



## **U.S. Department of Education**

Investment Acquisition Management Team (IAMT)

# Information Technology Operational Analysis Guide



# Operational Analysis Guide

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## LIST OF ATTACHMENTS

**Attachment 1 - Operational Analysis Report Template**

**Attachment 2 - Customer Survey Checklist Template**



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### DOCUMENT VERSION HISTORY

Version	Date	Update By:	Changes
Version 0.1	February, 2010	eGlobalTech	1 <sup>st</sup> Review Draft
Version 0.2	October, 2010	eGlobalTech	2 <sup>nd</sup> Review Draft
Version 0.3	December, 2010	eGlobalTech	3rd Review Draft Amended to make the PM's OA Plan the primary source for the OA Report Added "Increasing O&M Costs" to examples of causes for gaps in table 3
Version 0.3	February, 2011	eGlobalTech	4th Review Draft Amended to remove the PM's OA Plan and move necessary information into the OA Report
Version 0.4	April 5, 2011	eGlobalTech	Incorporated comments from COR



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### 1 INTRODUCTION & PURPOSE

This Operational Analysis (OA) Guide provides *Segment Owners*<sup>1</sup> and project managers (PMs) of major information technology investments<sup>2</sup> with a functional methodology for performing an Operational Analysis. It also provides a description of what information and data elements should be captured and assessed before, during, and after the analysis. This guide is based on Federal guidance, industry best practices, and Department of Education information resource management (IRM) protocols.

While the majority of investment control activities center on meeting the project's cost and schedule goals during development, the development stage represents only a fraction of the project's total life-cycle duration and costs. Ownership costs incurred during the remainder of the investment's useful life can easily consume as much as 80 percent of total life-cycle costs.<sup>3</sup> The purpose of the OA is to monitor and evaluate investments in the mixed or steady-state phase to ensure that they are continuing to meet cost, risk and value expectations. The OA and its reporting structure are designed to definitively assess and articulate whether an investment is meeting its prescribed objectives, be they operational, organizational, business or technical. The ultimate goal is efficiency and effectiveness, to make the right investment in the right way.

This guide is designed to provide users with a clear reference for planning, conducting, and using an operational analysis.

- **Section 1 – *Introduction and Purpose***: describes the OA, its inherent value, relevant OMB guidance, and subsequent responsibilities.
- **Section 2 – *OA Planning***: discusses the procedural elements that should be completed or in progress prior to conducting the analysis.
- **Section 3 – *Documentation and Reporting***: gives a description of source documents (inputs & outputs and format & structure) required for conducting the OA, and proposed resulting documents which should exist upon the conclusion of the analysis.
- **Section 4 – *Methodology***: describes the requisite OA data elements and their sources, how to capture these elements, how these elements should be used to make a definitive assessment, and a structure for creating a repeatable process.

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<sup>1</sup> The term *Segment Owner* is used at the Department of Education to describe the senior stakeholder and advocate for a particular line of business (i.e. "segment") of the Department. The Department's enterprise architecture presently consists of 13 segments (for example, grants, loans, research, etc.), each with an "owner" designated by the Department's Planning and Investment Review Working Group to articulate the needs, goals, objectives, and plans of a particular segment. For more on Segment Owners consult page 12 of the Department of Education IT Investment Management Process Guide, December 2009 on ConnectEd.

<sup>2</sup> A "major information technology investment" is defined on page 18 of the above-mentioned IT Investment Management Process Guide.

<sup>3</sup> OMB Capital Programming Guide Version 2.0, Supplement to OMB Circular A-11, Part 3: Planning, Budgeting, and Acquisition of Capital Assets, June 2006. See p.53: <http://www.whitehouse.gov/>



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- **Section 5 – Results:** outlines how the OA is used in the discovery of investment-specific performance gaps and as a mechanism for corrective action.
- **Section 6 – Recommendations:** provides information on how the OA team<sup>4</sup> should structure its findings to develop solutions for minimizing or eliminating gaps.
- **Section 7 – Plan of Action and Milestones (POAM):** provides information for the OA team and its analyst to work with the Segment Owner and/or PM to develop a plan moving forward that will lead to compliance, program fulfillment, and customer satisfaction.

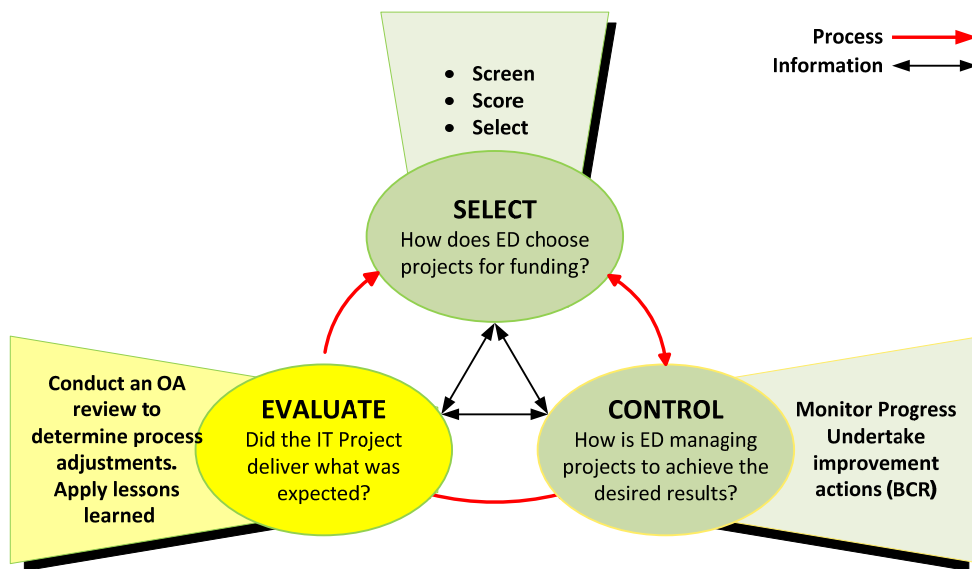
There are two templates that should be used in performing and evaluating an OA.

- Attachment 1: Operational Analysis Report Template
- Attachment 2: Customer Survey Checklist

Each OA should result in an Operational Analysis Report.

Figure 1 below illustrates the OA’s place in the ITIM schema.

Figure 1: OA Place in ITIM Schema



<sup>4</sup> See Appendix A for further details



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### 1.1 OPERATIONAL ANALYSIS (OA) OVERVIEW

An OA is a method of examining the current performance of a steady-state investment and measuring that performance against an established set of cost, risk and performance parameters. An OA should trigger considerations of how objectives could be better met, how costs could be saved, and whether in fact certain functions should continue to be performed. An OA should demonstrate that you have thoroughly examined the need for the investment, the investment's performance, and alternative methods of achieving the same results.

OA findings will locate gaps in performance and provide insight into their causes. This analysis helps the agency to compare one investment against another, to promote outcomes or realize efficiencies that help to better support ED's mission. The findings will reveal whether the investment continues to achieve agency goals or should be replaced.

The OA is a key practice within the Government Accountability Office's (GAO) Information Technology Investment Management (ITIM) Stage 2 maturity model<sup>5</sup>, a model adopted and followed by ED.

### 1.2 VALUE TO THE INVESTMENT AND MISSION

The OA is designed to measure the effectiveness and efficiency of steady-state (operations and maintenance (O&M) life-cycle phase investments. The analysis will either re-validate the cost and performance indicators of the investment, or show a need to find better ways for the asset to meet its life-cycle cost and performance goals. Operational performance for a given asset may be indicated by factors such as:

- effectiveness
- reliability
- productivity
- maintainability
- availability
- security
- energy efficiency (*Note that the December 2009 OMB passback requires agencies to plan to reduce IT energy consumption by a minimum of 30% by 2012.*)

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<sup>5</sup> See GAO ITIM Guidance at: <http://www.gao.gov/>



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### 1.3 OFFICE OF MANAGEMENT AND BUDGET GUIDANCE

An OA is the Office of Management and Budget (OMB) preferred method of measuring performance of investments in the steady-state (O&M) life-cycle phase. This Control Phase<sup>6</sup> process differs from other methods as it takes into account the stability of cost, schedule, performance and risk of operational investments. In accordance with Circular A-11<sup>7</sup>, OMB has determined that federal operational analyses should focus on four core measurement areas:

- Customer satisfaction
- Strategic and business results
- Financial performance
- Innovation

*“For capital investments, the greatest level of operational efficiency occurs at the asset or project level. To improve the accuracy and efficiency of operational data collection, whenever possible, an agency should employ an efficient way of collecting and analyzing operating cost and performance data.” OMB Circular A-123<sup>8</sup>*

OMB requires agencies to perform an OA annually on the steady-state components of each major IT investment. The results of the most recent OA are used to inform the annual IT portfolio Select process<sup>9</sup>, and influence the content of the investment’s business case and subsequent reporting to OMB in the Exhibit 300<sup>10</sup>.

OMB addresses the value and use of OA in Part 3 of the Capital Programming Guide.<sup>11</sup> OMB advises agencies to establish a system to measure the performance and cost of an operational asset against the baseline established in the planning phase. This information will allow agency resource managers to optimize the performance of capital assets. Additionally, an OA may indicate the need for a new capital asset.

### 1.4 RESPONSIBILITIES

The PM is responsible for ensuring that the OA is conducted. Upon completion, the PM is to place a copy of the OA Report in the business case to which it pertains. The PM may consult OCIO’s Investment and Acquisition Management Team (IAMT)<sup>12</sup> concerning composing an OA team that ensures an objective analysis. The PM will work with OCIO’s Enterprise Architecture Program Office (EAPO) to ensure that the investment is assigned the proper Enterprise

<sup>6</sup> The Control Phase of the IT investment management process is explained on pp. 26-32 of the Department of Education IT Investment Management Process Guide, December 2009.

<sup>7</sup> OMB Circular A-11, Section 300, page 20. See: <http://www.whitehouse.gov/>

<sup>8</sup> OMB Circular A-123 See: <http://www.whitehouse.gov/>

<sup>9</sup> The Select process is explained on pp. 19-25 of the IT Investment Management Process Guide on ConnectEd.

<sup>10</sup> Learn about the Exhibit 300 on page 41 of the IT Investment Management Process Guide Process Guide on ConnectEd.

<sup>11</sup> Capital Programming Guide Version 2.0, Supplement to OMB Circular A-11, Part 3: Planning, Budgeting, and Acquisition of Capital Assets, June 2006. See: <http://www.whitehouse.gov/>

<sup>12</sup> OCIO’s Investment and Acquisition Management Team is referred to hereinafter as the “ITIM team.”





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Architecture (EA) segment and meets the target architecture (the EAPO can be reached at EAHelp@ed.gov). OCIO's IAMT and EAPO are responsible for reviewing the OA for completeness and for ensuring that it reasonably satisfies its purpose and the requirements of OMB and ED.

The Segment Owner is responsible for reviewing the OA and initiating any actions to improve the investment's performance, including recommending to the Planning and Investment Review Working Group (PIRWG) changes in scope or discontinuance of the investment.

Using verifiable data contained in the OA, the PIRWG will review IT investment performance against stated expectations and forward its findings to the CIO for presentation to and ultimate decisions by the agency Investment Review Board (IRB). The PIRWG will use the investment's OA as the basis for this review to help ensure ED conforms to GAO's ITIM Stage 2 maturity model.

### 1.5 FREQUENCY

An OA should be completed and submitted to OCIO/IAMT within a year following the first full fiscal year that the investment has a steady-state component. An updated OA should be completed annually thereafter. A submission earlier in the year allows the findings of the OA to be considered during the Select Phase process of selection for funding of investments.

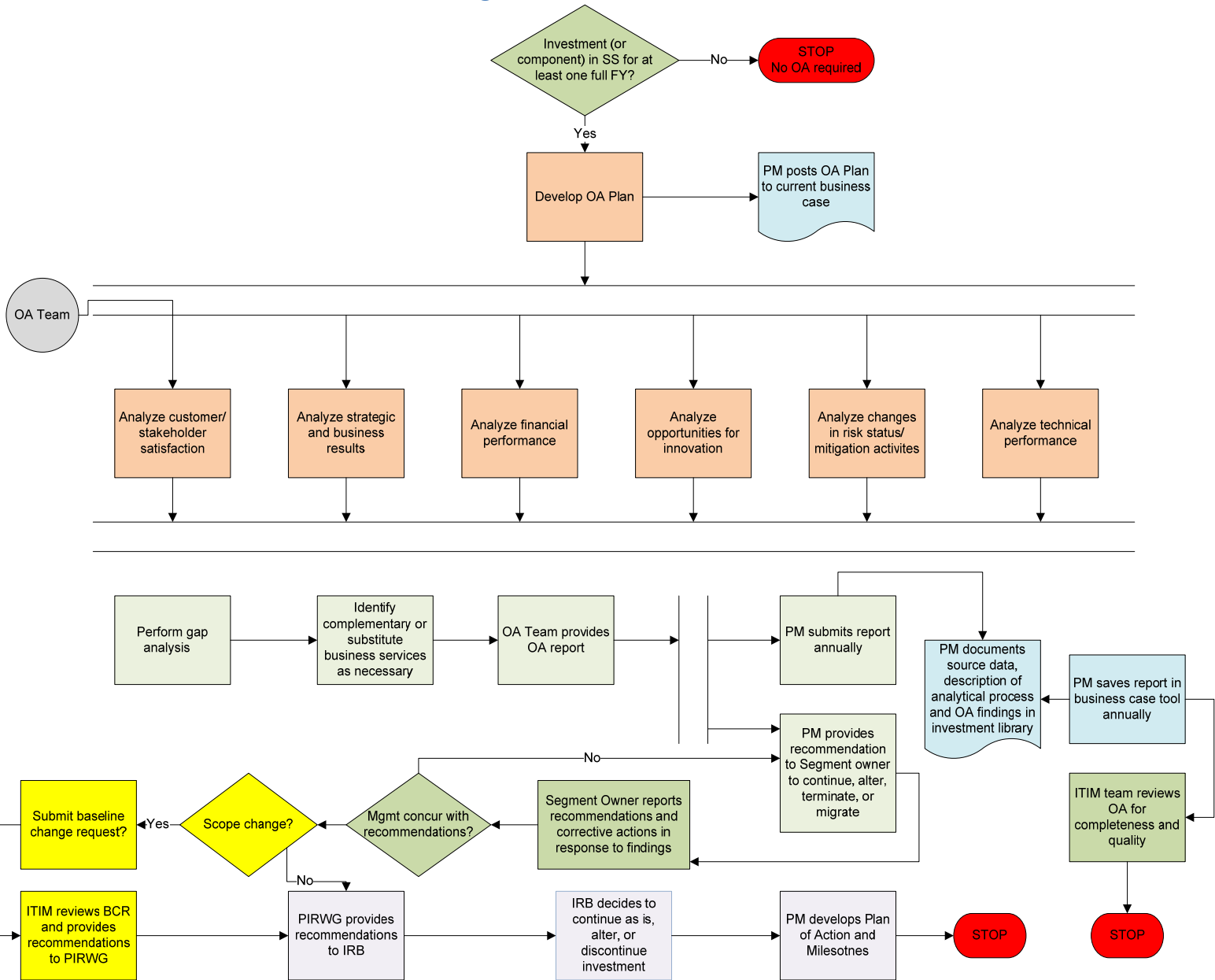


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## 1.6 PROCESS FLOW

The following flow chart displays the overall process for initiating, preparing, submitting and acting on the findings of the OA. Not included are the processes at the organizational level between the PM and the Segment Owner. Those interactions are unique to each investment and should be described in the investment’s OA Plan in sufficient detail that a new PM would have no difficulty following them.

Figure 2: OA Process Flow





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### 2 OA PLANNING

The PM of each steady-state investment, or mixed investment with operational components, must ensure the completion of an OA containing consistent objective results derived from reliable and repeatable procedures for conducting an annual OA. This will provide the members of the OA Team, who will vary over the life of the investment, with concise directions in order to avoid incomplete or inconsistent reviews from year to year. The PM will specify roles and responsibilities, and identify the following elements at a minimum:

- The investment's management control process
- Who will perform your OA?
- How will you fund the OA?
- Who are your customers/stakeholders?
- How will you gather data?



### 3 DOCUMENTATION AND REPORTING

The source data, analytical processes, and findings of the OA should be documented and retained in the investment library. Documentation should include data source documents and data collection methods. Data source documentation may include:

- survey results,
- system logs,
- progress reports,
- work breakdown structure (WBS).

Any actions taken in response to the findings and recommendations of the OA should be documented for consideration in future OAs or other analysis. This will provide valuable information for future analyses and traceability for the actions' rationale, is useful when responding to future audits and helps to demonstrate management attention to weaknesses or opportunities.

#### 3.1 FORMAT

The report of the OA results is to be prepared and submitted using the Report template found in Attachment 1 to this guide.

#### 3.2 EVALUATION

The results of the OA Report will be evaluated by the ITIM team (i.e. OCIO/IAMT, the PIRWG, etc.).



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## 4 METHODOLOGY

This section of the guide describes the materials you will use and the ways you will use the data to assess the investment's management and operational success. The OA will leverage the work accomplished prior to the IT asset becoming operational. It requires familiarity with alternatives considered prior to implementation, performance metrics, customer survey information and feedback, post-implementation review results, and budget and cost data.

The objective of an OA is to provide a fresh look at the investment in light of changing events. The OA lead should be someone who can approach the analysis with a degree of impartiality<sup>13</sup>. A team approach is encouraged, as it provides the opportunity to include the perspective of the investment customers, stakeholders and operational team.

Findings and recommendations are to be reported in a standard format using the OA Report template<sup>14</sup>.

Sources of data in the OA must be reliable and verifiable. The data source should be identified in the plan and in the final report. Any original data collected should be retained in the investment's project library for future reference and analysis.

*(Note: Objective quantitative measures are preferred for effectiveness/efficiency, whereas subjective measures are typically used to assess user and/or customer satisfaction and to elicit potential improvements).*

Table 1: Data Sources

Objective Data Sources: Efficiency/ Effectiveness	Subjective Data Sources; Customer Satisfaction
Projected Cost Data	Surveys
Actual Expense Data	Customer Focus Groups
Schedule Milestones	User Group Meetings
Technical Performance	Complaints/Suggestions

<sup>13</sup> One approach might be to obtain a separate contractor, such as one that conducts independent validation and verification (IV&V) activities, to perform the operational analysis.

<sup>14</sup> Please see Attachment 1 for the Operational Analysis Report template



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### 4.1 POST-IMPLEMENTATION REVIEW (PIR)

The OA should build upon the findings and outcomes of the PIR (if available) that was conducted upon completion of the development/modernization/enhancement (DME) phase of the investment. The analysis should examine any findings of the PIR that may be pertinent to the steady-state phase, or lead to recommendations for adjusting the focus or management of the investment.

The PIR is a process for tracking and measuring the impact and outcomes of implemented or canceled IT initiatives. A PIR is the starting point and an input for the *Evaluate Phase*<sup>15</sup> of the CPIC process. The PIR focuses on verification and validation of six primary areas. These are the same components that the OA assesses in an on-going manner throughout the steady-state phase:

- impact on goals and strategic objectives
- impact on stakeholders
- cost and schedule variances
- operational performance
- architectural compliance
- project risk management.

### 4.2 ANALYSIS OF ALTERNATIVES

The OA should always include a review of, and make reference to, the current investment analysis of alternatives. Reviewing the analysis of alternatives will provide insight into options or limitations that may help to frame the development of the OA. If the findings of the OA appear to be at odds with the analysis of alternatives, or suggest an alternative not previously considered, the reasons should be clearly stated in the OA Report.

### 4.3 CUSTOMER/STAKEHOLDER SATISFACTION

PMs should periodically assess whether the investment continues to support customer processes as designed. The focus of the customer/stakeholder satisfaction assessment should be to determine how well the investment meets customer needs and delivers services, and whether it could be improved to better meet changing requirements. Techniques for measuring customer satisfaction include interviews, investment-specific questionnaires, user groups, on-line feedback, and review of help desk logs. Issues to be addressed include the degree to which functionality and performance is satisfactory to the customer, whether the investment is helping users to perform their functions more easily or efficiently, and whether it will continue to meet customer and stakeholder needs. The method of measuring satisfaction should include a breakdown of results and analysis by business need.

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<sup>15</sup> *Capital Programming Guide Version 2.0, Supplement to OMB Circular A-11, Part 3: Planning, Budgeting, and Acquisition of Capital Assets, June 2006.* See: <http://www.whitehouse.gov/>



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### 4.3.1 DATA SOURCES

The PM must establish a strategy to solicit user or customer input. This can be done by a survey, focus groups or regular user group meetings. The PM must document the schedule and strategy for collecting this data. PMs should use the OA Report template<sup>16</sup> to assist in gathering data.

Based on projected investment benefits, the survey, focus group or regular user group results will determine whether the investment is meeting its original or revised objectives. The results are to be documented in the OA Report.

### 4.4 STRATEGIC & BUSINESS RESULTS

Strategic and business results measure how well the investment is meeting ED's business needs, whether it is contributing to the achievement of ED's current strategic goals<sup>17</sup>, and its alignment with the enterprise architecture. An investment's mapping to EDs' strategic goals is captured in its business case. In this category of analysis, the OA should provide data that contributes to answering such questions as: What strategic goals does this investment align with and support, and how does it help us achieve them? Over time, as business practices evolve and as missions and programs wax or wane, methods, procedures and processes once considered effective may no longer produce the best return on the dollar.

Performance measurement<sup>18</sup> and summary of quantified benefits is an important element of the OA framework. The project needs to be able to identify, measure, and track the accumulation over time of those benefits that were cited as justification for funding the investment. Benefit accumulation schedules may be based on the original quantitative benefit projection in the analysis of alternatives or may be revised in subsequent projections based on the program's actual cost, schedule, and technical performance data.

The OA lead should review the most recent Information Resources Management (IRM) Strategic Plan<sup>19</sup> to ensure that the investment's technology and IRM are supportive of, and do not conflict with, the functional areas of the IRM goals.

ED has developed an enterprise architecture that describes the agency's lines of business and the subsequent technology and process components that support its business functions. Target enterprise architectures describe ED's vision for operations in the future, including how all ED systems support specific processes or lines of business. The program or investment should be reviewed against the target enterprise architecture to re-validate the need for the investment or to anticipate changes that might be required of the investment due to interdependencies with other investments. Before changing the existing investment, consider using another investment within ED to meet future needs. The EAPO (EAHelp@ed.gov) can provide assistance.

#### 4.4.1 OMB E-GOVERNMENT/LINE OF BUSINESS INITIATIVES

Discuss any planned alignment or migration to any e-Government or line-of-business solution (if applicable) and discuss the transition strategies to accomplish alignment.

<sup>16</sup> Please see Attachment 1 for the Operational Analysis Report template.

<sup>17</sup> Department of Education Strategic Plan; <http://www.ed.gov/>

<sup>18</sup> For guidance in selecting appropriate performance measures, refer to [www.whitehouse.gov/](http://www.whitehouse.gov/).

<sup>19</sup> Department of Education IRM Strategic Plan; <http://connected/>



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### 4.4.2 DATA SOURCES

Most performance measures you will use are contained in the investment's business case. However, additional customer satisfaction<sup>20</sup> and technical performance data will also be important.

### 4.5 FINANCIAL PERFORMANCE

Financial performance compares current financial performance to the pre-established (initial) cost baseline, and reviews the system for cost reasonableness and efficiency. Financial performance should be expressed in terms of planned expenditures, actual expenditures, and ratios comparing planned to actual expenditures.

The financial performance analysis is the periodic analysis of the current cost performance and the expected changes to annual estimates going forward. An investment with steadily increasing cost during steady-state needs to be balanced against the potential return on that investment.

Describe the method you are using to measure and track cost, schedule, and performance metrics. Describe the investment's cost, schedule, and performance baseline, and describe the management technique you are using to monitor metrics against the baseline (monthly status review meetings, budget reviews, etc). Also describe the quantitative metrics you are using to measure variances from the baseline, and the frequency with which you apply these measurements. It could also be helpful in this section to describe any tools you are using to track performance metrics (Microsoft Project, Excel spreadsheets, etc.).

Discuss the current performance of the investment.

- Is performance within limits of variance? If not, what corrective actions are you taking to get back on track?
- Has upper management concurred in the planned corrective actions?

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<sup>20</sup> Measurement of customer satisfaction can be attained via surveys (for example, see Attachment 2 for further detail on how to develop a customer survey).





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The categories in the table below should be used to describe financial performance.

**Table 2: Financial Performance Categories**

#	Category	Description
1	Cost and Schedule Performance Measurement	Describe the method you are using to measure and track cost, schedule, and performance metrics.
3	Cost and Schedule Performance Control Techniques	Describe the management technique you are using to keep cost and schedule on the performance baseline.
5	Cost and Schedule Performance Tools	Describe any tools you are using to track performance metrics (Microsoft Project, Excel spreadsheets, etc.).

In addition to the costs of the investment, the financial performance analysis should address the indicators/metrics used to measure performance in relation to cost saving/avoidance identified in the Exhibit 300. The OA must also address the indicators/metrics used to measure the return-on-investment and payback-period estimates of the cost/benefit analyses that were part of the investment analysis.

To ensure that the products and services delivered to customers reflect full value for the resources expended, the investment's schedule and risk management plan/records, and its financial records, must provide sufficiently detailed data.

### 4.5.1 DATA SOURCES

The performance measurement baseline is the source of expected investment costs. Budget data for the investment should align with IRB-approved funding for the investment.

### 4.5.2 CURRENT COST BASELINE

OMB Memorandum 05-23<sup>21</sup> requires federal agencies to establish and validate performance measurement baselines with clear cost, schedule, and performance goals for *“all new major IT projects, ongoing major IT developmental projects, and high risk projects to better ensure improved execution and performance as well as promote more effective oversight.”* The PIRWG approves an investment's cost baseline and subsequent changes. The OA should be developed using the current cost baseline that has been reviewed and approved by the PIRWG.

## 4.6 INNOVATION

Opportunities for improving an investment may be found in new technologies or in new work flows, data flows or other processes for accomplishing the business objective, or a combination of new technologies and

<sup>21</sup> OMB Memorandum 05-23, “Memorandum for Chief Information Officers,” August 4, 2005, <http://www.whitehouse.gov/>



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change in the business process. Addressing innovation in the OA is an opportunity to demonstrate that the PM is in touch with the stakeholders' fundamental business needs and is monitoring the current state of the technology and availability in the marketplace of cost-saving and performance-enhancing technologies. The OA is to include a review of the latest Alternatives Analysis and comment on the alternatives considered, in the context of innovative solutions to the needs of the Segment Owner.

The Department's Enterprise Architecture and IRM Strategic Plan<sup>22</sup> should be reviewed with thought given to transitioning from 'stove pipe' systems to investments that cross *lines of business* (LoB) where doing so will increase effectiveness or efficiency. The process will ensure the PM is communicating with investment customers and stakeholders to address questions such as:

- How could we deliver more effective service to the customer?
- Could we meet these same customer needs at lower cost?
- Could this investment be combined with others to better meet our organization's strategic goals?

### 4.6.1 DATA SOURCES

Data that may identify potential benefits of innovation may be found in trade journals, vendor performance statistics, user surveys/user group meetings, PIR results, market research, business process reengineering (BPR) studies, oversight reports (such as IG and GAO), or other studies of which the Segment Owner may be aware.

### 4.7 RISK ASSESSMENT

Throughout the development and steady-state phases of an investment, risks are identified and tracked, and related mitigation activities are monitored. Any significant changes to the risk environment/status or risk-mitigation actions need to be analyzed as part of the OA activity to ensure the risks have not become unacceptable relative to the benefits of the investment at its current baseline. Conversely, a significant reduction in risk may indicate a benefit in extending the life of the investment.

### 4.8 TECHNICAL PERFORMANCE ANALYSIS

Regardless of which performance indicators and objectives were reported in the business case and reported to OMB (Exhibit 300), a number of technical performance indicators/objectives should be monitored as part of an OA effort to ensure that performance levels are sustained or continue to improve over time.

Technical performance indicators/objectives to monitor should include items such as:

- Functional performance (how long it takes to perform a function using the system; e.g., process a claim)
- Frequency and length of unscheduled outages
- Maintenance and equipment outages
- Mean time between outages/failures
- Mean time to restore service

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<sup>22</sup> Department of Education Enterprise Architecture and IRM Strategic Plan; <http://connectedED/>



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- Corrective maintenance action labor hours
- Operational availability
- Operational productivity measures (e.g., mean time to perform functions)
- Human or system error rates
- Training time to proficiency.



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### 5 RESULTS

The result of the OA process should be twofold:

1. More effective delivery of services by the investment, and
2. Improved effectiveness of the Department’s IT Portfolio in accomplishing ED’s goals.

Findings should be supported by evidence that is well documented and available for review.

#### 5.1 PERFORMANCE VARIANCES

The findings should highlight the existence, and if possible, the cause of variances in performance thresholds exceeding 10% over or under budget or 10% under the amount of work it was intended to enable (See section 4.5 Financial Performance).

##### 5.1.1 MISSION/PERFORMANCE/SATISFACTION GAP ANALYSIS

Address gaps identified between expected and actual results both in terms of technical performance shortcomings and failure to meet the needs of the customer.

Explore the root causes of any gaps. Identify what, if any, additional functionality or performance is required. If the investment is already scheduled for replacement or retirement, name the investment(s) that will support the requirements in the future.

The reported performance variances should be based on information contained in the business case.

The following table summarizes a few examples of topics for consideration:

**Table 3: Topics for Consideration**

Cause of Gap or Problem	Potential Solution
Poor performance and reliability	Modernized workstations and frequent technology refresh
Cannot meet growing demand or transaction volume	Increased capacity to meet processing, service, and mission demands
Inadequate information and computer security	Enterprise-based security authentication and or control. Re-code sign-in to accept strong passwords
Poor customer service	Institute help desk software to accept electronic service ticket submission and tracking
Technical architecture not scalable	Re-engineer system to Web-based/cloud computing architecture
System does not address changes in legislative requirements	Modify software to address new requirements
Increasing O&M costs	Consider cloud computing, contract re-compete, or systems consolidation. Review alternatives analysis.



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### 5.2 HOLISTIC ENTERPRISE VIEW

Step back and look at the investment. How effectively does it achieve mission performance? Assess its relationship with other investments and their interactions. Consider business and technology issues. The primary purpose of technology is to improve business performance in the most cost-efficient manner. Since government operations and program mission will change over time, it is important to analyze how well the investment is aligned with changed requirements. If possible, address the relationship of this investment to other investments from the perspective of increasing effectiveness or efficiencies in accomplishing ED's mission. Areas that might present appropriate opportunities are standardization, consolidation, and changing technologies. Identify opportunities for the investment to use and foster standardized data definitions. Consult with the Segment Owner and the Enterprise Architecture Program Office to find technical and business solutions that compliment, or avoid overlap with, existing or planned investments.



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### 6 RECOMMENDATIONS

Identify solutions that can provide the needed functionality or performance. This may include designing new processes, implementing technologies compliant with ED's enterprise architecture, or collaborating with other initiatives within the federal government.

Recommend whether the existing system should be:

- continued with no additional investment for DME,
- altered,
- terminated, or
- migrated to a similar system and retired.

The customer satisfaction assessment may have identified the need for capabilities related to but beyond the scope of the current Investment. Enhancements outside of the existing project scope are considered a new component of the investment.

If the OA identifies a need for a change in the investment's scope and/or the cost is impacted, the PM must prepare and submit a Baseline Change Request<sup>23</sup>.

### 7 PLAN OF ACTION AND MILESTONES (POAM)

Describe the actions that are scheduled to be taken in response to the findings of the OA. Action plans should include a clear description of the desired outcome, identification of responsible parties, a well defined course of action to be taken, and milestones (with associated initiation and completion dates) leading to achievement of the objective.

Actions may include drafting a Baseline Change Request or initiating discussions with other investment managers to investigate investment consolidation. Certain findings may warrant follow-on studies or corrective action plans.

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<sup>23</sup> Department of Education Departmental Directive OCIO:3-108, Information Technology Investment Management (ITIM), 1/29/2010



## Operational Analysis Guide

### APPENDIX A: ROLES & RESPONSIBILITIES

Responsible Party	Responsibilities	Reference
OA Team	<p>Conduct the OA.</p> <p>The OA team (i.e. those performing the OA) should consist of individuals that are independent from the management and outcomes of the investment.</p>	Sec 1 & 2
Project Manager	<p>Develop reliable and repeatable procedures for conducting an annual OA.</p> <p>Ensure that the OA is conducted, documented, and submitted to the ITIM team.</p> <p>Work with ITIM team on the OA team composition to ensure an objective analysis.</p> <p>Work with EAPO to determine if the investment meets the target architecture and is assigned the proper segment identifier.</p>	<p>Sec. 1&amp; 2</p> <p>Sec. 1.4</p> <p>Sec. 1.4</p> <p>Sec. 1.4</p>
ITIM team and EAPO	<p>Review the OA Report for completeness and ensure that it reasonably satisfies its purpose and the requirements of OMB and ED's business requirements.</p> <p>Evaluate the OA report using scoring criteria found in the OA Evaluation Template.</p>	<p>Sec. 1.4</p> <p>Sec. 3.3</p>
Segment Owner	<p>Review the OA and initiate any actions deemed to improve the investment's performance. Make recommendations to the PIRWG to change scope or terminate the investment.</p>	Sec. 1.4



## Operational Analysis Guide

Planning and Investment Review Working Group (PIRWG)	Review the performance of IT investments against stated expectations.	Sec. 1.4
IRB	Make decisions on OA findings and recommendations brought to their attention.	Sec. 1.4





## APPENDIX B: OA TEMPLATES

- **Attachment 1: DoED Operational Analysis Report Template**
- **Attachment 2: DoED Customer Survey Checklist Template**



## Operational Analysis Guide

### APPENDIX C: GLOSSARY OF ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
BCR	Baseline Change Request
BPR	Business Process Reengineering
CIO	Chief Information Officer
CPIC	Capital Planning & Investment Control
DME	Development/Modernization/Enhancement
EA	Enterprise Architecture
EAPO	Enterprise Architecture Program Office
ED	Department of Education
FY	Fiscal Year
GAO	Government Accountability Office
IAMT	Investment & Acquisition Management Team
IG	Inspector General
IRB	Investment Review Board
IRM	Information Resources Management
IT	Information Technology
ITIM	Information Technology Investment Management
LoB	Line of Business
OA	Operational Analysis
OCIO	Office of the Chief Information Officer
O&M	Operations & Maintenance
OMB	Office of Management and Budget
PIR	Post-Implementation Review
PM	Project Manager
PIRWG	Planning and Investment Review Working Group
ROI	Return on Investment



## Operational Analysis Guide

### APPENDIX D: GLOSSARY OF TERMS

Terms	Definition
Alternatives	The different courses of action, means, or methods by which objectives may be attained.
Alternatives Analysis	An analysis which considers the alternatives available for pursuing a business objective. Sometimes included as part of the feasibility study.
Baseline	A term used, in the context of an Operational Analysis, to describe (1) use of status quo costs and benefits as a basis for developing costs and benefits for alternatives during the cost/benefit analysis and, more importantly, (2) use of costs and benefits projected for the selected alternative during the cost/benefit analysis as a basis for comparing actual costs and benefits during cost/benefit measurement.
Benefit/cost ratio	An economic indicator of cost-effectiveness computed by dividing present value benefits by present value costs. Indicates the amount of benefits returned for each dollar invested.
Business Case	A structured proposal to make an investment, which functions as a decision package for organizational decision-makers. A business case may include an analysis of business process performance and associated needs or problems, proposed alternative solutions, assumptions, constraints, and risk-adjusted cost-benefit analysis (CBA), as appropriate to the investment. For major investments, OMB Exhibit 300 serves as the business case.
Capital Assets	Assets that are composed of land, structures, equipment, and intellectual property (including software) that are not acquired for the purpose of consumption or resale.
Cloud Computing	A model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.
Cost Avoidance	Benefits realized by avoiding a relatively certain future expenditure, although the projected expenditure has not been budgeted or obligated. Cost avoidance is more speculative than cost savings and requires more rigorous justification.



## Operational Analysis Guide

Terms	Definition
Cost/Benefit Analysis	Detailed evaluation of the costs and benefits of selected alternatives identified during the alternatives analysis. Includes costs of current and projected operations as a baseline for (1) determining which alternative to select for automation and (2) measuring costs and benefits of the implemented and operational system over time. Costs are normally expressed in dollars, but benefits may be expressed in dollars or in other quantitative (such as time reduction) or qualitative (such as improved security) measures. Cost/benefit analysis determines the most cost-effective solution, not simply the least cost solution. Can be included as part of the feasibility study or alternatives analysis, or stand as a separate document.
Customer	Groups or individuals who have a business relationship with the organization; those who receive or use or are directly affected by the products and services of the organization.
Development/Modernization/Enhancement (DME)	DME is the portion of an IT investment/project that deals with developing and implementing new or enhanced capability. IT investments may include DME and “steady state” (see Steady State below) components.
Earned Value Analysis	A project management tool/process that evaluates scope, schedule and cost to produce an objective, quantifiable, time-based measure of an investment’s progress and performance.
Effectiveness	A project’s ability to meet requirements at the project and agency level.
Efficiency	Means execution of project goals with most effect and with minimum/reasonable use of resources.
Investment	An expenditure of funds to acquire a new, or continue an existing, capability, function or asset.
Life Cycle	The time from conception to disposal of an investment, encompassing the Select, Control and Evaluate Phases.
Life Cycle Cost	The total cost of acquisition and ownership of a system over its full life, including the cost of planning, development, acquisition, operation, support, and disposal.
Line of Business	Line of Business (LoB) initiatives are by definition multi-agency efforts. Due to the multi-agency impact, multi-agency collaboration investments such as E-Gov and LoB initiatives are also by definition Major Investments (OMB Circ. A-11, Sec. 300).



## Operational Analysis Guide

Terms	Definition
Major Investment	An investment requiring special management attention because of its importance to the mission or function of the agency; or for financial management which obligates more than \$500,000 annually; or has significant program or policy implications; high executive visibility; high development, operating, or maintenance costs; is funded through other than direct appropriations; or is defined as major by the agency's capital planning and investment control process. Investments not considered "major" are "non-major."
Maturity Model	Models of the stages through which organizations progress as they define, implement, evolve, and improve their processes. This model serves as a guide for selecting process improvement strategies by facilitating the determination of current process capabilities and the identification of the issues that are most critical to achieving quality and process improvement.
Mixed Life Cycle	A life cycle including both steady state and development, modernization, enhancement (DME) aspects.
Objectives	Goals, results, or program improvements that the decision-maker wants to attain. Objectives should be independent of the solution and stated in a manner that does not preclude alternative approaches.
Performance Measure	Indicators, statistics, or metrics used to gauge program performance (OMB Circ. A-11 Sec 200.3). A method used to determine the success of an initiative by assessing the investment contribution to predetermined strategic goals. Measures are quantitative (e.g., staff-hours saved, dollars saved, reduction in errors, etc.) or qualitative (e.g., quality of life, customer satisfaction, etc.). For IT investments, a set of performance measures are reported in the "Performance Information Table" in OMB Exhibit 300.
Performance Measurement	A means of evaluating efficiency, effectiveness, and results. Performance measurement should include program accomplishments in terms of outputs (quantity of products or services provided) and outcomes (results of providing outputs in terms of effectively meeting intended agency mission objectives). Indicators, statistics or metrics used to gauge program performance. (OMB Circ. A-11, Part 7)
Performance Measurement Baseline	The time-phased budget plan against which investment performance is measured.
Post-Implementation Review	An assessment and review of a project's operational, working solution to determine whether the targeted outcome of the investment has been achieved.



## Operational Analysis Guide

Terms	Definition
Return on Investment	Project benefits in relation to costs while taking into consideration integrity, confidentiality and authenticity, availability and reliability.
Risk Management Plan	A description of potential cost, schedule, and performance risks, and an approach to managing all potential risks.
Schedule Variance	Earned value minus the planned budget for the completed work.
Segment Owner	A senior manager ultimately responsible for supporting an enterprise architecture segment and the investments contained within it.
Stakeholder	An individual or group with an interest in the success of an organization in delivering intended results and maintaining the viability of its products and services. Stakeholders influence programs, products, and services.
Steady state	The maintenance or operational stage of an investment's life cycle.
Work Breakdown Structure	A tool used to define and group a project's discrete work tasks in a way that helps organize and define the total work scope of the project.



**U.S. Department of Education**  
Investment Acquisition Management Team (IAMT)

**Operational Analysis Report**

**Enter Investment Name**



## OPERATIONAL ANALYSIS REPORT

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## OPERATIONAL ANALYSIS REPORT

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## OPERATIONAL ANALYSIS REPORT

Section 1 is to be completed by the Project Manager. The remaining sections are to be completed by the person(s) responsible for conducting the Operational Analysis.

<b>1 INTRODUCTION AND EXECUTIVE SUMMARY</b>		
Investment Name		
Unique Project Identifier		
Investment Status	Steady State:	Mixed Lifecycle:
Operational Component Name(s) (if Mixed Lifecycle)		
Principal Office		
Date of Operational Analysis		
Project Manager		
Date Submitted to IAMT		
Revision Number		
Revision Date		

<b>1.1 ANALYSIS SCOPE</b>	
Enterprise Architecture Segment	
Brief description of Investment scope	
Brief list of scope constraints (if any)	



## OPERATIONAL ANALYSIS REPORT

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### 1.2 EXECUTIVE SUMMARY

Provide a brief summary of the findings of the OA here. Include a short description of the results of the gap analysis (see the following sections in the OA report: 4.2.2, 4.3, 4.4.4, and 5.1.2).

**USER RESPONSE HERE :**



## OPERATIONAL ANALYSIS REPORT

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### 1.2.1 CUSTOMER/STAKEHOLDER SATISFACTION

Describe strategic and business results (e.g. review the performance measurement information contained in the "Performance Information" section of the Business Case) and evaluate if the actual measurement values (results) represent expected progress at this stage of the investment's lifecycle. Briefly describe any performance targets in the business case that are not currently being met or are expected to not be met in the future.

**USER RESPONSE HERE:**

### 1.2.2 FINANCIAL AND SCHEDULE PERFORMANCE

Describe financial and schedule performance (for example, by comparing actual vs. planned expenditures). Briefly describe any schedule variance that will cause a planned completion date of a milestone to be missed or impact a task on the critical path. Briefly describe any cost variance greater than 5%.

**USER RESPONSE HERE:**



## OPERATIONAL ANALYSIS REPORT

### 1.2.3 INNOVATION

Describe any innovation associated with this investment (for example, the potential use of cloud computing as a technical solution, or re-engineering of this investment resulting in consolidation with another investment).

**USER RESPONSE HERE:**

## 2 OA PLANNING

(See Section 2, "OA Planning" in the OA Guide for further reference)

### 2.1 SCOPE OF THE OA

Describe the investment or component that is the subject of this OA and provide a description of the business processes that the investment supports. If an investment component is being analyzed, explain how this particular component maps to the milestones in the current PIRWG-approved baseline.

**USER RESPONSE HERE:**



## OPERATIONAL ANALYSIS REPORT

### 2.2 ANALYSIS ASSUMPTIONS AND OBJECTIVITY

Provide a list of assumptions that were made relating to the analysis.

Explain how the objectivity and impartiality of the analysis will be maintained.

**USER RESPONSE HERE:**

### 3 DOCUMENTATION AND REPORTING

Provide a list of the data sources used to conduct this analysis

*(See Section 3, "Documentation and Reporting" in the OA Guide for further reference)*

**USER RESPONSE HERE:**



## OPERATIONAL ANALYSIS REPORT

### 4 METHODOLOGY

The analysis for this section focuses on five performance areas: Customer Satisfaction; Strategic and Business Performance; Financial Performance; Risk; and Technical Performance.

(See section 4, "Methodology" in the OA Guide for further reference)

#### 4.1 CUSTOMERS AND STAKEHOLDERS

Briefly describe the investment's customers and stakeholders. Customers are the people and organizations who receive or use or are directly affected by the products and services of the investment. Stakeholders may include customers and others who do not directly use or benefit from the investment but have a vested interest in its success. Briefly state how each component affects each category of customer.

**USER RESPONSE HERE :**



## OPERATIONAL ANALYSIS REPORT

### 4.2 CUSTOMER SATISFACTION GOALS AND METRICS

Summarize performance and satisfaction goals, including related business case performance metrics/indicators in the area of “Customer Results” or “Processes and Activities” (e.g., productivity, efficiency, errors, complaints, and timeliness).

**USER RESPONSE HERE :**

#### 4.2.1 CUSTOMER DATA COLLECTION AND ANALYSIS METHODS, PROCEDURES, AND/OR TOOLS

Describe methods, procedures, and/or tools used to collect and assess customer efficiency, system usability and suitability, and customer satisfaction and other data (e.g., performance data, including error data, surveys, user group meetings, customer focus groups, system data, etc.)

**USER RESPONSE HERE :**





## OPERATIONAL ANALYSIS REPORT

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### 4.2.2 CUSTOMER ASSESSMENT GAP ANALYSIS

Compare planned customer satisfaction goals against actual results per the metrics cited in Section 1 of this report to identify the need for additional functionality and/or improved performance.

**USER RESPONSE HERE :**

### 4.3 STRATEGIC AND BUSINESS PERFORMANCE GAP ANALYSIS

Compare strategic and business goals against actual results per the metrics cited in this report to identify the need for additional functionality and/or improved performance. Summarize the performance metrics collected, including those for cost, schedule, and risk. Describe instances, causes and impacts where the investment exceeded or failed to meet expectations.

**USER RESPONSE HERE :**



## OPERATIONAL ANALYSIS REPORT

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### 4.4 FINANCIAL PERFORMANCE GOALS AND METRICS

List the indicators/metrics used to measure performance. For example:

- Cost saving/avoidance identified in the Exhibit 300
- Return on investment

**USER RESPONSE HERE :**



## OPERATIONAL ANALYSIS REPORT

### 4.4.1 FINANCIAL PERFORMANCE DATA COLLECTION AND ANALYSIS METHODS

Describe the method you are using to measure and track cost, schedule, and performance metrics. Describe the management technique you are using to monitor metrics against the baseline (monthly status review meetings, budget reviews, etc).

**USER RESPONSE HERE :**

### 4.4.2 COST VARIANCE ANALYSIS RESULTS

Describe the quantitative measures used to measure variance from the baseline. Provide cost variance analysis details in terms of cost variance percentage (e.g. the investment has cost variance of 8%). Summarize the results of the financial performance metrics collected. Discuss:

- Is the performance within limits of variance?
  - If not, what is being done to bring performance back within variance limits?

**USER RESPONSE HERE :**



## OPERATIONAL ANALYSIS REPORT

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### 4.4.3 FINANCIAL PERFORMANCE RESULTS

Address the indicators/metrics used to measure the return-on-investment and payback-period estimates of the cost/benefit analyses that were part of the investment analysis.

**USER RESPONSE HERE :**



## OPERATIONAL ANALYSIS REPORT

### 4.4.4 FINANCIAL PERFORMANCE GAP ANALYSIS

Compare financial performance goals against actual results per the metrics cited in the appropriate sections of this report (e.g. "Financial Performance Goals and Metrics" section) to identify the need for additional functionality and/or improved performance.

**USER RESPONSE HERE :**

### 4.5 RISK ASSESSMENT

Describe the major challenges (if any) confronting the investment and how they are addressed.

**USER RESPONSE HERE :**



## OPERATIONAL ANALYSIS REPORT

### 5 TECHNICAL METRICS AND RESULTS

Technical performance indicators/objectives should be monitored as part of an OA effort to ensure that performance continues to improve, or at least does not degenerate over time. (See Section 5, “Results” section in the ED OA Guide for further reference)

#### 5.1.1 TECHNICAL PERFORMANCE GOALS AND METRICS

Describe which technical performance indicators/objectives you monitor, including appropriate items from the following list (include the units of measure):

- Functional performance (how long it takes to perform a function using the system; e.g., process a claim)
- Frequency and length of unscheduled outages
- Maintenance and equipment outages
- Mean time between outages/failures
- Mean time to restore service
- Corrective maintenance action labor hours
- Operational availability
- Operational productivity measures (e.g., mean time to perform functions)
- Human-system error rates
- Training time to proficiency.

**USER RESPONSE HERE :**



## OPERATIONAL ANALYSIS REPORT

### 5.1.2 TECHNICAL PERFORMANCE GAP ANALYSIS

Compare technical performance objectives/requirements against actual results per the metrics cited in the appropriate sections of this report (e.g. “Financial Performance Goals and Metrics” section) to identify the need for additional functionality and/or improved performance. Summarize the analysis results of the technical performance metrics collected. Describe instances, causes and impacts where the investment exceeded or failed to meet expectations.

**USER RESPONSE HERE :**

## 6 RECOMMENDATIONS

Describe your recommendation to continue the investment as-is, modify the investment performance/management in some way, or discontinue the investment.

Justify whether the existing system should continue in operation as is, be enhanced, or be terminated. If the system is to be enhanced or terminated, summarize the recommended actions to be taken this fiscal year or in coming years.

(see Section 6, “Recommendations” in the ED OA Guide Section 6 for further guidance)

**USER RESPONSE HERE :**



**OPERATIONAL ANALYSIS REPORT**

**7 ACTION PLAN**

In the table below (If applicable), list a summary of actions planned for each performance area (from section 4 above) and the status of these actions. Actions may include plans to conduct analyses for alternate technologies or obtain more information, in addition to corrective actions to address positive or negative cost or performance variances. (See Section 7, “Plan of Action and Milestones” section in the ED OA Guide for further reference)

Action Planned	Planned Start Date	Actual Start Date	Planned Completion Date	Actual Completion Date	Current Status/Progress made
<b>Customer/ Stakeholder Satisfaction</b>					
<b>Strategic and Business/Mission Support</b>					
<b>Financial Performance</b>					
<b>Risk</b>					
<b>Technical Performance</b>					





## **U.S. Department of Education**

Investment Acquisition Management Team (IAMT)

# Customer / Stakeholder Survey Checklist



OPERATIONAL ANALYSIS EVALUATION

[DATE]

CUSTOMER / STAKEHOLDER SURVEY CHECKLIST

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## OPERATIONAL ANALYSIS EVALUATION

[DATE]

### 1. PURPOSE:

This checklist provides an example of the requirements to be incorporated into customer satisfaction surveys in order to capture information needed to perform an Operational Analysis.

### 2. HOW TO USE:

The below list of survey questions can be used as a reference point when developing or updating a customer satisfaction survey.

Example question:

- ✓ How satisfied are the users with the system’s capabilities and functions?

Those performing an OA must have a systemic approach for recording responses to survey questions. See below for a sample scale that can be used for recording responses to survey questions:

1                      2                      3                      4                      5  
 Completely Unsatisfied .....Completely Satisfied

### 3. INFORMATION REQUIREMENTS

See below for sample questions to be included in a customer satisfaction survey.

- ✓ How satisfied are the users with the system’s capabilities and functions?
- ✓ How satisfied are the users that the system and its services are available and operational when needed?
- ✓ How satisfied are the users with the level of effort required to use and/or interface with the system?
- ✓ How satisfied are the users with the speed in which the help desk acknowledges a user inquiry or reported problem? *(Applicable only to IT systems that maintain their own help desk.)*
- ✓ How satisfied are the users with the effectiveness with which the help desk answers questions, resolves problems, or facilitates the resolution of a problem? *(Applicable only to IT systems that maintain their own help desk.)*
- ✓ How satisfied are the users with the help desk’s ability to resolve tickets on the first call?



## OPERATIONAL ANALYSIS EVALUATION

[DATE]

- ✓ How satisfied are the users with the overall system, considering both its strengths and weaknesses?

### 4. DEMOGRAPHIC INFORMATION

The survey must capture the following demographic information.

- ✓ Frequency of use (e.g. While working, how frequently do you use the system?)
- ✓ Length of employment
- ✓ Role at ED (e.g. Data Approver, Reviewer, etc.)

### 5. SURVEYING TIPS AND BEST PRACTICES:

When developing the survey, start with your objectives, not questions. What is it you want to know? Then, formulate your question around what it is you are seeking to learn.

- ✓ Introduce your survey, how long it will take, and how the results will be used.
- ✓ Include “Not applicable” where appropriate. Test your survey before administering to evaluate level of effort required to complete, difficulty of questions, length, and time to complete.
- ✓ Keep questions simple, painless and direct. Minimize the number of questions per page. Survey response rate will typically increase if a small amount of effort is required to complete.
- ✓ Be objective. Pay attention to the neutrality of words and avoid absolutes like “always,” “never,” “only,” or “just.”
- ✓ Group similar questions together or in the same area of the survey. The first few questions should be easy, interesting, and aimed to grab the participants’ attention.
- ✓ Demographic questions or personal information questions are best left towards the end of the survey.
- ✓ Send reminders during the survey period for those who have not completed the survey. Notify participants of the results/outcomes.