Benefit Analysis of the Food Aid Information System

Foreign Agricultural Service
United States Department of Agriculture

March 30, 2007

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Executive Summary

The United States Department of Agriculture (USDA) Foreign Agricultural Service (FAS) has begun to develop a new integrated information system to manage and administer its food aid programs. FAS sees a compelling business need to enhance the current management and administration processes, which rely on decentralized computer applications and spreadsheets, legacy systems, and manual operations, as well as paper-based communications. The new information system, or Food Aid Information System (FAIS), will be an integrated web-based system able to handle all food aid transactions within FAS and between its major stakeholders, including those outside the U.S. government.

FAS commissioned this benefits analysis to examine the benefits that this new system is intended to provide and to evaluate three high-level alternatives against a common set of potential criteria for each desired benefit. This analysis examines and quantifies the benefits of the proposed system as defined by FAS and its major food aid stakeholder groups in order to determine which alternative delivers the most value to the food aid process. The current system or status quo, albeit manual and decentralized, is included in this analysis in order to confirm the business need for an investment in a food aid information system.

The three alternatives being considered are markedly different from the status quo and are differentiated primarily in terms of their software:

- **Status Quo:** The current management and administration of food aid is conducted using stand-alone applications, (e.g. FADS, FARES, EC-Facts, etc.), individually developed spreadsheets, and paper-based communications.
- **Alternative 1:** The entire system is custom developed using a web-based language such as JAVA or .NET. The assumption behind this alternative is that no commercial off the shelf (COTS) solution exists that can adequately provide at least 70% of the requirements for FAIS.
- **Alternative 2:** The assumption behind this alternative is that a COTS solution is available that does not have any "out of the box" functionality, but can provide at least 70% of the requirements for FAIS after it is configured. The remaining 30% of the requirements are satisfied by further customizing the COTS application.[1]
- **Alternative 3:** Like Alternative 2, the assumption behind this alternative is that a COTS solution is available that does not have any "out of the box" functionality, but can provide at least 70% of the requirements for FAIS after it is configured. Unlike Alternative 2, the remaining 30% of the requirements are satisfied through the custom development of a web-based language.

Three Step Process

Consistent with OMB and USDA Capital Planning and Investment Control (CPIC) guidance, a three step process was used to conduct this analysis in order to support the justification for funding and enhance FAS' planning for the Food Aid Information System (FAIS).

[1] To date a COTS package has not been identified that can provide the necessary functionality. Therefore, Alternative 2 and Alternative 3 assume that there is a COTS package available.

Step 1 – Benefits Analysis

The first step was to develop the benefits framework leveraging the Value Measuring Methodology (VMM)[2], initially by interviewing and working with four stakeholder groups who will use FAIS, (Program Administration Division, Food Assistance Division, PVOs and the Transportation and Logistics Branch). Using stakeholder input, a list of twelve benefits across five higher-level benefit categories was developed. Benefits were identified holistically, with the categories representing different perspectives, in order to account for the full range of both financial and non-financial benefits. These benefit categories, as well as the benefits within each category, were subsequently prioritized (weighted).

Table 1 FAIS Benefit Framework

BENEFIT CATEGORIES & BENEFITS	Category Weights	Benefit Weights	Overall Weights
DIRECT USER	**35%**		
Data Accuracy and Reliability		37%	13%
Data Accessibility		32%	11%
Timeliness		32%	11%
GOVERNMENT OPERATIONAL AND FOUNDATIONAL	**10%**		
Facilitates Information Sharing		46%	5%
Robust Reporting Capabilities		54%	5%
STRATEGIC/POLITICAL	**11%**		
Enhanced Credibility/ Trust With Cooperating Sponsors		44%	5%
Improved Performance Of Agency Mission & Strategic Goals		56%	6%
SOCIAL	**17%**		
Improved Stewardship of Public Funds		68%	12%
Improved Transparency into Food Aid Process		32%	5%
GOVERNMENT FINANCIAL	**27%**		
Cost Savings		33%	9%
Cost Avoidance		17%	5%
Funds Control		50%	14%
TOTAL	**100%**		

The results reveal a consistent emphasis on the need to streamline and maximize efficiency throughout the food aid process. The benefit that received the greatest weight, Funds Control, reflects FAS' need to ensure more efficient management of its funding sources, to include CCC[3] Apportionments, USDA/FAS Appropriations, and MARAD[4] Reimbursements to finance the four Food Aid programs.

In addition to supporting Funds Control, FAS and its stakeholders clearly see a compelling need to improve the overall food aid process so that more food aid can be delivered more quickly using the same or fewer resources. This is confirmed by three of the four next most important benefits which each require an enhanced, networked system that promotes greater productivity:

[2]More detailed information on VMM can be found on the Federal CIO Council's Web site, under the Best Practices link, at www.cio.gov

[3] Commodity Credit Corporation (CCC)

[4] United States Department of Transportation Maritime Administration

1. Data Accuracy and Reliability – Data and transactions captured in FAIS are consistently correct, up-to-date and complete
2. Improved Stewardship of Public Funds – Secure the best performance and highest measure of accountability in the use of taxpayer funds
3. Data Accessibility – FAIS user groups have access to the data and information they require to efficiently execute their roles in food aid programs and business processes.
4. Timeliness – Information and data on FAS' food aid programs is available within time frames required by users for decision-making.

Step 2 – Alternatives Analysis

The second step incorporated the existing costs and risk matrix for each alternative into the analysis. With the exception of the status quo, the cost and risk information for the alternatives were developed prior to and separately from this effort; they are documented in the final report of the "Interagency Protocols for Electronic Communications and Computer Application Requirements Analysis - U.S. Food Aid Resource Management System (USFARMS)" and the FY 2008 FAIS Exhibit 300 submission.

For the status quo, the cost ($2.4M) and the risk matrix used to respond to Part II, Section A, Question 2 of the FY 2008 Exhibit 300 were used to revise the risk adjusted cost and determine a risk score. The cost reported in the Exhibit 300 accounts for current operational risks associated with the status quo but does not account for the risks associated with achieving the benefits outlined in this analysis. Accordingly, the risk matrix used to determine the risk adjusted costs for the three alternatives was employed where applicable. For example, if FAIS is developed using any of the three alternative scenarios, it assumes a schedule risk if it does not receive Section 11 funding in FY 2007 for Phase II of FAIS development. The status quo, in which a new, integrated FAIS is not built, does not incur a comparable risk. However, the risk that FAS' food aid partner agencies may not receive sufficient funding to build their parts of a business-to-business interface becomes a certainty if the status quo is maintained. To mitigate this risk FAS would have to invest an estimated $1.5M in order to modernize and network the current applications to facilitate such an interface. As a result, this $1.5M is included in the risk adjusted cost for the status quo so that the status quo and the alternatives can be compared on a consistent basis.

Table 2 Risk Scores

	STATUS QUO	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Expected Cost	$2,401,000	$16,867,503	$14,816,742	$13,536,780
Risk Adjusted Cost	$13,516,175	$20,070,335	$17,591,574	$16,100,126
Delta[5]	$11,115,175	$3,202,832	$2,774,832	$2,563,347
RISK SCORE[6]	**462.94%**	**18.99%**	**18.73%**	**18.94%**

The results indicate that although the operational or expected cost of maintaining the status quo is low, the *risk adjusted cost* is actually quite high. This is because achieving the desired benefits and performance goals in the status quo scenario – i.e., absent a new, integrated FAIS – will

[5] The Delta value in the Risk Scores Table is the risk cost, which is the cost associated with undesirable outcomes, a financial value accounting for any adverse affects that jeopardize the success of the particular investment

[6] Risk costs were figures reflected in the FY 2008 Exhibit 300 that were used to calculate the risk score. The risk score was calculated using the formula: RISK COSTS/(RISK ADJUSTED COSTS – RISK COSTS). Risk scores are calculated to represent a percentage of overall performance slippage or cost increase.

require FAS to bear significant costs. For example, one of FAS' performance metrics requires an annual 10% decrease in the time required to generate and process a food aid agreement. Another measure calls for a 50% reduction in the size of reserve funds through improved funds control by 2009. In order to achieve these as well as the other performance goals listed in the FY 2008 Exhibit 300, FAS would have to invest a significant amount of money in upgrading the current applications and tools.

With the effects of risk and cost identified, the value scores for each alternative could be determined. The status quo and each alternative were scored against a consistent set of performance metrics for each desired benefit. These performance metrics were developed in collaboration with stakeholders, FAS leadership, and subject matter experts (SMEs) to provide a basis for estimating whether or not the currently envisioned alternatives as well as any potential future alternatives[7] are likely to provide sufficient value to satisfy stakeholders. As a result of this process, the status quo and each alternative earned a value score.

Table 3 Value Scores

	STATUS QUO	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
VALUE SCORE	23.79	65.11	67.02	69.43
RISK ADJUSTED VALUE SCORES				
VALUE SCORE	-86.34	52.75	54.47	56.28

The value score quantifies how the current high-level alternatives are expected to perform against a consistent set of measures. They are used to make an "apples-to-apples" comparison of the value delivered by multiple alternatives for a single initiative. Alternative 3 has a value score of 69.8, (out of 100), and is preferred over the Status Quo, which has a value score of 23.84, as well as the other alternatives, if no other factors are considered.

This result appears more pronounced once the value scores are risk adjusted. In fact, the status quo actually produces a negative value score once risk is considered. This underlines the need for enhanced efficiencies throughout the food aid process and the very large risk exposure that the status quo presents for FAS if it is to achieve it performance goals.

Step 3 – Reporting

FAS has identified a pressing business need to replace its current portfolio of stand alone computer applications, spreadsheets, and legacy systems supporting the food aid activities. Based on the cost, risk and benefit evidence available at this early stage of planning, this analysis appears to confirm that need, and the fact that the desired benefits are a high priority among major food aid stakeholders.

The vision for FAIS is to provide an integrated web-based system able to handle all food aid transactions within FAS and between its major stakeholders including those outside the U.S. government. In order to make this vision a reality, FAS selected three alternatives and evaluated them using a flexible yet comprehensive decision-making framework for optimizing the trade-offs between value, cost, and risk.

[7] FAS recently commissioned a requirements analysis which will specifically define alternatives for FAIS. As a result, the alternatives presented here may evolve as FAIS is defined in more granular terms.

Table 4 Summary Findings

	ALT 1	ALT 2	ALT 3
VALUE SCORE	65.11	67.02	69.43
RISK SCORE	18.99%	18.73%	18.94%
RISK ADJUSTED VALUE SCORE	52.75	54.47	56.28
TOTAL INVESTMENT	$16,867,503	$14,816,742	$13,536,780
RISK ADJUSTED TOTAL INVESTMENT	$20,070,335	$17,591,574	$16,100,126
RISK ADJUSTED NPV (COST ONLY)	$15,693,210	$13,744,006	$12,596,361
DESIGN & BUILD DURATION (MONTHS)*	22.71	19.15	18.68

**Source: USFARMS*

In interpreting the results of this analysis, there are two key points that must be emphasized:

- This analysis assumes that a COTS package exists that can provide at least 70% of the requirements for FAIS.
- The requirements analysis currently underway will determine if a COTS package is available. Based on the results of the requirements analysis, FAS expects to define the alternatives at a more granular level, and update the alternatives analysis.

Regardless of the technical solution that is ultimately selected, FAIS should aim to maximize the benefits that have been identified by FAS and its major stakeholder groups.

At this point, the results of this analysis point towards Alternative 3 which is the lowest cost solution. *However, a clear and obvious alternative is not evident*. The risk scores are all within hundredths of a percent, the largest delta between value scores is about 3 points, and the difference in cost is only about $4M. At this early stage of planning, there are very few discriminating factors among the high-level alternatives to drive a strong case for any one of them.

Nevertheless, the methodology and process used to conduct this benefits analysis were selected because they are credible and most importantly repeatable. As the requirements analysis advances and more detail is understood about potential alternatives, this analysis can be updated to help select the alternative that provides the optimal combination of value, cost and risk. Further, as FAIS matures this analysis can be revisited to assist FAS leadership with making effective business decisions throughout the investment's lifecycle. In the meantime, the benefits, performance metrics, and targets identified here should help guide the requirements analysis – ensuring that the benefits identified with the participation of stakeholders are incorporated from the beginning.

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1 Introduction

The United States Department of Agriculture (USDA) Foreign Agricultural Service (FAS) has begun to develop a new, integrated information system to manage and administer its food aid programs. FAS sees a compelling business need to enhance the current management and administration processes, which rely on decentralized computer applications and spreadsheets, legacy systems, and manual operations, as well as paper-based communications. The new information system, or Food Aid Information System (FAIS), will be an integrated web-based system able to handle all food aid transactions within FAS and between its major stakeholders, including those outside the U.S. government.

FAS commissioned this benefits analysis to examine the benefits that this new system is intended to provide and to evaluate three high-level alternatives against a common set of potential criteria for each desired benefit. This analysis examines and quantifies the benefits of the proposed system as defined by FAS and its major food aid stakeholder groups in order to determine which alternative delivers the most value to the food aid process. The current system or status quo, albeit manual and decentralized, is included in this analysis in order to confirm the business need for an investment in a food aid information system.

The traditional means used to analyze alternatives and justify investments focuses primarily on quantitative financial benefits such as return on investment (ROI) and net present value (NPV). While financial analysis is important, it only provides a part of the overall picture. It does not offer any guidance on how to choose among alternatives that offer a variety of benefits or how to prioritize tangible and intangible benefits that stakeholders seek. Furthermore, traditional financial analysis is not inclusive and does not generate support for a selected approach among a diverse group of stakeholders—including program analysts, freight forwarders, private volunteer organizations (PVOs), OMB, and Congress to name a few—whose support is critical to the long-term sustainability of FAIS.

Accordingly, this analysis employs the Value Measuring Methodology (VMM) which defines, captures and measures value associated with IT investments unaccounted for in traditional quantitative financial benefits, to fully account for costs, and to identify and consider risk.[8] It was developed in response to the changing definition of value over the life cycle of an investment to include both tangible and intangible benefits that can be communicated to multiple stakeholders. VMM provides a flexible yet comprehensive decision-making framework for optimizing the trade-offs between FAIS' value, cost, and risk. More specifically, it offers a rigorous, holistic, and proven approach that:

- Defines and prioritizes value from multiple perspectives, facilitating cross-organizational communication and enhancing buy-in
- Enables an "apples-to-apples" comparison of the alternatives' ability to deliver the most critical tangible and intangible benefits for stakeholders
- Conducts a key portion of the analysis that must be summarized to create robust budget justification documents (i.e., the benefits analysis required for an OMB Exhibit 300)
- Provides documentation that provides an audit trail for decision making and assumptions regarding the anticipated benefits of FAIS

[8] More detailed information on VMM can be found on the Federal CIO Council's Web site, under the Best Practices link, at www.cio.gov.

- Serves as the foundation for the detailed planning (e.g., risk management, security, acquisition strategy, and enterprise architecture) that is required for capital investment decision making and consistent with OMB and USDA's CPIC guidance

Currently, FAS relies on several stand alone computer applications, spreadsheets, and legacy systems to support food aid activities. In fact, much of the information exchanged between food aid partners occurs through the manual exchange of paper-based communications versus electronic or automated communications.

In October of 2004, the Office of Management and Budget (OMB) funded a contract to study the food aid process and data interactions between all food aid partners within the U.S. Government. One of the objectives for this study was to develop an overview of the technical requirements of FAIS including three proposed alternative solutions. These alternatives are detailed in the final report "Interagency Protocols for Electronic Communications and Computer Application Requirements Analysis - U.S. Food Aid Resource Management System (USFARMS)" and the FAIS FY2008 Exhibit 300.

The three alternatives being considered are markedly different from the status quo and are differentiated mostly in terms of their software:

- **Status Quo:** The current management and administration of food aid is conducted using stand alone applications, (e.g. FADS, FARES, EC-Facts, etc.), individually developed spreadsheets, and paper-based communications.
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This benefits analysis was conducted from August 1, 2006 through November 30, 2006 to confirm the business need for FAIS and enable the evaluation and comparison of alternatives to ultimately recommend which, if any, alternative to pursue. In March 2007, after a separate requirements gathering process for FAIS had been underway for some time, FAS provided some revisions to the original benefits framework based on an updated understanding of the investment and what it could be expected to achieve. These revisions have been incorporated into this final version of the benefits analysis. It includes a description of the methodology that was used to develop and weight the benefits specific to FAIS as well as score the alternatives according to their ability to provide these benefits.

[9] "Inter-Agency Protocols for Electronic Communications and Computer Application Requirements Analysis Final Report (USFARMS)" Chapter XI: Deliverable Ten: Cost Estimate, p. 218, 30 June 2005

2 Methodology

According to the United States Department of Agriculture (USDA) Capital Planning and Investment Control (CPIC) Guide for Fiscal Year 2008, all IT investments need to be actively managed throughout their lifecycle to maximize the benefits from scarce resources and achieve the strategic goals of the USDA. As part of this management, a cost benefit analysis (CBA) is required to help decision makers evaluate alternatives in order to allocate resources as effectively as possible throughout the investment's lifecycle. As a critical piece of a CBA, a benefits analysis includes a comprehensive estimate of the projected benefits and costs for each alternative including tangible and intangible benefits (benefits which cannot be valued in dollars).

Every proposed IT system has identifiable benefits for both the agency and its stakeholders; benefits are the services, capabilities, and qualities of each alternative, and can be viewed as the return from an investment.

The benefits analysis methodology involved developing a robust and comprehensive value or benefits framework. This required a holistic identification and quantification of both financial and non-financial benefits to stakeholders in order to analyze and score the three alternatives presented in the USFARMS study. By incorporating FAS' pre-existing costs and risk matrix for each alternative into the analysis, the results are more credible and defensible.

The methodology required three steps. Step one was to develop a benefits framework. Step two was the analysis of the three FAIS Alternatives, including cost and risk. In step three, all of the analysis was synthesized and reported.

Step 1

The first step was to develop a benefits framework for FAIS that ensures alternatives can be evaluated using consistent criteria. The benefits framework for FAIS consists of a well-defined structure designed to capture the differences among alternatives in terms of their benefits. Benefits were considered from multiple perspectives to accurately reflect organizational priorities and business imperatives and to optimize trade-off decisions. In accordance with VMM, the value of FAIS was considered within five categories or from five different perspectives.

Within each benefit category, specific benefits desired from the investment were identified and defined during interviews with stakeholders. Because it is important to understand the relative importance of these benefits to each other, both the benefit categories and the specific benefits within each category were prioritized or weighted. Again, stakeholders were asked to provide their input in order to determine the relative weights for each benefit and benefit category.

Table 5 Benefit Categories and Descriptions

BENEFIT CATEGORIES	DEFINITIONS
DIRECT USER	▸ Benefits to FAIS customers
GOVERNMENT OPERATIONAL/FOUNDATIONAL	▸ Improvements to current Government food aid operations
STRATEGIC/POLITICAL	▸ Contributions to achieving USDA's and FAS' strategic goals and priorities
SOCIAL	▸ Benefits to non-direct users (US citizens or society as a whole)
GOVERNMENT FINANCIAL	▸ Financial benefits to FAS

Step 2

The second step was the analysis of the three FAIS Alternatives. Because the benefits framework designed in step one quantified the value of each benefit from multiple perspectives, the analysis of alternatives was able to quantitatively compare the differences between the three alternatives in terms of their benefits to all stakeholders.

The value scores for each alternative were computed, in part, by developing a normalized scale to quantitatively measure intangible benefits, as well as using ranges to define specific elements of performance. In this way, both financial and non-financial benefits to stakeholders were quantified for each alternative. In instances where data was not available, other appropriate sources of information to include subject matter experts (SMEs), historical data and analogous system requirements were leveraged.

FAS' pre-existing risk-adjusted life cycle cost estimates and risk factor matrix for FAIS were then introduced into the analysis. By including cost and risk, the risk adjusted value scores provide a more holistic understanding of the alternatives.

Step 3

The final step required synthesis and collective analysis of all the data developed in the previous steps. With all of the relevant information for each alternative consolidated, FAS decision makers charged with the development of FAIS can evaluate each of the alternatives using consistent and comprehensive criteria. Moreover, the results and methodology used for this analysis are credible, defensible and repeatable. As a result, current and future funding justifications as well as FAIS development and management decisions can rely on this analysis to identify and select the best value proposition for FAIS.

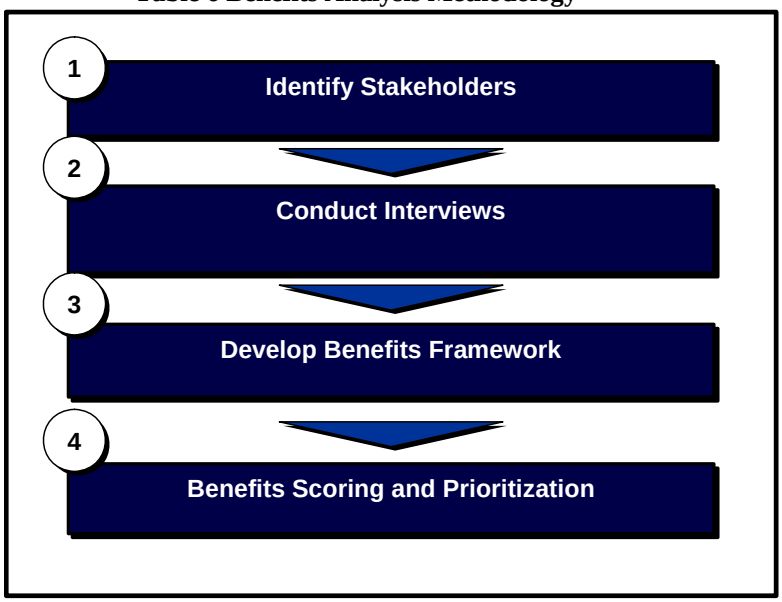
3 Benefits Analysis

According to the "Value Measuring Methodology – Highlights" manual released by the Federal CIO Council's Best Practices Committee:

> By defining the Value Structure [or benefits framework], managers gain a prioritized understanding of the needs of direct users, government stakeholders, and society. This task also requires the definition of metrics and targets critical to the comparison of alternatives and performance evaluation.[10]

Accordingly, the six steps used in this analysis provide FAS with a prioritized list of the desired benefits from FAIS, as defined by FAS management as well as major stakeholder groups. In addition, performance metrics and targets for each benefit were developed to enable an analysis of alternatives as well as enhance the evaluation of FAIS' performance.

Table 6 Benefits Analysis Methodology



3.1 Identify Stakeholders

FAS leadership identified nine stakeholders across four stakeholder groups to be interviewed as a representative sample of the population of FAIS customers. Each of the stakeholder group's function in the food aid process is critical and therefore valuable to the benefit analysis.

[10]"Value Measuring Methodology – Highlights" can be found at, www.cio.gov under the best practices link

Table 7 Benefits Analysis Stakeholders

STAKEHOLDER FUNCTION	STAKEHOLDER ORGANIZATION AND # OF REPRESENTATIVES	STAKEHOLDER ROLE
FINANCIAL/BUDGET	Program Administrative Division Representative X 3	Manage FAS budget, commodity pricing and contract expenditures. Specific responsibilities that require FAIS: ▸ Track costs of commodities and shipping ▸ Track and report cost effectiveness of food aid ▸ Provide funding
SYSTEM OWNER	Food Assistance Division Representative X 1	Manage food aid budget authority and solicit, evaluate and award proposals from Cooperating Sponsors (these are PVOs, NGOS, as well as other government organizations). Specific responsibilities that require FAIS: ▸ Budget request data repository ▸ Manage FAS metrics
PVOS (COOPERATING SPONSORS)	ACDI/VOCA Representative X 1 Counterpart International Representative X 1	Direct humanitarian and developmental projects overseas. Specific responsibilities that require FAIS: ▸ Application/proposal submission ▸ Track donated commodities ▸ Reporting project results (statistics)
OPERATIONS	Transportation & Logistics Branch Representative X 3	Execute freight and find the least-cost carrier. Specific responsibilities of the Operations Division that require FAIS: ▸ Foreign inland operations ▸ Track who, how and what ships food aid ▸ Payments of freight bills; reviews, approves and certifies invoices

3.2 Conduct Interviews

Interviews were conducted with the different stakeholder groups to solicit their input on the functionalities and the benefits that FAIS should provide specific to their roles. Each stakeholder group was asked to provide input into all five benefit categories, especially those most applicable to their domain expertise.

Table 8 Stakeholder Areas of Expertise

	Program Administration Division	Food Assistance Division	PVOs	Transportation and Logistics
DIRECT USER	4	4	4	4
GOVERNMENT OPERATIONAL/ FOUNDATIONAL	4	4	0	4
STRATEGIC/POLITICAL	4	4	0	4
SOCIAL	4	4	4	4
GOVERNMENT FINANCIAL	4	4	0	4

3.3 Develop Benefits Framework

Using input from these nine stakeholder representatives and four stakeholder groups, twelve benefits were identified for FAIS. These benefits were then named and described accurately to represent the input received. Performance metrics, performance targets, and scales were developed for each benefit to evaluate the three current alternatives in addition to evaluating future alternatives as well as system development, implementation, and performance.

Table 9 Illustrative VMM Benefit Structure

EXAMPLE

Concise, Illustrative Name	Robust Reliable Service	
Brief Description	**Service with:** ▸ Minimal or no disruptions ▸ Consistent service regardless of normal fluctuations in demand ▸ High fault tolerance with built-in redundancy	
Performance Metrics	**Target**	**Scale (0-100)**
Frequency of service disruptions	None	0 disruptions = 100 1 disruption = 95 4 disruptions = 60
Length of service disruptions	10 minutes	≥ 10 min. = 90 11 – 14 min. = 60
Is an executable Continuity of Operations plan in place (with a backup NOC) sufficient to pass annual certification?	Yes	No = 0 Yes = 100
Latency	75 milliseconds	

The performance metrics were developed based on analysis of stakeholder interviews as well as SME recommendations and best practices. To further define the performance metrics, targets were established using a normalized scale (0-100). Ultimately, the targets provide a measurable standard for FAIS to meet in order to deliver the benefits required by the stakeholders who will actually use the system.

The following table provides the names and description for each of the twelve benefits identified for FAIS as well as performance metrics, targets, and scales for each benefit. The benefits framework involved some iteration, as stakeholder inputs were gathered, consolidated, and reviewed and refined by FAS management. A final round of refinements were incorporated in March 2007, after the FAIS requirements effort had been underway for some time, and benefits were better understood.

Table 10 FAIS Benefits, Performance Metrics, Targets and Scales

1. DATA ACCURACY & RELIABILITY		
Brief Description	Data and transactions captured in FAIS are consistently correct, up-to-date and complete	
Performance Metrics	**Target**	**Scale**
% Manual Data Entry By Data Type	None	0% - 3% = 100 3.1% - 4.9% = 95 5.0% + = 60
Data Refresh Rate By Data Type	TBD By Data Type	The maximum refresh rate available by data type should be the goal for each data type
Up-time % - Hours Per Month Less Hours Down/ Hours Per Month	97%	100% - 97% = 100 96.9% - 90% = 90 89.1% - = 60
2. DATA ACCESSIBILITY		
Brief Description	FAIS user groups have access to the data and information they require to efficiently execute their roles in food aid programs and business processes	
Performance Metrics	**Target**	**Scale**
Single Sign-on Capability	Yes	No = 0 / Yes = 100

Ratio – User Groups With Access To FAIS/Total Number Of FAIS User Groups	All	All = 100 1 Missing = 90 2 Missing = 80
% Of Users With Log-on Privileges/Total Number Users With Log-on Requirements Per Quarter	100%	100% - 97% = 100 96.9% - 96.1% = 95 95.0% - = 60
# Of Functions Available By User Group	#	Data used to determine the demand
% Of External Users Who Use FAIS Regularly/External Users Authorized To Use FAIS	75%	100% - 75% = 100 74.9% - 70% = 95 69.9% - = 60
% Of Automated Functions By User Group/ Total Number Of Functions Available To User Group	50%	100% - 50% = 100 49.9% - 40% = 90 39.9% - = 60
# Of Users Per Function By User Group Per Quarter	#	Data used to determine the demand
# Of Uses Per Function By User Group Per Quarter	#	Data used to determine the demand
3. TIMELINESS ACCESSIBILITY		
Brief Description	Information and data on FAS' food aid programs is available within time frames required by users for decision-making	
Performance Metrics	**Target**	**Scale**
Number Of Days From Appropriation And/Or Funds Apportionment To Process & Approve Applications For Food Aid (Application Response Time – 2004 USDA Food Aid Programs PART Study, Program Performance metrics)	90	90 - 100 = 100 101 – 121 = 90 122 – 200 = 80
Mean Cycle Time for Electronic and automated Processes and Sub-processes	≥ 10% Annually	Requires a Baseline Analysis or Benchmark Analysis of Current Manual Processes and Sub-processes That Will Become Electronic to establish a meaningful scale
4. FACILITATES INFORMATION SHARING		
Brief Description	Information can be shared efficiently and effectively among and between user groups and Food Aid partners	
Performance Metrics	**Target**	**Scale**
Ratio – The # Of System Interfaces/# Of System Interfaces Required	100% (A plus cannot be integrated)	100% - 97% = 100 96.9% - 90% = 90 89.1% - = 60
% Of Systems That Allow For Data To Be Transferred To FAIS/ System Interfaces	100%	100% - 97% = 100 96.9% - 90% = 90 89.1% - = 60
# Of FAIS Automated Triggers Among User Groups	#	This data can be used to determine the demand
# Of FAIS Automated Triggers Between User Groups	#	This data can be used to determine the demand
5. ROBUST REPORTING CAPABILITIES		
Brief Description	FAIS provides decision-makers in all user groups with the data and functionality to meet reporting requirements	
Performance Metrics	**Target**	**Scale**
Ability To Create Customized Dashboards And Reports	Yes	No = 0 / Yes = 100
Ability To Analyze Data And Report Program Management Measures	Quarterly	Quarterly = 100 Biannual = 80 Annual = 60

Ability To Capture And Analyze Cooperating Sponsor Reporting IAW 7 C.F.R. 1499.7 [11]And 7 C.F.R. 1599.7[12]	Quarterly	Quarterly = 100 Biannual = 95 Annual = 70
6. ENHANCED CREDIBILITY/ TRUST WITH COOPERATING SPONSORS		
Brief Description	Cooperating Sponsors trust and confidence in the quality, accuracy and integrity of FAS' management of Food Aid Programs	
Performance Metrics	**Target**	**Scale**
Report The % Of Timely Execution Of Food Aid Annually	30 Days After FY	30 Days = 100 45 Days = 75 60 Days + = 60
Report The % Of Commodities Delivered Undamaged	Quarterly	Quarterly = 100 Biannual = 90 Annual = 60
Report The # Of Beneficiaries Per Dollar	Monthly	Monthly = 100 Quarterly = 90 Biannual = 75 Annual = 60
Report The # Of Beneficiaries Per Ton Of Commodity	Monthly	Monthly = 100 Quarterly = 90 Biannual = 75 Annual = 60
Report The # Of Beneficiaries Per Year	Yes	No = 0 / Yes = 100
Report The # Of Beneficiaries Per Focused Metric (Country, Region, Etc.)	Yes	No = 0 / Yes = 100
7. IMPROVED PERFORMANCE OF AGENCY MISSION & STRATEGIC GOALS		
Brief Description	FAIS helps FAS demonstrate its value to the Congress, the American taxpayer and its contribution to American foreign policy	
Performance Metrics	**Target**	**Scale**
Report The % Of Timely Execution Of Food Aid Annually	30 Days After FY	30 Days = 100 45 Days = 75 60 Days + = 60
Report The % Of Commodities Delivered Undamaged	Quarterly	Quarterly = 100 Biannual = 90 Annual = 60
Report The # Of Beneficiaries Per Dollar	Monthly	Monthly = 100 Quarterly = 90 Biannual = 75 Annual = 60
Report The # Of Beneficiaries Per Ton Of Commodity	Monthly	Monthly = 100 Quarterly = 90 Biannual = 75 Annual = 60
Report The # Of Beneficiaries Per Year	Yes	No = 0 / Yes = 100
Report The # Of Beneficiaries Per Focused Metric (Country, Region, Etc.)	Yes	No = 0 / Yes = 100
8. IMPROVED STEWARDSHIP OF PUBLIC FUNDS		
Brief Description	Secure the best performance and highest measure of accountability in the use of taxpayer funds	
Performance Metrics	**Target**	**Scale**
Report The % Of Timely Execution Of Food Aid Annually	30 Days After FY	30 Days = 100 45 Days = 75 60 Days + = 60

[11] Code of Federal Regulations, Title 7 – Agriculture, Reporting Requirements, Organizations must submit quarterly financial reports for all funds advanced and all interest earned

[12] Code of Federal Regulations, Title 7 – Agriculture, Chapter XV – Foreign Agricultural Services, Department of Agriculture, Part 1599 – McGovern Dole International Food for Education and Child Nutrition Program, Applicable procedures for procuring ocean transportation

Report The % Of Timely Execution Of Food Aid Annually	30 Days After FY	30 Days = 100 45 Days = 75 60 Days + = 60
Report The % Of Commodities Delivered Undamaged	Quarterly	Quarterly = 100 Biannual = 90 Annual = 60
Report The # Of Beneficiaries Per Dollar	Monthly	Monthly = 100 Quarterly = 90 Biannual = 75 Annual = 60
Report The # Of Beneficiaries Per Ton Of Commodity	Monthly	Monthly = 100 Quarterly = 90 Biannual = 75 Annual = 60
Report The # Of Beneficiaries Per Year	Yes	No = 0 / Yes = 100
Report The # Of Beneficiaries Per Focused Metric (Country, Region, Etc.)	Yes	No = 0 / Yes = 100
9. IMPROVED TRANSPARENCY INTO FOOD AID PROCESS		
Brief Description	FAIS will enable stakeholders involved in the food aid process to have greater visibility into the food aid process, as well as the status of food aid shipments and outcomes/results.	
Performance Metrics	**Target**	**Scale**
Report the Food Aid Effectiveness Ratio - Proportion Of Food Aid Out Of Total Food Aid That Reduces The Food Distribution Gap In the world's Most Food Insecure Countries[13]	Yes	No = 0 / Yes = 100
Report The % Of Commodities Delivered Undamaged	Quarterly	Quarterly = 100 Biannual = 90 Annual = 60
Report The # Of Beneficiaries Per Dollar	Monthly	Monthly = 100 Quarterly = 90 Biannual = 75 Annual = 60
Report The # Of Beneficiaries Per Ton Of Commodity	Monthly	Monthly = 100 Quarterly = 90 Biannual = 75 Annual = 60
Report The # Of Beneficiaries Per Year	Yes	No = 0 / Yes = 100
Report The # Of Beneficiaries Per Focused Metric (Country, Region, Etc.)	Yes	No = 0 / Yes = 100
Ratio – User Groups With Access To FAIS/Total Number Of FAIS User Groups	All	All = 100 1 Missing = 90 2 Missing = 80
% Of Users With Log-on Privileges/Total Number Users With Log-on Requirements Per Quarter	100%	100% - 97% = 100 96.9% - 96.1% = 95 95.0% - = 60
10. COST SAVINGS		
Brief Description	Eliminating or reducing costs that are expected to deliver or support a current capability	
Performance Metrics	**Target**	**Scale**
Ratio of Cost Savings to Investment	100%	100% - 97% = 100 96.9% - 90% = 90 89.1% - = 60

[13] FAS and USDA/ERS have developed an annual performance measure utilizing the long-standing ERS Food Security Assessment (FSA) model, which estimates the food distribution gap for approximately 70 of the world's most food insecure countries. ERS has calculated the contribution of USDA's food aid programs in reducing the gap (for the most food insecure countries). This measure is expressed as a food aid effectiveness ratio. Source: USDA Program Assessment Rating Tool (PART)

11. COST AVOIDANCE		
Brief Description	Eliminating or reducing costs that could reasonably be expected in the future to deliver or support an additional capability	
Performance Metrics	**Target**	**Scale**
Ratio of Cost Avoidance to Investment	100%	100% - 97% = 100 96.9% - 90% = 90 89.1% - = 60
12. FUNDS CONTROL		
Brief Description	More efficient management of the funding sources to include CCC Apportionments, USDA/FAS Appropriations, and MARAD Reimbursements to finance the four Food Aid programs	
Performance Metrics	**Target**	**Scale**
Report The # Of Fiscal Year Dollars That Are Not Obligated At Year End And Therefore Lost	Yes	No = 0 / Yes = 100
Report The # Of Beneficiaries Per Dollar	Yes	No = 0 / Yes = 100
Report The Current Balance Of CCC Apportionments For FY By Transportation, Administration, And Commodities	Weekly	No = 0 / Yes = 100
Report The Estimated Food Aid Costs/Actual Costs Of Food Aid By Program	Monthly	No = 0 / Yes = 100
Report The % Of Forecasted MARAD Reimbursements Per FY/ Actual FY MARAD Reimbursements	Yes	No = 0 / Yes = 100

3.4 Benefits Scoring and Prioritization

Through a second round of meetings, stakeholders were asked to score the value of each benefit category as well as each benefit as it relates to their respective roles in the food aid process. The result was a prioritized list of the twelve benefits. Subsequently these results were reviewed with FAS management and refined; as with the framework itself, final adjustments to the weightings were incorporated in March 2007 based on FAS' more detailed and up-to-date understanding of the system requirements. As FAIS matures through its lifecycle, these benefits and rankings should be reexamined to ensure they still accurately capture and prioritize the most valuable benefits.

The results reveal a consistent emphasis on the need to streamline and maximize efficiency throughout the food aid process. The benefit that received the greatest weight, Funds Control, reflects FAS' need to ensure more efficient management of its funding sources, to include CCC[14] Apportionments, USDA/FAS Appropriations, and MARAD[15] Reimbursements to finance the four Food Aid programs.

In addition to supporting Funds Control, FAS and its stakeholders clearly see a compelling need to improve the overall food aid process so that more food aid can be delivered more quickly using the same or fewer resources. This is confirmed by three of the four next most important benefits which each require an enhanced, networked system that promotes greater productivity:

1. Data Accuracy and Reliability – Data and transactions captured in FAIS are consistently correct, up-to-date and complete

[14] Commodity Credit Corporation (CCC)
[15] United States Department of Transportation Maritime Administration

2. Improved Stewardship of Public Funds – Secure the best performance and highest measure of accountability in the use of taxpayer funds
3. Data Accessibility – FAIS user groups have access to the data and information they require to efficiently execute their roles in food aid programs and business processes.
4. Timeliness – Information and data on FAS' food aid programs is available within time frames required by users for decision-making.

Table 11 Benefits Framework

BENEFIT CATEGORIES & BENEFITS	Category Weights	Benefit Weights	Overall Weights
DIRECT USER	**35%**		
Data Accuracy and Reliability		37%	13%
Data Accessibility		32%	11%
Timeliness		32%	11%
GOVERNMENT OPERATIONAL AND FOUNDATIONAL	**10%**		
Facilitates Information Sharing		46%	5%
Robust Reporting Capabilities		54%	5%
STRATEGIC/POLITICAL	**11%**		
Enhanced Credibility/ Trust With Cooperating Sponsors		44%	5%
Improved Performance Of Agency Mission & Strategic Goals		56%	6%
SOCIAL	**17%**		
Improved Stewardship of Public Funds		68%	12%
Improved Transparency into Food Aid Process		32%	5%
GOVERNMENT FINANCIAL	**27%**		
Cost Savings		33%	9%
Cost Avoidance		17%	5%
Funds Control		50%	14%

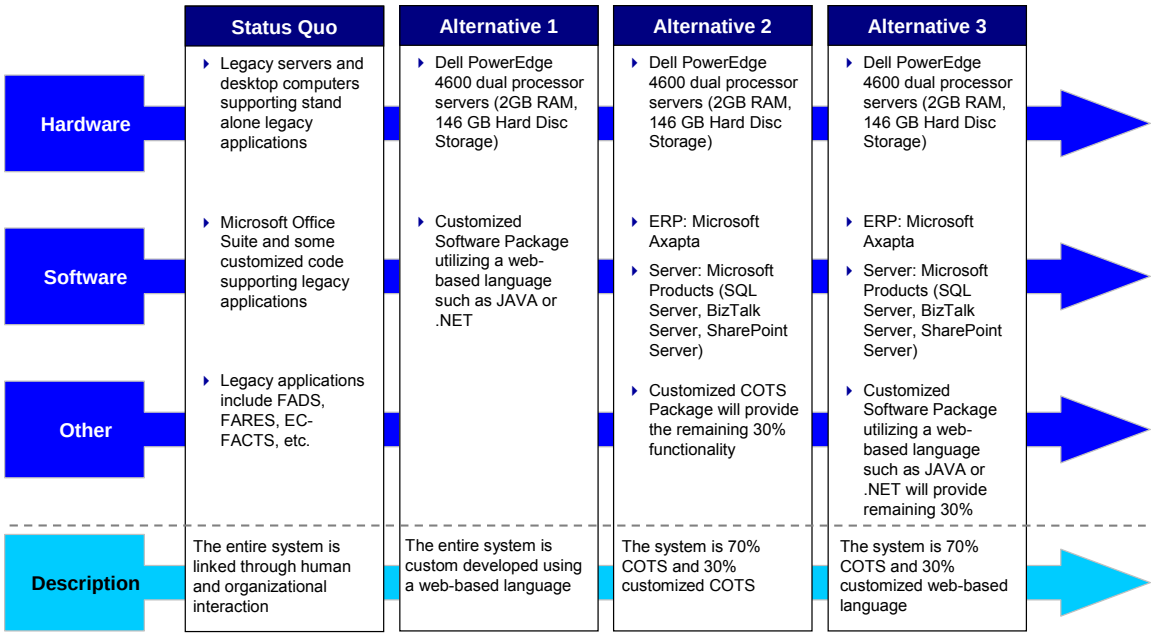
4 Alternatives Analysis

An analysis of alternatives is ultimately a decision support tool that aids in the evaluation and selection of the best value alternative for an investment. Decisions based on thorough alternatives analysis provide credible budget justifications as well as identify critical business and mission needs. For FAIS, the current alternatives analysis seeks to:

- Confirm the business need for an integrated, web-based information system vice investing in the status quo
- Identify which of the existing, high-level technical design alternatives is most likely to maximize value for its users

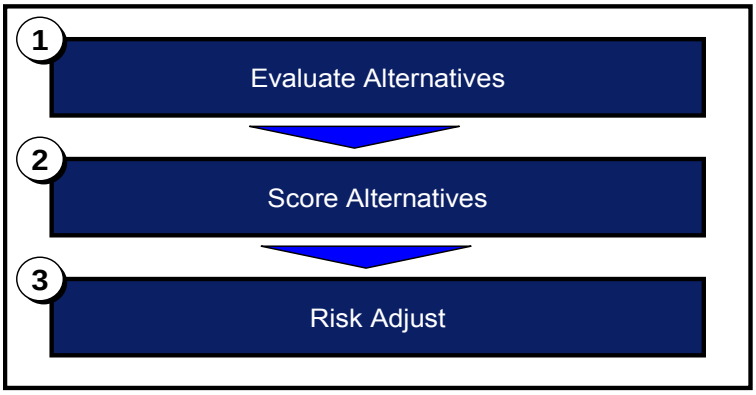
The three alternatives being considered are markedly different from the status quo and are primarily differentiated in terms of software.

Figure 1 Status Quo and Alternatives Descriptions



A three step process was used to develop the data for the alternatives analysis so that FAS decision makers can evaluate the current alternatives holistically – accounting for value, cost and risk.

Table 12 Alternatives Analysis Methodology



4.1 Evaluate Alternatives

A crucial part of the benefits framework development was the establishment of performance targets and scales for each performance metric associated with a benefit (see Section 3.3). These targets and scales provide consistent criteria to evaluate the status quo as well as each of the three high-level technical alternatives. Since FAIS is still in the early developmental stage, specific requirements for each alternative had not yet been defined when the benefits analysis was undertaken. As a result, each benefit's performance scale converted to a more generalized evaluation scale.

Table 13 Performance Metric Evaluation Scale

SCALE	DESCRIPTION	SCORE
LOW	▸ The alternative will most likely score 0-5% on the performance scale ▸ Minimal or no impact on the overall or marginal success of the investment	**5%**
LOW-MEDIUM	▸ The alternative will most likely score 6-27.5% on the performance scale ▸ Minor to somewhat moderate impact on the overall or marginal success of the investment	**27.5%**
MEDIUM	▸ The alternative will most likely score 28- 50% on the performance scale ▸ Moderate impact on the overall or marginal success of the investment	**50%**
MEDIUM-HIGH	▸ The alternative will most likely score 51-72.5% on the performance scale ▸ Major impact on the overall or marginal success of the investment	**72.5%**
HIGH	▸ The alternative will most likely score 73-95% on the performance scale ▸ Critical impact on the overall or marginal success of the investment	**95%**

Technical SMEs were consulted along with other relevant source documentation to include the FY 2008 FAIS Exhibit 300 submission and the 2004 USDA Food Aid Programs' Program Assessment Rating Tool (PART) report to evaluate each alternative comprehensively. This analysis considered value over the life of the investment.[16] For example, an alternative that provides medium value for the life of FAIS was considered more beneficial than one that provides high value initially but will most likely provide low value thereafter.

The following graphic shows the results of this analysis. The justification and explanation can be found in Appendix 6.4.

[16] The current lifecycle for FAIS is eight years according to the FY 2008 FAIS Exhibit 300 Summary of Spending Table

Table 14 Evaluation of Status Quo and Alternatives

	STATUS QUO	ALT 1	ALT 2	ALT 3
DIRECT USER				
Data Accuracy & Reliability	Low	Medium	High	Medium-High
Data Accessibility	Low	High	Medium	Medium-High
Timeliness	Low	Low-Medium	High	Medium-High
GOVERNMENT OPERATIONAL/FOUNDATIONAL				
Information Sharing	Low	Medium	High	Medium-High
Robust Reporting Capabilities	Low	Medium	Medium-High	Medium-High
STRATEGIC POLITICAL				
Credibility/Trust	Low	High	Medium	Medium-High
Mission & Strategic Goals	Low	High	Medium	Medium-High
SOCIAL				
Educate the Public	Low	High	Medium	Medium-High
Reduce Hunger	Low	High	Medium	Medium-High
GOVERNMENT FINANCIAL				
Cost Savings	Low	Low	Low-Medium	Low-Medium
Cost Avoidance	Low	Low	Low-Medium	Low-Medium
Program Budgeting	Low	High	High	High

4.2 Score Alternatives

In order to score the alternatives, the overall weights from the benefits matrix (Table 13) were used to calculate the value scores for each alternative. Specifically, the score for a given alternative relative to a particular benefit (Table 15) was multiplied by the overall weight for that particular benefit to produce a value score for that alternative against that particular benefit. Then sum of the benefit value score was taken to produce the overall value score for an alternative. Since the sum of the overall weights column in the benefits matrix totals one hundred percent, the highest an alternative could score was 100 and the lowest was 0.

Below is an illustrative example of the value score calculation for Alternative 1 against the first Direct User benefit in the benefits framework, Data Accuracy & Reliability.

Table 15 Value Score Calculation Example

STEP	ACTIVITY	RESULT
A	Benefit Category Weight (Table 11)	35%
B	Benefit Measure Weight (Table 11)	37%
Step 1	Multiply the Benefit Category Factory Weight (35%) by the Benefit Measure Weight (37%) to develop the Overall Weight	
C	Overall Weight (A X B = C)	13%
D	Evaluation Score (Table 14)	50%
Step 2	Multiply the Data Accuracy & Reliability Overall Weight (13%) by the Evaluation Score to determine the Benefit Value Score (50%)	
E	Benefit Value Score (C X D = E)	6.4
Step 3	Steps 1 through 3 are repeated for the 11 remaining benefits and then added together to calculate Alternative 1's overall value score	
F	Benefit Value Score Total for remaining Benefits in Alternative 1 (Step 3)	58.7
G	Alternative 1 Value Score (E + F = G)	65.1

Value scores offer decision makers a quantifiable means to determine the potential value an alternative will deliver when implemented. They represent how each alternative performs against a specific set of measures. Therefore, an alternative that has a value score of 80 will be preferred (in terms of value only) over another alternative with a value score of 70.

Table 16 FAIS Value Scores

	STATUS QUO	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
VALUE SCORE	23.79	65.11	67.02	69.43

The value score quantifies how alternatives will most likely perform against a specific set of measures. They are used to facilitate an "apples-to-apples" comparison of the value delivered by multiple alternatives for a single initiative. Alternative 3 has a value score of 69.8 (out of 100), and is preferred over the Status Quo with a value score of 23.94 as well as the other alternatives, if no other factors are considered.

4.3 Risk Adjust

Risk impacts both the value and cost of an investment; specifically, it decreases the value (i.e., degrades performance) and increases the cost. Using VMM, this risk can be quantified by comparing the expected cost to the risk adjusted cost for a specific investment. More specifically, the risk score was developed for these alternatives by dividing the difference between the expected cost for an alternative and the risk adjusted cost by the expected cost of that alternative.[17]

Table 17 FAIS Risk Scores

	STATUS QUO	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
EXPECTED COST	**$2,401,000**	**$16,867,503**	**$14,816,742**	**$13,536,780**
RISK ADJUSTED COST	**$13,516,175**	**$20,070,335**	**$17,591,574**	**$16,100,126**
DELTA[18]	**$11,115,175**	**$3,202,832**	**$2,774,832**	**$2,563,347**
RISK SCORE[19]	**462.94%**	**18.99%**	**18.73%**	**18.94%**

As mentioned above, risk negatively impacts value or performance. For example, if Alternative 1 were chosen, FAS should plan for a potential decrease in value of 18.99% and a potential $3.2M increase in cost.

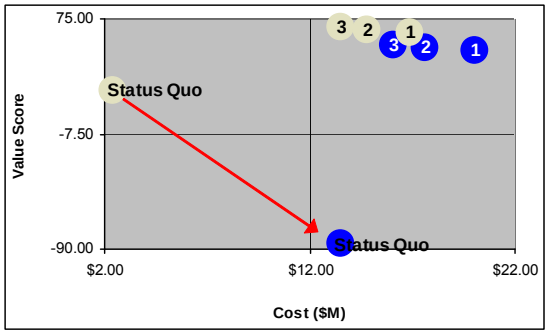
In fact, the status quo actually produces a negative value score once risk is considered. This underscores the need for enhanced efficiencies throughout the food aid process and the very large risk exposure that the status quo presents for FAS in achieving it performance goals.

Figure 2 illustrates the impact of risk on the FAIS alternatives. The grey points on the graph indicate program cost and value before risk is considered. Conversely, the blue points factor in

[17] Lifecycle costs taken from USFARMS
[18] The Delta value in the Risk Scores Table is the risk cost, which is the cost of undesirable outcomes, a financial value accounting for any adverse affects that jeopardize the success of the particular investment
[19] Risk costs were figures pulled from the FY 2008 Exhibit 300 used to calculate the risk score. The risk score was calculated using the formula: RISK COSTS/(RISK ADJUSTED COSTS – RISK COSTS). Risk scores are calculated to represent a percentage of overall performance slippage or cost increase.

risk to program cost and value, which causes all alternatives to move down and to the right (i.e., in a southeastern direction in the graphics) indicating a decrease in value and an increase in cost.

Figure 2 Comparative Analysis of Alternatives



The status quo does not offer any value once risk and cost are factored in . . .

. . . however, the three alternatives for FAIS do offer FAS opportunities to achieve the value that food aid stakeholders require

Quantifying the Financial Benefits, ROI, NPV and Payback Period for FAIS

As planning for FAIS matures, and more detailed cost estimates for the baseline environment as well as the alternatives are developed, FAS will want to capture and calculate the financial benefits for FAIS. Currently, FAS lacks sufficiently detailed and transparent cost data – for the baseline as well as the alternatives – to calculate financial benefits.

The VMM-based framework in this analysis can be used to incorporate financial benefits. The identification of financial benefits should begin by developing a detailed cost estimate of the status quo or baseline environment, including projections into the out-years. In addition, FAS expects to develop complete and comprehensive cost estimates of the alternatives. The USDA CPIC Guide for FY 2008 provides guidance on creating a cost element structure (CES) which is essential to developing a comprehensive cost baseline.

As the FAIS investment matures and/or after every major investment decision, the baseline must be updated so that current and future alternatives can be considered. With the outputs from this type of analysis, a meaningful and defensible ROI, NPV, and payback period can be established and maintained for FAIS or any investment.

5 Reporting

FAS has identified a pressing business need to replace its current portfolio of stand alone computer applications, spreadsheets, and legacy systems supporting the food aid activities. Based on the cost, risk and benefit evidence available at this early stage of planning, this analysis appears to confirm that need, and the fact that the desired benefits are a high priority among major food aid stakeholders.

The vision for FAIS is to provide an integrated, web-based system able to handle all food aid transactions within FAS and between its major stakeholders, including those outside the U.S. government. In order to make this vision a reality, FAS has identified three high-level alternatives and evaluated them using a flexible yet comprehensive decision-making framework for optimizing the trade-offs between value, cost, and risk.

Table 18 Summary Findings

	ALT 1	ALT 2	ALT 3
VALUE SCORE	65.11	67.02	69.43
RISK SCORE	18.99%	18.73%	18.94%
RISK ADJUSTED VALUE SCORE	52.75	54.47	56.28
TOTAL INVESTMENT COST	$16,867,503	$14,816,742	$13,536,780
RISK ADJUSTED TOTAL INVESTMENT	$20,070,335	$17,591,574	$16,100,126
RISK ADJUSTED NPV (COST ONLY)	$15,693,210	$13,744,006	$12,596,361
DESIGN & BUILD DURATION (MONTHS)*	22.71	19.15	18.68

**Source: USFARMS*

In interpreting the results of this analysis, there are two key points that must be emphasized:

- This analysis assumes that a COTS package exists that can provide at least 70% of the requirements for FAIS.
- The requirements analysis currently underway will determine if a COTS package is available. Based on the results of the requirements analysis, FAS expects to define the alternatives at a more granular level, and update the alternatives analysis.

Regardless of the technical solution that is ultimately selected, FAIS should aim to maximize the benefits that have been identified by FAS and its major stakeholder groups.

At this point, the results of this analysis point towards Alternative 3 which is the lowest cost solution. *However, a clear and obvious alternative is not evident*. The risk scores are all within hundredths of a percent, the largest delta between value scores is about 3 points, and the difference in cost is only about $4M. At this early stage of planning, there are very few discriminating factors among the high-level alternatives to drive a strong case for any one of them.

Nevertheless, the methodology and process used to conduct this benefits analysis were selected because they are credible and most importantly repeatable. As the requirements analysis

advances and more detail is understood about potential alternatives, this analysis can be updated to help select the alternative that provides the optimal combination of value, cost and risk. Further, as FAIS matures this analysis can be revisited to assist FAS leadership with making effective business decisions throughout the investment's lifecycle. In the meantime, the benefits, performance metrics, and targets identified here should help guide the requirements analysis – ensuring that the benefits identified with the participation of stakeholders are incorporated from the beginning.

6 Appendices

6.1 Definitions/Terms

Benefit *– A term used to indicate an advantage, profit, or gain attained by an individual or organization*

Cost *– A term used to indicate the expenditure of funds for a particular investment alternative over an expected period of time. Cost may include direct and indirect initial costs plus any periodic or continuing costs for operation and maintenance*

COTS - *systems which is manufactured commercially, and then may be tailored for specific uses; COTS systems are in contrast to systems that are produced entirely and uniquely for the specific application*

Life Cycle Costs *– The overall estimated cost for a particular program alternative over the time period corresponding to the life of the program, including direct and indirect initial costs plus any periodic or continuing costs for operation and maintenance*

Non-Financial Benefits - *Are those benefits that should not be monetized (translated into dollar amounts). The Alternatives Analysis should also indicate the quantitative benefits of the alternatives and indicate the justification for why the capital investment was chosen*

Performance Metrics – Means for quantifying how well an initiative is delivering the anticipated value; measurement of an initiative's effectiveness

Performance Targets – The intended level of performance that is to be achieved by the initiative within a specified period of time

Risk – A term used to define a class of factors which have a measurable probability of occurring during an investment's life cycle, and have an associated cost or affect on the investment's output or outcome (typically an adverse effect that jeopardizes the success of an investment)

Risk Score – A number representative of the risk impacting the value and cost of an alternative that is calculated by comparing expected cost and expected value to risk-adjusted cost and risk-adjusted value for a specific alternative. A risk score provides decision-makers with a means of comparing the degree of negative impact to value and cost

Scale – Provides a method for integrating objective and subjective measures of value into a single decision metric. The scale used is not important; what is important is that the scale remains consistent

Value Score – aggregate of all "expected/anticipated" value received from an initiative for each factor according to previously defined weights, it is used to determine the potential value an alternative will deliver when implemented

6.2 Benefit Descriptions

BENEFIT	DESCRIPTION
Data Accuracy & Reliability	*Data and transactions captured in FAIS are consistently correct, up-to-date and complete*
Data Accessibility	*FAIS user groups have access to the data and information they require to efficiently execute their roles in food aid programs and business processes*
Timeliness	*Information and data on FAS' food aid programs is available within time frames required by users for decision-making*
Facilitates Information Sharing	*Information can be shared efficiently and effectively among and between user groups and Food Aid partners*
Robust Reporting Capabilities	*FAIS provides decision-makers in all user groups with the data and functionality to meet reporting requirements*
Enhanced Credibility/Trust With Cooperating Sponsors	*Cooperating Sponsors trust and confidence in the quality, accuracy and integrity of FAS' management of Food Aid Programs*
Improved Performance of Agency Mission & Strategic Goals	*FAIS helps FAS demonstrate its value to the Congress, the American taxpayer and its contribution to American foreign policy*
Improved Transparency into Food Aid Process	*FAIS will enable stakeholders involved in the food aid process to have greater visibility into the food aid process, as well as the status of food aid shipments and outcomes/results*
Improved Stewardship of Public Funds	*Secure the best performance and highest measure of accountability in the use of taxpayer funds*
Cost Savings	*Eliminating or reducing costs that are expected to deliver or support a current capability*
Cost Avoidance	*Eliminating or reducing costs that could reasonably be expected in the future to deliver or support an additional capability*
Funds Control	*More efficient management of the funding sources to include CCC Apportionments, USDA/FAS Appropriations, and MARAD Reimbursements to finance the four Food Aid programs*

6.3 Assumptions and Constraints

ASSUMPTIONS & CONSTRAINTS			
	ASSUMPTION/ CONSTRAINT	**EXPLANATION**	**IMPLICATION(S)**
REGULATORY	Merchant Marine Act of 1936	Stipulates that at least 75 percent of the annual tonnage of all food aid programs be shipped on U.S. flag vessels via the lowest landed cost bidding process	▸ Increased freight expenses ▸ Shipment timeliness ▸ Increased logistical effort
	Paperwork Reduction Act of 1995	Require Federal agencies to become more responsible and publicly accountable for reducing the burden of Federal paperwork on the public	▸ Necessitates internal business process reform and program and work execution improvements ▸ FAIS expedited timeline
	Agricultural Trade Development and Assistance Act of 1954	Numerous types of food aid programs are authorized and stipulations are outlined	▸ FAIS must operate within rules and regulations defined within the act
	Reform of Food Aid Programs	Asks agencies to improve the efficiency and transparency with which the U.S. Government manages and implements food aid programs	▸ Necessitates internal business process reform and program and work execution improvements ▸ FAIS expedited timeline
	The President's Management Agenda of 2002 (Expanded Electronic Government)	Asks agencies to improve the communication among computer applications maintained with which the U.S. Government manages and implements food aid programs	▸ Necessitates internal business process reform and program and work execution improvements ▸ FAIS expedited timeline
	Agricultural Act of 1949, Section 416(b)	Authorizes the donation of CCC-owned commodities in surplus of domestic program requirements to carry out programs of assistance in developing and friendly countries	▸ Commodities are donated through agreements with foreign governments, private volunteer organizations, cooperatives, and the World Food Program ▸ Requires FAIS to track commodities and agreements to abide by the Agricultural Act of 1949
	Section 508	Accessibility standard that federal agencies must ensure that this technology is accessible to employees and the public to the extent it does not pose an "undue burden"	▸ FAIS should comply with Section 508 standards
	Animal and Plant Health inspection Service (APHIS) – Phytosanitary Certification	Official document issued by an exporting country, which a certifies that the phytosanitary status of a shipment meets the phytosanitary regulations of the importing country	▸ All applicable FAS commodities must be certified ▸ APHIS requirements are incorporated into FAIS ▸ Timeliness of FAIS will be dependent upon certification schedule
TECHNICAL	PEB Database	Program Evaluation Database	▸ FAIS should include all of the capabilities of the PEB database
	Food Aid Request Entry System (FARES)	Online interface created to facilitate the call forward of food aid commodities	▸ The system should follow the USDA Web Style Guide on all online user interfaces
	PowerTrack	PowerTrack is a US Banking System of Payments that tracks electronic billing	▸ FAIS will need to interact with PowerTrack
	e-grants.gov	e-grants.gov allows organizations to electronically find and apply for Federal grants	▸ FAIS must integrate the proposal entry form with e-grants.gov
	USDA Web Style Guide	Provides standards for the look and feel of USDA Web sites and offers detailed information such as color palette options, font sizes, image specifications and design templates for a variety of Web pages	▸ The system should follow the USDA Web Style Guide on all online user interfaces
	EC-FACTS	Listed in USFARMS Requirements Analysis	▸ FAIS should include all of the current freight booking capabilities of EC-FACTS
SECURITY	Document and data privacy	Information on FAIS must be protected on a need to know basis	▸ FAIS should meet all security requirements
	e-Authorization	Listed in USFARMS Requirements Analysis	▸ FAIS should conform to all departmental e-Authorization security policies