.2.1-1 is intended as a logical guide for the program office or service organization as they complete the work activities of final investment analysis. In actual practice, the outputs and products of final investment analysis are interdependent and will evolve and mature over time during the conduct of phase activities. However, all must be finalized, verified, validated, and have the required approvals before the final investment decision.

*Figure 2.5.2.1-1 Key Activities of Final Investment Analysis*



- **Convene Collaboration Team.** The collaboration team convenes to agree on the goals and outcomes of final investment analysis and to identify participants who

will work together to facilitate and contribute to the work effort. The collaboration team will typically have representatives from the program office (or service organization) proposing the initiative; key stakeholder organizations such as Investment Analysis and Planning, ATO Technical Operations, safety, information security, and testing; and the AMS policy team. The collaboration team is also available during execution of final investment analysis to resolve issues that are delaying or affecting the quality of the work effort.

- **Develop Implementation Strategy and Planning Document.** The program office (or service organization) develops a detailed strategy for procuring, implementing, and supporting the solution over its service life with input from key stakeholder organizations. This strategy is the foundation for a request for offer to industry for procurement of the solution and all other program planning and tasking artifacts. Planning is recorded in the implementation strategy and planning document which must be completed and signed before the final investment decision.
- **Develop Program Management Plan with Work Breakdown Structure.** The program office (or service organization) uses the FAA standard work breakdown structure and in-service review checklist as the basis for preparing the program management plan for implementing the solution. This plan specifies how the program office (or service organization) will execute the implementation strategy in the ISPD and defines the roles and responsibilities of key participating organizations. Planning must cover all aspects of obtaining the solution so costs and schedules are accurately reflected in resource documents and the acquisition program baseline or execution plan. The program work breakdown structure (Section 3 of the FAA standard work breakdown structure) is a required attachment to the program management plan.
- **Develop Initial Test & Evaluation Master Plan and In-Service Review Checklist.** The test organization develops an initial test and evaluation master plan consistent with the final requirements document, program management plan and draft prime mission product contract. The TEMP describes the test program for the initiative, establishes the basis for test requirements in the request for offer to industry, and establishes the basis for test costs and schedules in the acquisition program baseline or execution plan. The in-service decision authority organization works with the program office and key stakeholder organizations to develop the in-service review checklist. Completion of checklist items is a foundational basis for making the in-service decision.
- **Solicit Offers For Prime Contract(s).** The program office (or service organization) with assistance from key stakeholder organizations develops and releases a request for offers and then evaluates industry responses for completeness, technical suitability, and compliance with the statement of work. The most acceptable industry response forms the basis for the final business case, final requirements document, final planning, and the acquisition program baseline or execution plan for the initiative.
- **Conduct System Safety and Information Security Assessments.** The program office (or service organization) works with the system safety organization to develop a preliminary system safety hazard analysis for the proposed solution in support of the final investment decision. It also works with the information systems safety organization to conduct and document a final information security assessment of the proposed solution.
- **Finalize Requirements Document and Solution Concept of Operations.** The program office (or service organization) updates the program requirements document and solution concept of operations as necessary to be consistent with the draft contract to be awarded to

the prime mission product contractor.

- **Finalize Business Case.** The investment analysis organization and program office (or service organization) work together to finalize the business case and supporting documents according to templates located on the final investment analysis web page in FAST. The final business case must take into consideration the costs and schedules from the prime contractor proposal selected for award.
- **Develop Draft Prime Contract.** The program office (or service organization) develops the draft contract to be awarded to the prime mission product contractor after the Joint Resources Council approves the initiative for implementation and funding at the final investment decision. Key stakeholder organizations assist by providing statement of work paragraphs and contract deliverable descriptions within their domains of responsibility (e.g., logistics, test and evaluation, information security, safety, configuration management, training, and system engineering).
- **Develop Acquisition Program Baseline or Execution Plan.** The acquisition program baseline or execution plan establishes the cost, schedule, and key performance baselines for the investment initiative. It is the agreement between the program office (or service organization) and the Joint Resources Council concerning the performance that will be obtained and the timeframe and resources agreed to by the agency.
- **Update Enterprise Architecture Products.** The program office (or service organization) works with the enterprise architecture organization to produce the products and views required for the final investment decision and submits them to the FAA Enterprise Architecture Board for review and approval.
- **Verify and Validate Key Work Products.** Investment Planning and Analysis validates the business case as described in Business Case Evaluation and Assessment Guide. Verification and validation for all other program work products is done according to the FAA AMS Lifecycle Verification and Validation Guidelines. The full list of work products that may be required for the final investment decision is found in the JRC Checklist located on the JRC Secretariat website.

In all cases, organizations conducting investment analysis must apply the processes and guidelines located in the investment analysis section of FAST.

### 2.5.2.2 Outputs and Products **Revised 01/2021**

The principal output of every final investment analysis is detailed planning for the alternative selected for implementation. The required outputs and products for a Level 1 New Investment are listed below. Refer to the ACAT table ([link](#)) for outputs and products for other acquisition categories.

- Final implementation strategy and planning document;
- Program management plan with program work breakdown structure;
- Initial test and evaluation master plan;
- In-service review checklist;
- Solicitation for prime contract;
- Preliminary system safety hazard analysis;
- Final information security assessment;
- Final program requirements document with concept of operations;

- Final business case;
- Updated architecture products and views;
- Draft prime mission product contract; and
- Acquisition program baseline or execution plan.

Key work products are verified and validated according to the FAA AMS Verification and Validation Guidelines before the final investment decision.

### 2.5.2.3 Who Does It? Revised 01/2021

Organization	Responsibilities
Collaboration Team	<ul style="list-style-type: none"> <li><input type="checkbox"/> Facilitates agreement on the goals and outcomes of final investment analysis and identifies participants who will work together and contribute to the work effort</li> <li><input type="checkbox"/> Assists in resolving issues delaying or affecting the quality of the work effort during final investment analysis.</li> </ul>
Investment analysis team	<ul style="list-style-type: none"> <li><input type="checkbox"/> Performs the activities and prepares the outputs and products of investment analysis</li> </ul>
Implementing service organization or program office	<ul style="list-style-type: none"> <li><input type="checkbox"/> Typically leads the investment analysis team</li> <li><input type="checkbox"/> Works with stakeholder organizations to ensure their needs are integrated into the solution especially the draft prime mission product contract</li> </ul>
Investment Planning and Analysis	<ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies and validates the business case for both NAS and Mission Support investments</li> <li><input type="checkbox"/> Provides standards, guidance, training, and consulting services to ensure consistency in the conduct of investment analyses</li> <li><input type="checkbox"/> Provides analysts who may lead, conduct, or review business cases as agreed to in the investment analysis plan</li> </ul>
Stakeholder organizations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Represent their organizations on the investment analysis team and contribute to the products and outcomes of final investment analysis</li> </ul>
Capability management team (NAS only)	<ul style="list-style-type: none"> <li><input type="checkbox"/> Ensures the solution emerging from final investment analysis can provide the performance and functionality necessary to obtain the overall operational capability (applies when the initiative is a building block of an operational capability)</li> </ul>
Test service organization	<ul style="list-style-type: none"> <li><input type="checkbox"/> Develops the initial test and evaluation master plan during final investment analysis</li> </ul>

### 2.5.2.4 Who Approves? Revised 01/2021

Approval authorities for the outputs and products of final investment analysis are found in document template for each artifact located on the final investment analysis page of the FAST website.

### 2.5.2.5 Final Investment Decision Revised 01/2021

The Joint Resources Council makes the final investment decision except in the case of Tech Refresh Portfolio sub-ACAT 2 initiatives for which the Stakeholder Governance Board is the decision authority. The Stakeholder Governance Board follows the decision guidelines and criteria in the governance board charter approved by the Joint Resources Council.

If the Joint Resources Council approves the initiative for funding and implementation, it:

- Establishes an investment program and delegates responsibility for implementation to the appropriate service organization or program office;
- Approves the final program requirements document, final business case, enterprise architecture products, implementation strategy and planning document, program management plan with program work breakdown structure, acquisition program baseline or execution plan, initial test and evaluation master plan, and draft prime contract;
- Commits the FAA to funding the program, as specified in the acquisition program baseline or execution plan; and
- Approves adjustments to FAA plans and budgets to reflect the investment decision.

If the Joint Resources Council disapproves the recommendation, it returns the investment package to the program office or service organization with specific instructions for further work or it terminates the effort.

When a final investment decision involves an investment initiative that is an element of an operational capability, the portfolio manager attends the JRC decision meeting to explain the interrelationships among capability elements and the impact of not approving the initiative on the overall operational capability.