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ABSTRACT

A preliminary design for a quality control (QC) system for the Pell Grant Program is proposed, based on the needs of the Office of Student Financial Assistance (OSFA). The applicability of the general design for other student aid programs administered by OSFA is also considered. The following steps included in a strategic approach to QC system design and testing are discussed: conducting a functional analysis of the current delivery system and conceptualizing QC system modular components. QC requirements at the policy, management, and operations levels are analyzed for the Pell Grant program, and a preliminary modular design for a Pell Grant QC system is provided. This system is composed of a series of modular components that can be developed independently, in an incremental phased fashion. Ways that the QC system design can be expanded to include the Guaranteed Student Loan program and campus-based aid programs are also discussed. Also considered are general strategies for proceeding with the system design effort, including consideration of the policy mechanisms required to develop corrective actions designed to reduce error in the delivery system. Appended is an outline of the components of the annual assessment of payment error in the Pell Grant program. (SW)

PRELIMINARY QUALITY CONTROL SYSTEM DESIGN FOR THE PELL GRANT PROGRAM

Submitted to

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EXECUTIVE SUMMARY

The development of a Quality Control (QC) system for the Pell Grant Program is a complex undertaking. This paper proposes a preliminary design for a QC system for the Pell Grant Program, based on a functional analysis of QC needs in the Office of Student Financial Assistance (OSFA). The applicability of the general design is also considered for other student aid programs administered by OSFA.

The conceptual framework for this project utilized a strategic approach to QC system design and testing. The basic steps implied in the strategic approach are:

- Identify major sources of error.
- Conduct a functional analysis of the current delivery system.
- Conceptualize QC system modular components.
- Select and prioritize modular components.
- Proceed with development of selected components.
- Perform system tests on modular components as they are developed.

This report represents the second and third steps of this process. The functional analysis of the Pell delivery system emphasized documenting and analyzing current sources of information and management procedures, since the most viable configuration option appears to be a combined automated/manual system that uses existing data. This emphasis increases the possibility that the QC system would be resource saving, using and enhancing existing data and management practices, rather than resource draining, placing new demands on the current delivery system. The analytic framework used to develop the preliminary QC system design considered QC information requirements from three perspectives:

- Strategic policy: Refers to the policy and political arena and the types of quality control information, reporting, monitoring, and analysis required for improved policymaking.

- Management control: Refers specifically to the functional divisions within OSFA and the student aid programs and the types of quality control standards, information, reporting, and analysis required to improve management of the Pell program.

- Operational control: Refers specifically to operational control of the student aid programs (particularly Pell Grants) and the types of information reporting, monitoring, and analysis required to improve the actual process of program delivery.

The three-tiered analytic framework provides an effective lens through which to view the QC needs and information resources for the Pell Grant Program. The types of QC needs identified in the functional analysis clearly vary by level of organization for OSFA student aid programs. The functional analysis identified QC information needs at all three levels:

- At the policy level, QC concerns relate primarily to the quality of overall program delivery. Outside of OSFA, in the Department of Education (ED) and the Office of Management and Budget (OMB), there is a concern that payment error in the Pell program be assessed on an annual basis. These same concerns are apparent within OSFA, along with an accurate awareness that critical parts of the policy cycle (planning, budgeting, and regulation) and program delivery (application through reconciliation) be performed on a timely basis.

- At the management level, quality control for the Pell program is hindered by the lack of program emphasis in the formal organization structure of OSFA. The functional organization structure of OSFA makes programmatic developments more difficult because responsibilities for the program are spread across divisions with no formal linkages between critical program functions. The goals and objectives system currently being implemented by the Division of Systems Design and Development has the potential of overcoming this key problem with program management if appropriate QC enhancements are developed.

- At the operations level, QC issues are more abundant. Branches and divisions have developed their own QC procedures, as needed, usually on an ad hoc basis. As a result, there is a wide variation in the awareness of staff within branches about QC issues. Some branches have developed fairly sophisticated approaches to QC, while others are confronted by basic problems.

Given existing QC requirements and information resources it is possible to propose a preliminary design that identifies modular QC components that address system needs at each of these levels. Accordingly, a five-component QC system was proposed. This included:

- A policy-level QC management information system to provide:
  - Analysis of QC corrective action options
  - Analysis of problems with the program delivery cycle
  - Analysis of problems with the planning, budget, and evaluation cycle
- An external QC subsystem for annual assessment of overall payment error in the Pell program
- An OSFA goals and objectives QC subsystem as a source of critical paths flow models for the policy cycle (planning, budget, and evaluation) and program delivery cycle for the Pell program
- A student/disbursement QC subsystem for identifying error-prone institutions and student profiles based on analysis of application and disbursement data
- An institution review QC subsystem for developing QC standards and measures for postsecondary institutions
- A processor/vendor QC subsystem for monitoring performance of the Pell processing contractor

It is possible to integrate other student aid programs into this basic framework. Three of the subsystems--policy level QCMIS, OSFA QC, and institution review--can be modified to include both GSL and Campus-Based programs. The external QC also can be modified to include Campus-Based programs. Also, additional subsystems can be identified for the disbursement function in the other programs:

- An interest payment subsystem for GSL
- An FISAP QC subsystem for the Campus-Based fund allocation

Based on the functional analysis and preliminary QC system design, strategies are considered for continuing the QC system design and testing task. First, it is essential that a sound systems methodology be used to develop QC subsystems (or modules) once they are selected by ED. Such a methodology is proposed in the final chapter. Second, a corrective actions component of the overall QC system must also be developed. A strategy for achieving this was also proposed. The next step in the QC system development process is the selection of QC subsystems for development. A working paper on this topic has already been prepared and submitted.

CHAPTER 1

INTRODUCTION

Quality Control (QC) systems are essential to the sound management of Federal student assistance programs. This is especially true for the Pell Grant Program, the second largest student aid program administered by the Office of Student Financial Assistance (OSFA) and one prone to error and abuse. The annual overpayment in the Pell program, due to various institutional, student, and processor errors, is estimated to be approximately $300 million. The development of a QC system for the Pell program is complicated by these factors:

- The delivery system is subject to change as a result of administrative or legislative action.
- The current delivery system is already in operation and involves an extremely large number of primary actors.
- Many of the potential avenues for corrective action in the current system only recently have been identified as a result of the Stage One QC study.

In spite of these factors, the time is now critical for the development of a QC system for the Pell program, as it is for other student aid programs. The overall purpose of QC procedures and systems is to reduce error in the program through systematic development and refinement of administrative procedures and automated systems that can monitor error-prone functions and generate timely and policy-relevant analysis of these functions. This report represents significant progress toward this end. The purposes of this report are to:

- Develop a conceptual framework for QC system development for the Pell Grant Program.
- Provide a detailed functional analysis of the Pell Program and the status and the use of QC standards in the program.

- Provide a preliminary design for a modular QC system for the Pell program, including consideration of possible interfaces with other student aid programs.

- To discuss strategies the Department of Education (ED) should consider for developing a QC system for the Pell Grant Program.

Before detailing the contents of this report, it is important to define quality control as it has been used in this study. Specifically, the applicability of QC concepts to student aid is critical, since QC standards are not easily transferred from one sector to another.

DEFINITION OF QUALITY CONTROL

Quality control, while essential to almost any enterprise, is ambiguous and difficult to define precisely because as a concept it is applicable to such a wide range of activities. The essential element of a QC system, in either an industrial or social service setting, is the capability for detecting, preventing, and correcting errors or any tendency toward errors that occurs in an operational setting. Implicit in this definition is recognition that:

- It is essential to establish acceptable standards for the output (or products) of a system.

- Standards must incorporate technical specifications prescribed by the provider of the service (or product) and expected by the recipient (or consumer).

- A system for monitoring standards and correcting errors is necessary for the implementation of an effective QC system.

- The purpose of a QC system is to increase the efficiency and effectiveness of the delivery system by reducing costly errors and increasing the quality of services (or products).

During Stage One of the QC study, Advanced Technology examined the applicability of QC concepts and procedures to student financial assistance programs in order to develop a QC concept for the Pell program. The project team:

- Reviewed relevant literature on industrial and governmental QC systems and practices.
- Interviewed QC personnel from five social service agencies operating at the Federal, state, and local levels.
- Conducted a workshop/discussion with these personnel and ED staff.

PURPOSES OF THE STUDENT AID QC SYSTEM

From Stage One activities, a working concept of QC was developed for student financial assistance programs, particularly the Pell Grant Program. It is essential that a QC system for student assistance programs enable ED to:

- Develop standards and measures for monitoring the delivery of student aid.
- Measure performance of student aid delivery against specified measures.
- Determine and monitor errors in eligibility determination and award processing.
- Identify sources and probable cause of errors to plan corrective actions.
- Develop corrective action procedures as an integral part of the processing functions.
- Develop standards and measures for monitoring the results of corrective actions.
- Ensure that various actors (e.g., processors or institutions) are operating in accordance with specified procedures, regulations, and standards.
- Report appropriate QC information to ED personnel on a timely basis.

To accomplish these functions, ED will need to develop QC procedures performed on an ongoing basis as the award process is taking place (front end) and on an audit basis after the award process has been completed (back end). For the Pell Grant Program, it is desirable that front-end procedures be developed to reduce the amount of error prior to the disbursement of funds. It is also necessary to have a back-end component to ensure that these corrections have actually taken place, as well as to perform analysis and develop corrective action for future years. The

certainty that corrective action will be implemented and monitored is an essential component of the QC system.

The QC cycle, illustrated in Figure 1-1, identifies necessary steps in the QC corrective action process. The first five steps in the cycle require a thorough analysis of the delivery system and supporting information systems for student aid programs. The final four steps in the cycle require an understanding and a thorough analysis of the management and policy processes in OSFA, in order to develop decision mechanisms that will result in corrective actions in critical areas. This paper primarily addresses the issue of designing a QC system that will:

- Define the sampled subject for control.
- Define a unit of measure.
- Establish standard of performance.
- Create a measuring device or procedure.

The subsequent steps in the QC cycle will be addressed as the project moves into the development of QC modules. This will include consideration of management procedures and policy coordination mechanisms that will result in completion of the final steps for selected targets of opportunity. However, there is some preliminary discussion of the requirements of a corrective action system in the final chapter. A formal process for initializing and implementing corrective actions will be required to complete the QC loop in the overall system design.

CONCEPTUAL MODEL FOR THE QC SYSTEM

Although a detailed conceptualization of the Pell QC system is an objective of the Stage Two study, it is first necessary to conceptualize the basic components of

THE QC CYCLE: FEEDBACK LOOP

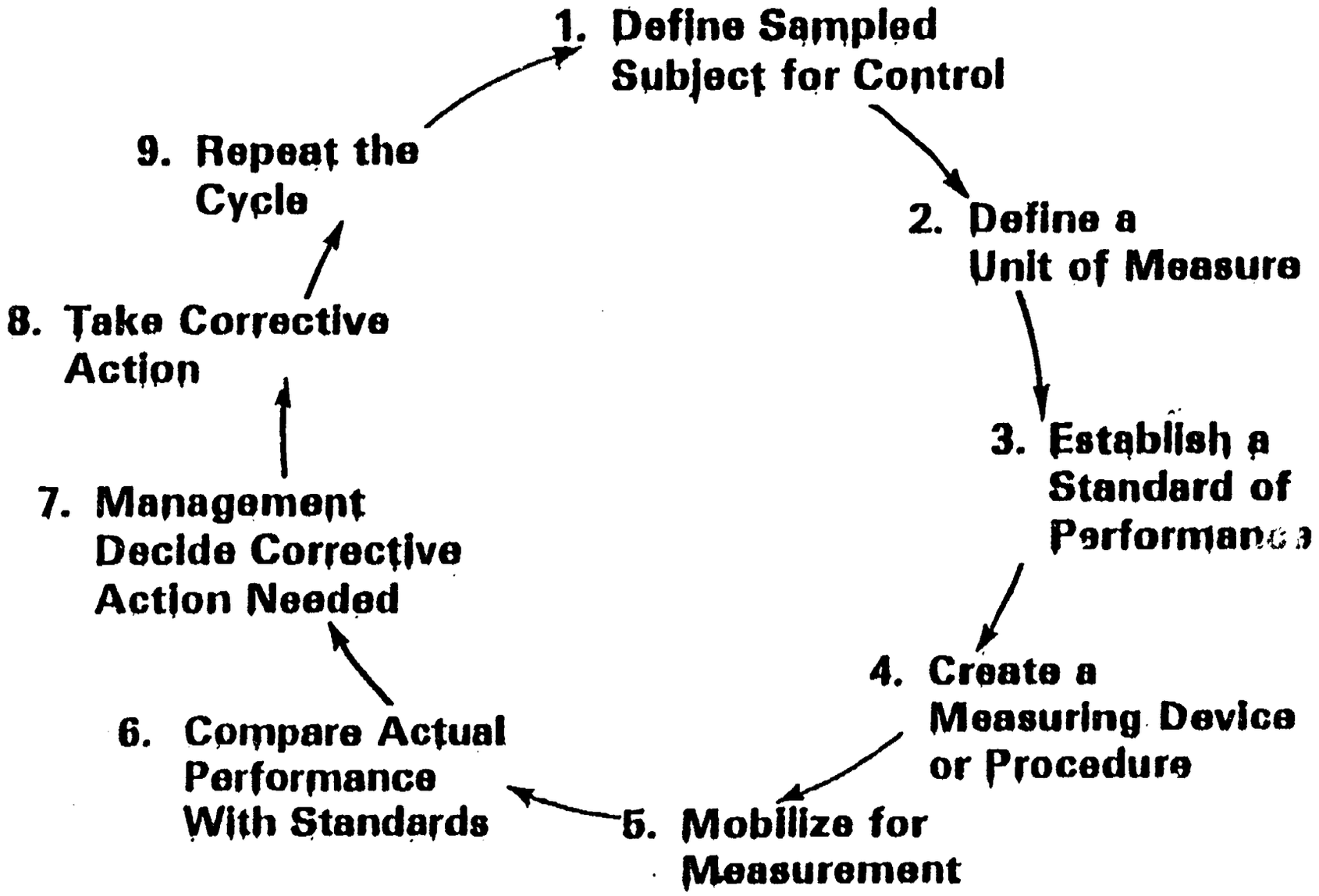


FIGURE 1-1

such a system. Conceptually, a QC system for the Pell program would combine a core QC Management Information System (QCMIS) for monitoring and tracking the award process with a series of subsystems for the major actors in the award process; the application processors (Central and MDE), OSFA (Central and Regional), institutions, and students. The subsystems would both monitor performance against standards and determine error levels within each subsystem. Such a system could also have an external QC subsystem, which would provide an external check on the program by sampling an appropriate group of recipients to determine if they received the correct award amounts. A simplified conceptual model is illustrated in Figure 1-2.

Steps in Building a QC System

In practice there could be more than these four subsystems. Each subsystem must interface with both manual and automated systems and, therefore, must combine elements of both. The development of a QC system for the Pell program will be a complex process requiring:

- Detailed analysis of the Pell delivery system
- Development of a conceptual model for an overall QC system
- Systematic development of QC subsystems that integrate into the delivery system
- Development of a central monitoring and tracking system, the QCMIS

THE REPORT

This report represents completion of the first step in the development of a QC system for the Pell Grant Program. The report provides a detailed functional analysis of current QC procedures in OSFA student aid programs as well as conceptualization of a framework for the development of the QC system.

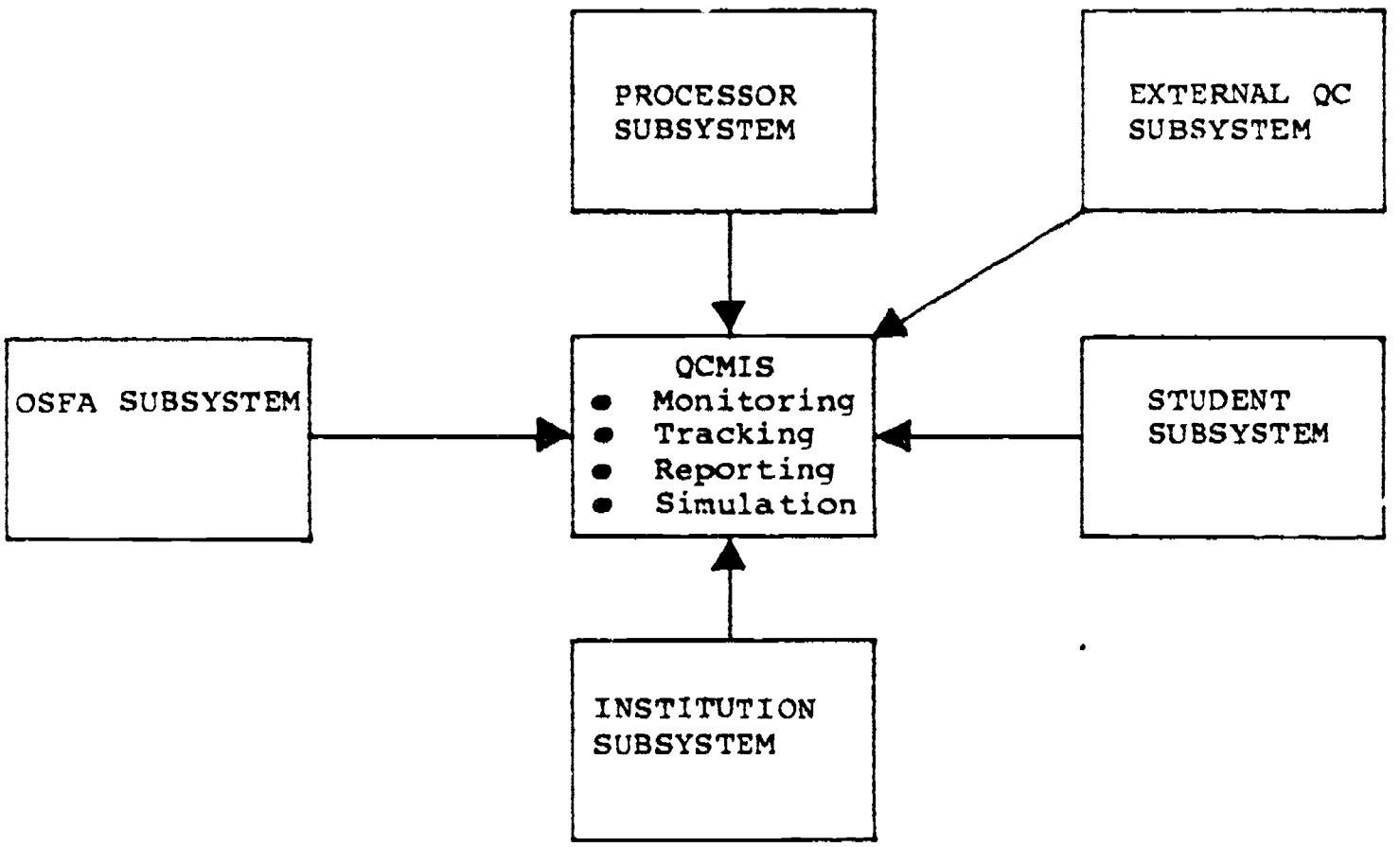


FIGURE 1-2

CONCEPTUAL MODEL OF THE PELL GRANT QC SYSTEM

The report has five chapters. After the introduction, Chapter 2 presents the QC system development framework used in the Stage Two study. It explains the strategic modular approach that will be used to design the QC system for the Pell program. Chapter 3 provides a functional analysis of the QC requirements for a Pell Grant QC system. It analyzes QC requirements at the policy, management, and operations levels for the Pell Grant Program. Chapter 4 presents a preliminary modular design for a Pell Grant QC system. This system is composed of a series of modular components that can be developed independently, in an incremental phased fashion. Chapter 4 also considers how the QC system design can be expanded to include other OSFA student aid programs. Finally, Chapter 5 considers general strategies for proceeding with the system design effort, including preliminary consideration of the policy mechanisms required to develop corrective actions designed to reduce error in the delivery system.

CHAPTER 2

QC SYSTEM DEVELOPMENT FRAMEWORK

The development of QC procedures and systems in environments that already have operating systems, in government or industrial settings, is a complex process. It requires an understanding of organizational dynamics as well as systems development methodologies. In the case of a Federal student aid program, QC system development also requires an understanding of the policy process, since a QC system must provide policy-relevant information. In the present context the selected QC system development strategy must also accommodate policy decisions that might change the basic structure of student aid delivery. As a result, it is essential that a QC system development framework be used that provides sound methodology and conceptual design, as well as flexibility with respect to a changing organizational setting.

This chapter presents the basic framework that will be used to develop and test the QC system for the Pell program. Four topics are considered:

- Generic Approaches: A review and evaluation of approaches to QC system development, including selection of a general methodology.
- System Design: Preliminary assessment of alternative Pell Grant QC system configuration options
- Organizational/Information System Perspective: An information system perspective of the organizational environment in the Office of the Student Financial Aid, considered as a basis for the functional analysis and system design
- Analytic Framework: Based on these three considerations, an analytic framework is specified for the QC system development task.

GENERIC APPROACHES TO QC SYSTEM DEVELOPMENT

To set the stage for ED decisions about the design and development of the Pell Grant QC system, it is important to consider three generic approaches to QC system

development. One approach represents the status quo for student aid programs. The other two approaches could be used to develop a new QC system for the Pell program or other student aid programs. The first is characterized as the incremental bottom-up approach, the second is the comprehensive approach, and the third is the strategic or modular approach. A discussion and comparison of these generic approaches follows.

Incremental Approach

The incremental, bottom-up approach to QC systems development typifies the approach used in most government agencies, educational institutions, and industrial settings. The incremental approach assumes that functional subunits within an organization have responsibility for corrective actions and procedures in their areas of responsibility. Corrective action and QC system development are usually truly incremental in this context, and, therefore, seldom the outcome of coherent planning. It is possible, however, to specify the steps typically followed if the incremental approach is taken:

- Functional subunits (division, branch, etc.) discover error-prone areas through problems with the system in operation.
- Plans for corrective actions (new procedures or system changes) are developed and based on needs as they arise; usually a limited range of options are considered.
- Managers seek new resources for corrective actions--system development or implementation of new procedures--but problems that involve an interface with other subunits (divisions and branches) are often ignored unless the resource issue can be resolved.
- QC procedures are developed and implemented as time and resources permit.

For the Pell Grant Program, the incremental approach typifies the approach used to date in the area of quality control. While the Division of Quality Assurance (DQA) has implemented some QC reporting requirements in the past, there have been no

systematic attempts to devlop a QC system for Pell or the other student aid programs. The types of problems likely to emerge if the incremental, bottom-up approach is used are:

- Production of tasks in the necessary time frame taking priority over smooth operation and reduction of error in the system and efficient use of personnel and other resources
- Inconsistency and variation in the ways functional units deal with quality control problems
- Inadequate development of quality assurance procedures in functional units
- Acute problems in the quality control of products that cut across functional subunits (or that involve more than one division/branch)

When acute problems emerge in an operating system, which the Stage One QC study indicates is the case for the Pell program, it becomes necessary to take a more systematic approach to QC system development. When major problems emerge, incremental changes (with bottom-up control) are no longer adequate.

Comprehensive Approach

The comprehensive approach assumes that anything that can go wrong with the operating system will go wrong; therefore, it is important to identify every possible error in the system and design corrective procedures. The basic steps involved in this approach are outlined as follows (with the application of each step to the Pell Grant Program considered in parentheses).

- Identify the major subsystems of the programs (for Pell Grants this would include eligibility determination, award processing, fund disbursements, and so forth).
- Identify the major actors or components for each subsystem. (For the eligibility subsystem this would include students/parents, institutions, and application processors.)

- For each actor in each subsystem, identify acceptable measures of possible errors in the system. (For students and parents in the eligibility system subsystem this will include identification of standards for application errors.)

- Define measures for each set of standards. (This would include identification of data elements and procedures for information collection.)

- Determine the components of each subsystem that merit development and inclusion in the QC system. (Evaluate the feasibility of including the various information sources in a QC data base.)

- Proceed with system development on the select subsystems. (Design and develop procedures for implementation of selected components of each subsystem.)

For the Pell Grant Program, the comprehensive approach would result in an elaborate QC system that imposes new data collection procedures on top of the already existing system. It would permit the development of a separate or stand-alone QCMIS. It could also be used to produce QC manuals for training ED personnel (Central and Regional) and institutional representatives in the practice of QC in the Pell Grant and other student aid programs. To the extent that the system used automated data collection and analysis procedures, it would be labor intensive since virtually an entire new set of procedures would be needed for each component of each subsystem; and sophisticated data base management procedures may be needed centrally, depending on how much of the system is eventually implemented.

Strategic Approach

This approach assumes that the major sources of error in the Pell Grant Program can be identified and that corrective action should be made in these areas through the development of modular components of an overall QC system. The basic steps involved in the strategic approach are outlined as follows (with applications to the Pell Grant Program):

- Identify significant sources of error in the program. (For the Pell Grant Program this was accomplished in the Stage One QC study.)

- Conduct a functional analysis of the operating system, including information requirements, linkage structures, and breakdown points. (Identify the places in the system where corrective action can be taken and monitor progress.)

- Conceptualize a QC system with modular components designed to detect and monitor error-prone functions. (Conceptual system design would consider modular subsystems that interface the QCMIS with subsystems of the Pell Grant system, e.g., Processor, funds disbursement.)

- Select and prioritize modular subsystems for development. (Identify time frame for specifications, design, development, and installation of each selected subsystem.)

- Proceed with systems development for selected subsystems (e.g., develop procedures and systems manuals, user manuals, system specifications, and software specifications, as necessary).

- Perform system tests on modular subsystems as they are completed. (This would be determined as the work schedule was developed and approved.)

For the Pell Grant Program, the strategic approach to QC development would permit the incremental implementation and testing of modular QC subsystems designed specifically to reduce errors in the system. The modular approach could also permit the use of up-to-date electronic technology utilizing preexisting data sources, where appropriate, rather than developing new data sources and reporting procedures. In other instances it might result in more systematic analysis and reporting on data currently collected. The principal advantage of the modular design is the use of preexisting data sources, where appropriate, with enhanced reporting and monitoring capabilities. However, in some areas new data sources would be needed.

Evaluation

For the purposes of this project, both the comprehensive and strategic approaches to QC system are viable approaches. This section compares the comprehensive and strategic approaches to QC system development using the following objectives of the proposed QC system as evaluative criteria.

- Reduce Error in the Pell Grant Program.
- Maintain Flexibility to Add Additional Programs.
- Pilot Test QC System Components.
- Produce Sound QC Methodology.

The two approaches vary in their potential for reducing errors, particularly the overpayments identified in Stage One of the QC study. The comprehensive approach would build in an elaborate procedure for identifying all possible errors but would also introduce complicating factors such as possible overemphasis on less important issues and time delays in monitoring key factors due to the implementation and operation of new data collection procedures. This would severely constrain the implementation of front-end corrective actions, since the excessive staff commitment to system implementation would limit staff resources available for analysis of corrective action options. The strategic approach would be targeted at critical problems in the design stage; it would also attempt to use, wherever possible, preexisting data sources. This would ensure that systems development work would be targeted at the most critical timely information. This approach could also be oriented toward front-end and back-end correction. Therefore, the strategic approach would maximize the potential for reducing program costs in a shorter time frame.

The two approaches also vary considerably in their flexibility to add additional programs to the QC system. With the comprehensive system it is possible to repeat the same procedure for other student aid programs or to modify the system and data correction procedures to include other student aid programs. In contrast with the strategic approach ED can create new modular subsystems for other student aid programs, as part of an overall integrated QC system. In fact, the development of modular subsystems could be staged to coincide with changes in the delivery system.

The strategic approach would also provide ED with the opportunity to pilot test QC system components at an earlier stage in the process. Inherent in the comprehensive approach is the design of new data collection procedures that involves defining new data elements and devising new collection procedures, which take time to implement and test. The strategic approach emphasizes the use of existing data sources, a time-saving procedure, and the phased development of QC subsystems. This should allow for pilot testing components of the QC system earlier in the development process.

Both approaches would produce sound QC methodologies but would have different results with respect to the type of methodology developed and used. The comprehensive approach would result in the same methodology being applied to each subsystem of the Pell program, with critical subsystem components receiving the appropriate levels of attention. Since it is an elaborate system review process, a well-defined procedure would be necessary, which may also apply to other student aid programs. The strategic approach would have to use sound systems development procedures in the conceptual development of the QC system and modular subsystems. As a part of the overall functional analysis, the contractor would evaluate the value of the QC procedures already in use, for example, in manuals currently distributed to institutions, before developing new procedures. Therefore, the procedures developed as a result of the project would be specifically oriented toward the existing system, but the procedures used for the entire project would be applicable to all Title IV programs.

In summary, given the objectives of the QC system design and testing phase of the Stage Two QC study of the Pell Grant Program, the strategic approach to systems development increases the prospect of:

- Reducing errors in the Pell program
- Adding other student aid programs to the QC system
- Pilot testing QC components earlier in the study
- Developing a sound generalized methodology

At a recent meeting on the QC system design, DQA officials expressed a desire to achieve these ends. Advanced Technology concurs with this emphasis and recommends that the strategic approach be used in the Stage Two study.

QC SYSTEM DESIGN

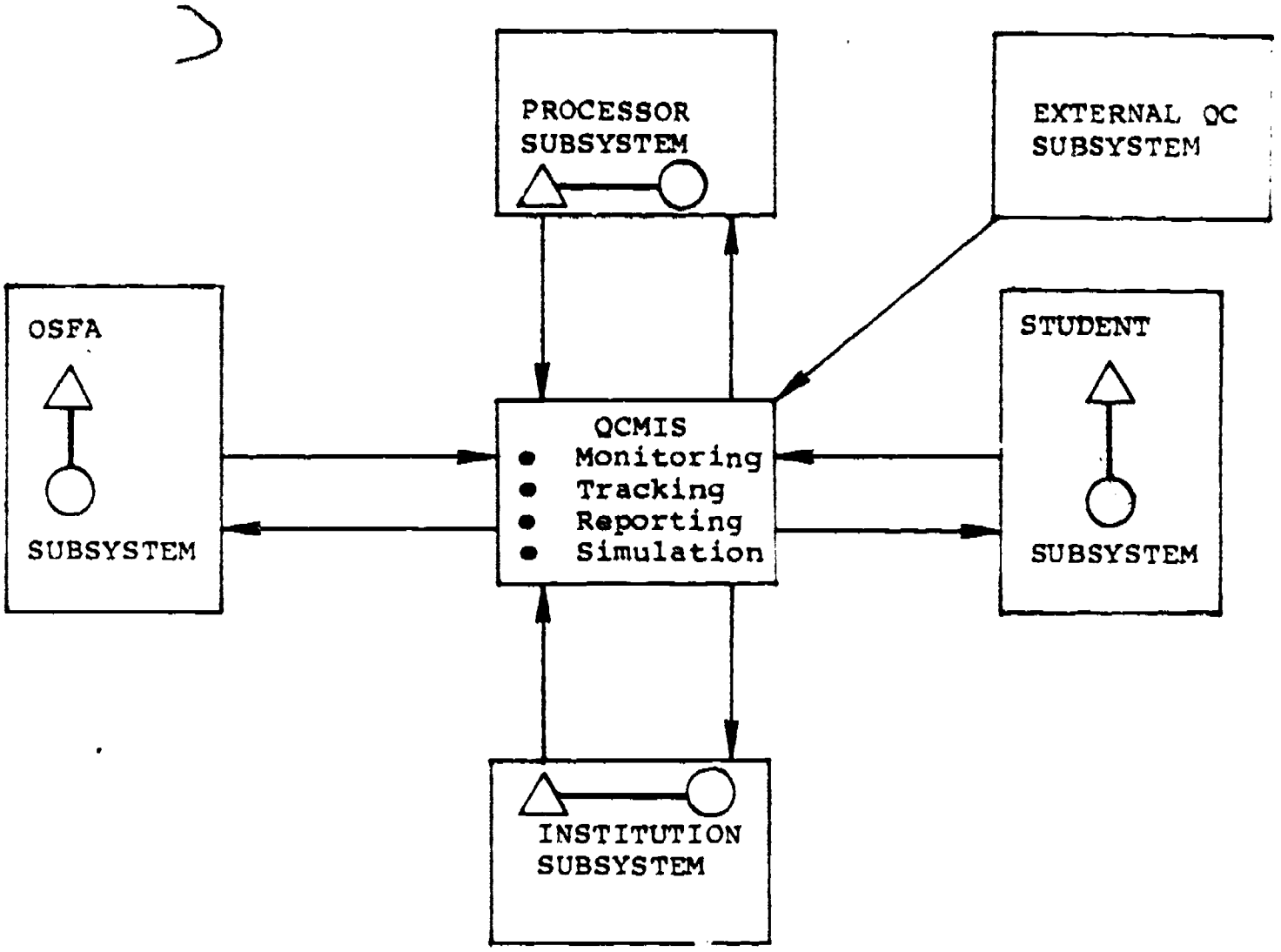
It is not possible at this stage in the study to provide a detailed description for conceptualization of the QC system. Nor is this desirable, since ED still must make some basic decisions about the type of QC system desired, and the functional analysis included in this report will be a major input to the system design. This section considers alternate configurations for the QC system relative to the degree of automation and use of preexisting information. Before considering these options, it is necessary to consider the purposes of the QC system.

QC System Purposes

A basic conceptual model of the Pell Grant Program QC system was discussed briefly in Chapter 1. This model is reconsidered in Figure 2-1. Each of the four major subsystems has two purposes:

- Each provides information on the functioning of the subsystem.
- Each is the object of quality control.

Ideally, information would flow back from the QCMIS about the types of corrective action that should be taken. This conceptualization is oversimplified since it ignores the information for each of the subsystems. The source of information and whether it will come from existing and new sources are still to be determined. It is



KEY

△ Provider of information

○ Object of QC

← Flow of information

— Link between functions

FIGURE 2-1

CONCEPTUAL MODEL OF THE PELL GRANT QC SYSTEM RECONSIDERED

possible, however, to describe an idealized form of the functions of each of the subsystems, and the QCMIS.

- QCMIS: This central QC information system would receive routine summary information from each of the subsystems. Reports would be analyzed, possibly through subsystem simulation of the program delivery process, to identify problems in the overall delivery system (either as early warnings or follow-up reports) and alternative corrective actions that can be taken (front end or back end). This subsystem would also be used to monitor the impact of corrective action.

- Student Subsystems: Would combine and analyze information about program applicants; monitoring and evaluation reports would be generated about student error and used as a basis of policy decisions about corrective actions; information about corrective action procedures would be fed back into the subsystem.

- Institutional Subsystem: Would provide a mechanism for monitoring QC measures and standards for institutions' reports from the institutional review function and would provide reports on trends to the central QCMIS; would also integrate information about corrective actions taken.

- Processor Subsystems: Would develop a series of QC subsystem checks to provide input to the QCMIS for policy decisions about the program and would alert policymakers to potential problems with the processing function.

- OSFA Subsystem: Would provide a routine procedure for monitoring OSFA management of the Pell program; would identify points where corrective actions are needed in the system.

- External QC Subsystem: Would provide an external quality control check on the program by sampling the program's recipients for purposes of determining whether awards are correct and, if not, what the sources of error are in the program. This component would provide feedback to the other major subsystems through the QCMIS. This could be a periodic replication of the Stage One QC study.

These descriptions are an idealized and simplified version of how a QC system might work. In reality, the QC system will have to utilize information from a wide range of sources, including thousands of institutions and millions of students. It is highly likely that QC relevant information can be generated from existing data sources. However, in its conceptualized form, a QC system for the Pell program will

provide a mechanism for monitoring and correcting error and tendency toward error in each of the major subsystems:

- Students/applicants
- Institutions
- Application processor
- OSFA

Alternative QC System Configurations

While it is neither possible nor desirable at this early stage to provide a detailed description of what the QC system will actually include, since this is an objective of the QC system design and testing project now underway, it is important to speculate about what the QC system might look like and how it will interface with the Pell delivery system. It is particularly difficult, without undertaking the functional analysis of the Pell delivery system, to specify the extent to which the QCMIS will be a manual or automated system and the extent to which it will use new or existing data sources. Two issues help distinguish between optional configurations for the QC system:

- The extent to which the new system is manual or automated
- The use of new or existing data sources

These issues can be used to generate four discrete configuration options. The criteria used to evaluate these options are:

- Feasibility of the system design (Can it be done?)
- Potential for reducing error (Will it save money?)
- Developmental costs (How much?)
- Interface with the delivery system (Will it work?)

At this point, consideration of the actual configuration of the QC system is preliminary. However, it is possible to outline and compare a few options, using these as evaluative criteria. As a part of the system development project, a rigorous and detailed analysis is necessary. This preliminary analysis helps explain the emphasis of the current QC system design effort.

Option 1: Manual Enhancements

It is possible to develop a QC system that essentially provides manual enhancements to the existing Pell delivery system. In this case, the system development activity would include detailed specifications of reporting requirements for each of the major actors in the Pell Grant Program. The reports would be entered into a filing system in the Division of Quality Assurance and used as a means of monitoring and tracking progress on certain key areas identified during the system development process. Either the comprehensive or the strategic approach to the system development just outlined could be used to develop the manual enhancements, although the comprehensive approach is easiest to adapt to this option. The major problems with this option are that it would add to the reporting burden for the major actors and that excessive time delays would be built into the system.

Option 2: Combined Manual/Automated QC System Using New Data Sources

This option would essentially take the above-stated concept an additional step. Where appropriate data collected through the QC process could be automated, some files would be accessible for automated analysis and reporting. Others, particularly periodic summary reports using aggregated data, would remain manual. This option is an improvement on Option 1, using automated technology as appropriate within the framework of creating a new data collection system. It has the potential of providing data on a somewhat more timely basis, but it would provide an additional layer of

reporting on top of the existing delivery system. It would use either system development approach but would be more adaptable to the comprehensive approach.

Option 3: Combined Manual/Automated QC System Using Existing Data Sources

This option would have some of the same features as Option 2 but would emphasize new analyses of existing data sources rather than development of entirely new data collection procedures. This would involve utilizing, where appropriate, data the major actors currently generate or that could be generated relatively easily through modification of current practice. In some instances this might involve reporting progress in corrective actions and in the speed of handling certain types of problems. For example, if the IRS Form 1040 cross-check were built into the Pell processor contract, a system for monitoring and reporting on this activity could be built in as well. This approach would be flexible enough to add other student assistance programs as necessary. In this way a QCMIS subsystem could be constructed that dealt with critical points in the delivery system. This option would be most adaptable to the strategic approach for QC system development.

Option 4: Fully Automated Integrated QC System Using Existing Data Sources

This option would take the approach just identified to the fullest possible degree of system automation. Such an option would integrate the core QCMIS with systems that interface with the major actors' operating systems. Monitoring, comparing results to specific standards, taking routine corrective actions, and reporting could be built into the system. Such an approach would be dependent on automation of most components of the Pell delivery system. Other student aid programs could be integrated into the system, depending on whether and how the student assistance delivery system was eventually redesigned. This option could use a variation of either

the strategic or the comprehensive approach to systems development but would have to be done in combination with the redesign of the entire delivery system.

Assessment

A functional analysis of the Pell Grant system is required to fully evaluate these options. In the absence of such an analysis, only preliminary judgments are considered. Once the functional analysis of the program is complete, it will be possible to develop these and/or other options in greater detail, in which case it will be possible to provide a detailed evaluation. Figure 2-2 summarizes the preliminary assessment of the four generalized options. This assessment uses the evaluation criteria just identified.

On the basis of the preliminary assessment it is possible to make an initial judgment about which QC system option is most desirable. Option 1 would probably have relatively modest results, with respect to its potential for reducing error, and moderate developmental costs, and it would not be integrated with the delivery system. Option 2 would increase the potential for reducing error and the developmental costs. Option 3 has high potential for reducing error, would require moderate developmental costs compared to Options 2 and 4, and would be partially integrated into the delivery system. Option 4, while having the highest potential for reducing error, does not appear feasible at the present time. As the Stage Two QC study progresses, however, it could be further evaluated as part of the delivery system redesign. Of the four options, Option 3, a combined automated/manual system using existing data sources, appears to be the most desirable QC delivery system configuration.

This preliminary assessment indicates that Option 3 is the desirable configuration for the Pell Grant QC system; a full evaluation of the precise configuration will

	OPTION 1	OPTION 2	OPTION 3	OPTION 4
Description	Manual QC System with New Data Sources	Combined Automated/ Manual QC System with New Data Sources	Combined Automated/ Manual QC System with Existing Data Sources	Fully Automated, Integrated QC System
Feasibility	Moderate (Can be implemented with existing delivery system--manual analysis may take too long to be useful.)	High (Can be implemented with existing delivery system.)	High (Can be implemented with existing delivery system.)	Low (Requires delivery system redesign.)
Potential for Reducing Error	Low (Delays built into reporting limit monitoring front-end corrective action. Implementation may not lead to error reduction.)	Moderate (Delays built into reporting limit monitoring front-end corrective action.)	High (Integrated approach permits monitoring front-end corrective action.)	High (Integrated approach permits monitoring frond-end corrective action.)
Developmental Costs	Moderate (Requires developing entirely new system.)	High (Requires developing entirely new system.)	Moderate (Uses existing data to the extent possible.)	Unknown (Included in delivery system redesign which would be costly.)
Interface with Delivery System	Not Integrated (Result is creation of new, parallel system.)	Not Integrated (Result is creation of new, parallel system.)	Partially Integrated (Result is integration of QC subsystems with Pell delivery system.)	Fully Integrated (Result is full integration of QC into Pell delivery system.)

FIGURE 2-2

PRELIMINARY ASSESSMENT OF QC SYSTEM OPTIONS

be necessary at a latter point. However, it appears that a combined manual/automated QC system using existing data sources is desirable. This also fits best with the needs of the Office of Student Financial Assistance. This is considered in more detail in subsequent chapters.

ORGANIZATIONAL FRAMEWORK

The development of a QC system for the Pell Grant Program, or for other Federal student aid programs, will take place in a complex organizational setting. Whether the actual delivery system is stable or changes as a result of new legislative actions, the QC system must interface with the bureaucratic organization in the Office of Student Financial Assistance. To adequately consider the information needs of a complex organizational setting, it is necessary to consider the different levels of decision in an organization and how they interrelate. Information system planners generally distinguish between the levels of the decision-making hierarchy (Anthony, 1965; Bassett, 1979; Blumenthal, 1969; and Weathersby, 1975).

- Strategic Planning (and Policy) is the process of deciding on objectives which can be expressed as programs in large organizations, changes in objectives, resources to be used, and policies that govern the acquisition, use, and distribution of resources.

- Management control is the process by which managers assure that resources are used effectively and efficiently in the accomplishment of the organization objectives.

- Operational control is the process of assuring that specific tasks are carried out efficiently and effectively.

Each level of decision making has different information needs. For large student aid programs, such as the Pell program, there are many actors involved in the decision process, ranging from the President and Congress, at the strategic level, to institutional and operational units in OSFA at the operational control level. This information system perspective on organizational decision making can be applied to

OSFA and the Pell program. Figure 2-3 depicts an information system perspective of OSFA student aid programs using this three-tiered organizational framework. The level of organization involved in the decision making about student aid programs ranges from the President and Congress, who make major policy decisions, to the staff in OSFA and higher education institutions actually responsible for operation of the programs. As recipients, students are not directly involved in the management or control of the program. Some actors are involved in two levels of decision making. For example, the Deputy Assistant Secretary for Student Financial Aid is involved at both the strategic and management levels, while other OSFA administrators are involved at both management and operational levels.

The information system perspective on the OSFA hierarchy provides a systematic way of viewing the types of decision objectives that are important at each level, as well as the types of decision inputs, information sources, and decision outputs that are considered important at each level. Clearly, each level of the organization is dependent on a flow of information and analysis. The problem is that types of information required for each level of decision making vary; therefore, the degree of specificity in reporting and timeliness of reports required at each level will also vary. At the operational levels, managers and personnel are concerned about the basic types of data elements (application forms, IRS forms, etc.), as well as the timeliness of processing to ensure that students receive awards. At the management level, summary reports and detailed analysis of patterns and trends are required to provide management with appropriate information for the assessment of operating objectives. At the strategic level, special one-time reports are needed to determine if policy objectives are being met or need to be changed; simulations can be used to forecast the consequences of alternative policies; and unrestricted inquiries may be necessary when major problems or new initiatives arise.

DECISION-MAKING HIERARCHY	ORGANIZATIONAL LEVEL INVOLVED	DECISION OBJECTIVES	DECISION PROCESS INPUTS	INFORMATION SOURCES	DECISION PROCESS OUTPUTS
Strategic Planning	President, deans, Congress, ED, OPBE, Deputy Assistant Secretary for Student Aid	• Set objectives. • Determine resources to be applied.	• Staff studies • External situation • Reports on internal achievements	• Special "one-time" reports • Simulations • Inquiries (Unrestricted)	Goals Policies Constraints
Management Control	Deputy Assistant Secretary OSFA Division Chiefs OSFA Branch Chiefs OSFA Section Chiefs	• Allocate assigned resources to task. • Make rules. • Measure performance. • Exert control.	Summaries Exceptions	• Many regular reports • Format variety • Inquiries (Restricted) • Data-Bank oriented	Decisions "Personal" Leadership Procedures Actions
Operational Control	OSFA Division Chiefs OSFA Branch Chiefs OSFA Section Chiefs OSFA Unit Chiefs OSFA Personnel Pell Grant Processor Institutions	Use resources to carry out task in conformance with rules.	Internal events	• Formal • Fixed procedures • Complex • Concrete	

SOURCE: Adapted from Sherman C. Blumenthal, Management Information Systems (Englewood Cliffs, N.J.: Prentice-Hall, 1969), page 29.

FIGURE 2-3

A SYSTEMS PERSPECTIVE OF THE OSFA HIERARCHY

This perspective can also be used to illustrate how a quality control system would most effectively interface with the organization hierarchy in the Office of Student Financial Assistance. Figure 2-4 presents an organization perspective on how the QC system would interface with the OSFA hierarchy. The external QC system could provide a formal mechanism for conducting inquiries into the way the system is working. The QCMIS would combine routine reporting from the subsystems with a simulation capacity that would use QC data to analyze the impact of policy issues.

The perspective provided by the organizations and information systems framework is highly adaptive to the issues already considered:

- The use of a strategic, modular approach to QC system development
- The development of a combined automated manual system that uses existing data to the extent possible.

In fact, the organizational framework provides insights into how the data gathered in the functional analysis should be analyzed to meet the needs of the Department of Education. The analysis and the organizational resources, management objectives, and QC standards of the Office of Student Financial Assistance must reconcile the fact that information resources and needs vary considerably by level of organization.

ANALYTIC FRAMEWORK

The analytic framework used in this report is derived from a synthesis of three issues. First, a strategic approach to QC system design and testing is the most desirable approach for this activity. The basic steps implied in the strategic approach are:

- Identify major sources of error.
- Conduct a functional analysis of the current delivery system.

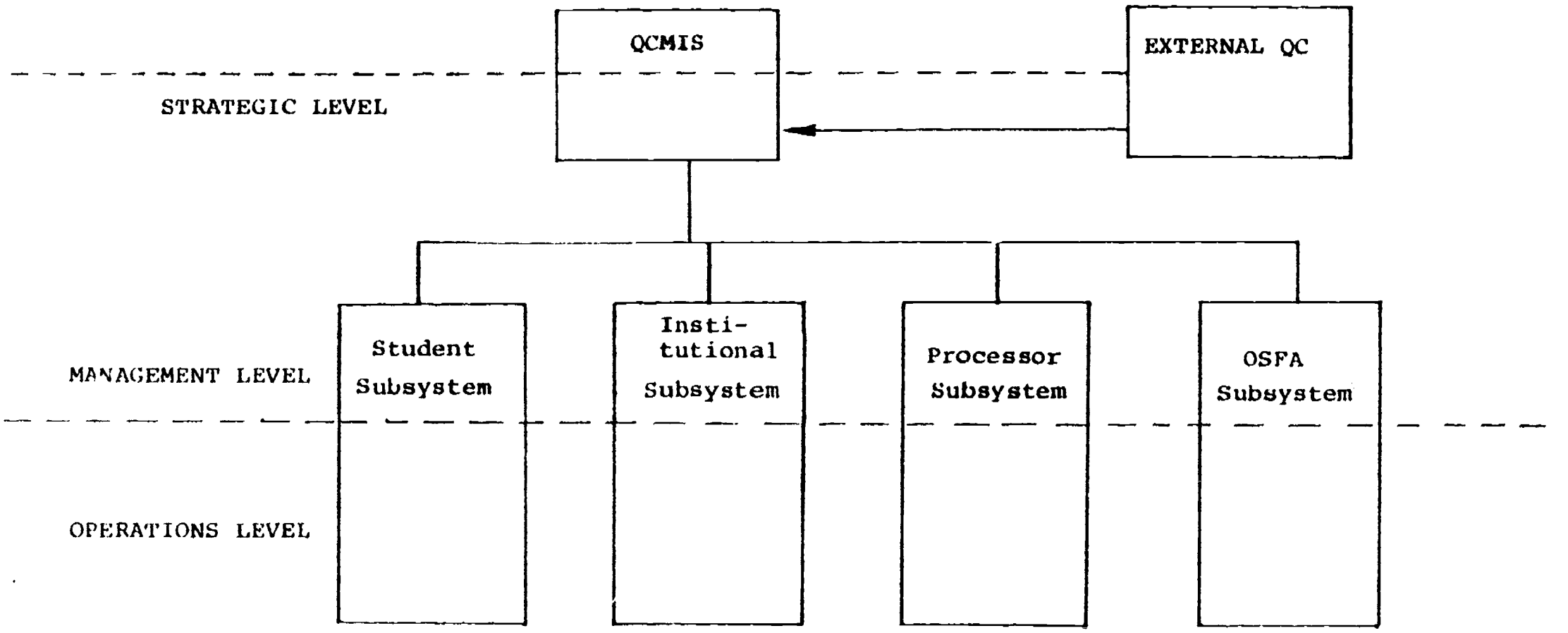


FIGURE 2-4

AN ORGANIZATIONAL PERSPECTIVE OF THE PELL QC SYSTEM

- Conceptualize QC system modular components.
- Select and prioritize modular components.
- Proceed with development of selected components.
- Perform system tests on modular components as they are developed.

This report represents the second and third steps of this process. The functional analysis of the Pell Grant delivery system is included in Chapter 2, while the preliminary conceptualization of a QC system for the Pell program is contained in Chapter 4.

Second, during the data collection stage of the functional analysis of the Pell delivery, emphasis was placed on documenting and analyzing current sources of information and management procedures, since the most viable configuration option appears to be a combined automated/manual system that uses existing data. This would increase the possibility that the new system would be resource saving, using and enhancing existing data and management practices, rather than resource draining, placing new demands on the current delivery system. The basic data gathering techniques used during the functional analysis have emphasized using existing resources:

- Interviews emphasized documenting existing procedures, processes, and sources of information.
- Reviews of ED/OSFA documents and program regulations.

Third, analysis of the information collected will use the organizational perspective on information systems. Three levels of information sources, resources, and requirements are analyzed in subsequent chapters:

- Strategic policy: Refers to the policy and political arena and the types of quality control information, reporting, monitoring, and analysis required for improved policymaking.

- Management control: Refers specifically to the functional divisions within OSFA and the student aid programs and the types of quality control standards, information, reporting, and analysis required to improve management of the Pell program.

- Operational control: Refers specifically to operational control of the student aid programs (particularly Pell Grants) and the types of information reporting, monitoring, and analysis required to improve actual process of program delivery.

The subsequent chapters, which provide a functional analysis and preliminary system design for the Pell program, will use this three-tiered perspective. The development of an effective QC system that uses existing resources, and that results in resource savings, is dependent on a thorough understanding of the QC requirements and needs at each of these levels in the OSFA organization.

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CHAPTER 3

FUNCTIONAL ANALYSIS:

PELL PROGRAM DELIVERY SYSTEM

QC system development in the current Pell program delivery system requires a thorough functional analysis of the Pell delivery system within the Office of Student Financial Assistance. This chapter undertakes such an analysis for OSFA Central and Regional Offices. The other major actors--institutions and application processors--have not been included in this analysis. However, they will be analyzed as the design project progresses. The purpose of this analysis is to identify and assess the QC information requirements for the Pell program. This chapter analyzes the Pell delivery system, including information systems and needs for improved QC procedures and systems, from three perspectives.

First, the policy context is considered. Many of the basic decisions about the Pell Grant Program are made in the political arena, as a result of analysis by ED, Office of Management and Budget (OMB), and congressional staff. Usually this takes place either through the annual budget process or through the reauthorization of the Higher Education Act, the legislation which sets the basic parameters for Pell and other student aid programs under Title IV. This analysis considers the types of QC information required in the policy arena.

Second, the management of student aid programs in OSFA is considered, including the types of QC information procedures required for effective management of the Pell program. This includes analysis of the organization of the Office of Student Financial Assistance (OSFA) and the management procedur[illegible]tly being implemented in the office.

Finally, the actual delivery system for the Pell program is considered. This analysis considers:

- The function of major organizational units involved directly in the Pell program delivery system
- The quality control procedures currently in place
- The information resources within the unit
- The information needs of the unit

THE POLICY CONTEXT

The QC issues for the Pell program that concern Federal policymakers are a direct outgrowth of the program's history. The Pell Grant Program was created as the Basic Educational Opportunity Grant (BEOG) Program in the Education Amendments of 1972, which reauthorized the Higher Education Act of 1965. The purpose of the BEOG and other student aid programs authorized under Title IV was to promote equal educational opportunity. The funding of the program began in FY73 with the freshman class of 1973. At first the delivery system was entirely a paper process, with students making applications directly to the application processor, which was the American College Testing (ACT) Service. Each subsequent year until FY76 an additional entering class was added to the program. The award levels for the program (the maximum award allowed per student) were also increased. As a result, the costs of the program grew dramatically, from $69 million in FY73 to $959 million in FY76.

The accuracy of the projected cost of the program is perhaps the major QC issue that concerned congressional and administration policymakers during the early years of the program. As a result, there was a rapid proliferation of micro-simulation models for the program. At first, cost projection models used for other student aid programs were adapted to the BEOG program. But since Pell is basically an

entitlement program, these flow distribution models did not work. Pell is a demand-driven program, like other social programs and unlike other student aid programs. Within a year, an enrollment-based model was developed for the Pell program; it used the National Center for Education Statistics (NCES) enrollment projections for a basis of program cost projections. Different versions of this model were operated by HEW and other agencies, further confusing the political process. In the late 1970s, HEW started work on a new model that would use prior year application data. This became operational for FY80; a version of the model is now housed in OSFA. Two additional models were developed by the Congressional Budget Office and the College Entrance Examination Board. OSFA has also funded the development of a cost simulation model for all student aid programs. The combination of models has gradually increased the awareness of policymakers about the complexity of esimating costs for the program. The budget etimates for the program have always been off target due to a combination of policy and estimation problems.

During the 1970s, the problems with estimating program costs preoccupied senior policymakers and analysts in HEW and Congress. The delivery system for the program also underwent a rapid evolution. Since congressional decisions about budgets and program regulations usually delayed starting the program each year, e.g., the preapplication process, the basic issue facing the Bureau of Student Financial Assistance (before ED was formed, OSFA was a bureau) was to deliver Pell Grants within a reasonable schedule. Quality control—identifying and reducing error in the program—was not a high priority.

When the Department of Education was formed in 1979, the administration of education programs was modified significantly. While controversy continued over program budget estimates, the student aid delivery system became the subject of study. For example, the new Office of Management and Evaluation (OME) took a

direct interest in the quality of the student aid delivery system, and senior officials in OME circulated a paper prepared for the Secretary of Education, proposing that a major new system be developed for all student aid programs. Simultaneously, OSFA developed plans for the QC study of the Pell program. The initial findings of the Stage One study added to speculation that there were major QC problems and sources of significant error in the Pell delivery system.

The Reagan Administration began to raise basic questions about the quality of entitlement programs during 1981. Currently, there is a heightened concern about QC in the Pell delivery system in the policy arena. Specifically:

- Officials in ED's Office of Planning Budget and Evaluation expressed concern that the QC system provide good analysis of delivery system options, such as the cost and benefits of validation by institutions or the processor.

- All of the senior officials interviewed outside of OSFA expressed concern that significant changes were needed in the student aid delivery system and that development of a full-scale QC system in the current delivery system would not maximize the potential for error reduction.

Currently, senior policymakers and analysts in Congress and the administration are dependent on QC information on student aid programs provided by OSFA. A senior-level Credit Management Task Force was recently formed in ED to plan for major changes in the entire student aid delivery system. The deliberations of this group, the reactions of the President and OMB officials to error in the program, the escalating costs of all entitlement programs, and the awareness that marginal improvements in QC can be implemented through the budget process are all factors influencing the policy-level requirements for QC information.

During the recent round of interviews with ED and OMB officials about QC in Pell and other student aid programs, wide-ranging viewpoints were expressed about QC information needs in the policy arena. The two critical issues raised in these interviews were:

- OMB officials expressed concern that QC includes a system for annually measuring errors in the awards made in the Pell program.
- OPE officially expressed a desire for timely analysis of corrective action options.

While micro-simulation models for estimating program costs are operated outside of OSFA—e.g., OPBE and CBO—the collection and analysis of information on the quality of program delivery is an OSFA function. Therefore, a policy-level QC management information system that provided information and analysis directly to senior administration officials would fill a glaring gap that now exists in the current system for collecting and analyzing information on the quality of program delivery. Some of the policy relevant requirements for such a system would be to provide:

- Annual assessment of the level of error in Pell award
- Analysis of the quality of program delivery in OSFA
- Timely analysis of policy-related issues for the budget and reauthorization processes

THE MANAGEMENT ENVIRONMENT IN OSFA

This section considers the management environment in OSFA and the QC resources and requirements considered important for the improved management of OSFA programs. Three topics are considered:

- Organization of the management process in OSFA
- Management processes and information resources
- Quality control requirements

All of these issues obviously interrelate. The discrete treatment of these three topics is necessary for a complete functional analysis of the OSFA environment. In this discussion district the Pell program is not treated separately. Since OSFA has a functional organization, the distinct analysis of the organization and management of a single program is complex.

OSFA Organization

OSFA has a functional organization structure, with management responsibilities assigned according to function rather than program. A simplified organizational chart for OSFA is diagrammed in Figure 3-1. The Deputy Assistant Secretary for Student Financial Assistance heads OSFA. There are six divisions:

- Division of Policy and Program Development (DPPD): Responsible for policy analysis, program planning, and regulation development for each of the programs. The Pell Grant Branch maintains the application processor contract for the Pell program, in addition to the responsibilities for policy and regulation.

- Division of Program Operations (DPO): Responsible for operations of Pell, Campus-Based, and GSL programs. The Pell Grant Branch is responsible for the regular alternate disbursement system.

- Division of Certification and Program Review (DCPR): Responsible for audit and review functions in OSFA. Subunits are not organized according to program.

- Division of Systems Design and Development (DSSD): Responsible for system design and development in OSFA. Currently, maintains an OSFA-wide goals and objectives systems. The division does not have a separate branch for the Pell program.

- Division of Training and Dissemination (DTD): Responsible for training of OSFA staff and dissemination of program and consumer information to ED central and regional offices and to institutions. Not organized according to program.

- Division of Quality Assurance (DQA): Responsible for QC and quality assurance for student aid programs. Not organized according to program.

The functional organization of OSFA has both disadvantages and advantages relative to the design and development of a QC system for the Pell program and other student aid programs. The principle disadvantage is the absence of a programmatic emphasis that cuts across all divisions in OSFA and identifies QC measures and standards for individual programs, especially for processes that cut across division lines. Therefore, it is important that a quality control subsystem link divisions together. The design of a Pell QC system must take into account this serious limitation.

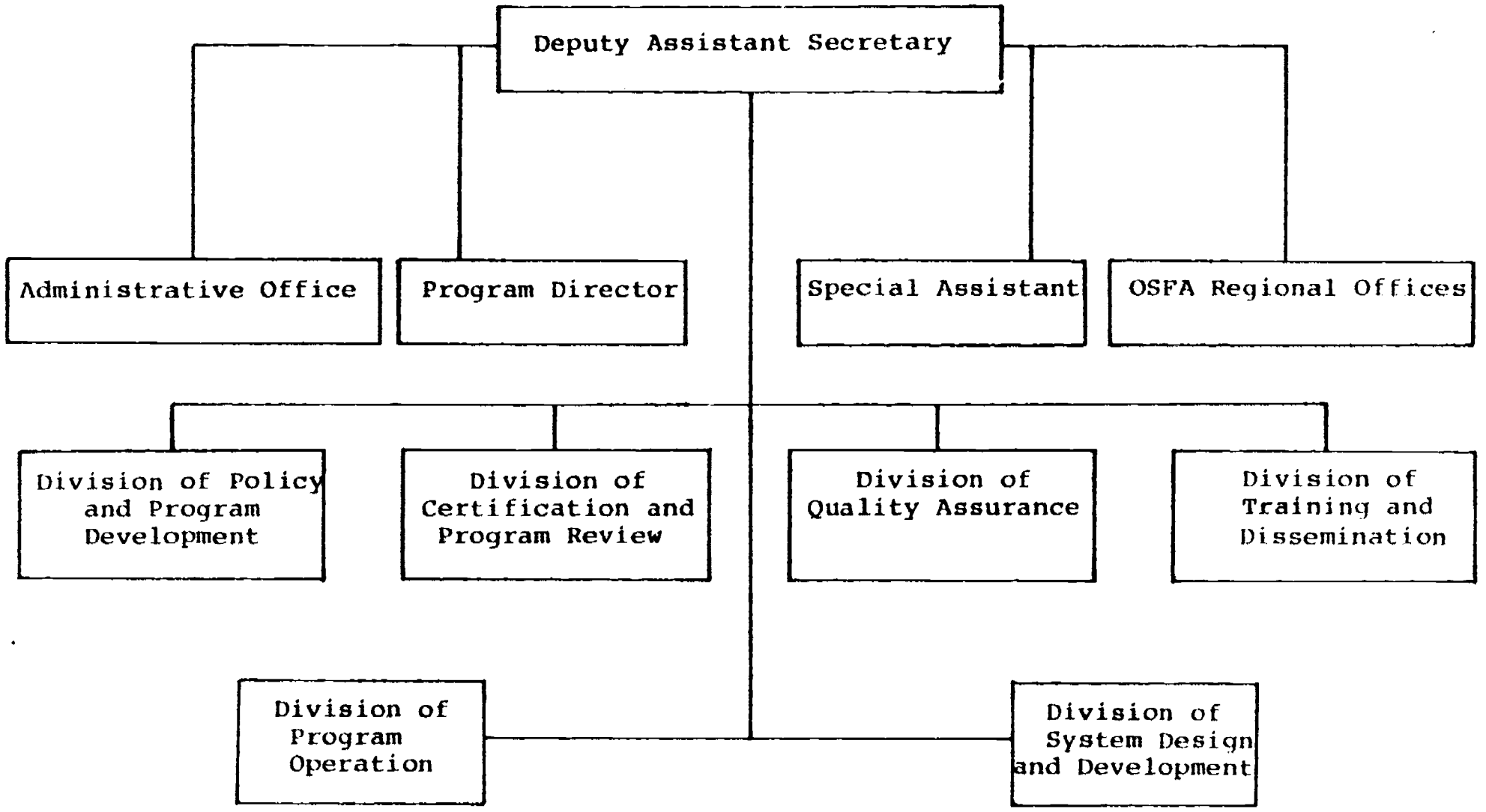

FIGURE 3-1

ORGANIZATION OF THE

OFFICE OF STUDENT FINANCIAL ASSISTANCE

The principle advantage of the organizational structure for the QC system design activity is that the functional emphasis makes it possible to develop QC modules that view the various operations as an integrated system and can thus assess performance across program areas. As the QC design effort continues, it will be important to evaluate which QC modules can perform functions across programs and yet provide the necessary linkage across divisions for each student aid program.

OSFA Management

The Deputy Assistant Secretary for Student Financial Assistance has recently proposed a goals and objectives management system for OSFA that is currently being implemented. This system provides a potentially sophisticated and effective process for managing OSFA programs. The intent of the system has been characterized as follows:

> To provide improved means of resource planning and management, OSFA personnel have developed and implemented at a management level the goals and objectives system, to assist personnel in understanding the numerous activities that must be accomplished. Information can be saved, modified, and presented to assist key personnel in meeting objectives in a timely manner and in developing resource plans.[1]

The primary objective is to provide OSFA with a means of planning, allocating, and tracking the use of resources easily in a changing environment with respect to OSFA's key goals and objectives. The system organizes OSFA goals through the specific steps required for implementation. Specifically, this is defined as follows:

- Goals: Reflect OSFA priorities.
- Objectives: Identify division responsibility.
- Activities: Identify branch responsibility within division.

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[1] D. Kerr, "Goals/Objectives Management System," OSFA, Division of Systems Design and Development, April 27, 1982, page 2.

- Tasks: Identify section within division.
- Subtasks: Identify unit responsibilities.
- Steps: Identify personnel responsible for specific steps in the implementation process.

The first step in implementing this system has been accomplished. Divisions have identified goals through steps as they relate to division responsibilities. The first round of goals through steps are currently being entered into an automated TRS-80 system. The system itself is intended to result in:

- Improved resource allocation
- Improved office-wide communication
- Improved long-term planning
- Improved flexibility

According to current plans, the system will provide OSFA with a primary means of planning, allocating, and monitoring resources. The Division of Systems Design and Development has been given responsibility for implementing the new system. It will eventually provide each division with Gantt charts for divisional objectives through steps. After review, this system will become an integral part of the OSFA management system.

The goals and objectives system provides OSFA with a significant vehicle for improved QC, especially if program specific information flow and program responsibilities are identified. In fact, the information currently entered in the system can be used to develop program specific QC standards for Pell and other OSFA programs.

QC Issues

The major QC issue at the management identified level in OSFA as a result of this review is that program management can break down because of the functional organizational structure in OSFA. The design of a QC system for Pell or other student

aid programs should identify program specific linkages across OSFA divisions. The goals and objectives management system currently being implemented in OSFA provides a framework for identifying these programmatic linkages across divisions and identifying QC standards for performance in critical areas. This system should be used as a framework for developing a management level QC system for the Pell program and other student aid programs. Each system should include attention to:

- Critical points in the policy cycle for program policy, planning, and regulations for each program
- Critical points in the delivery cycle for each program

ANALYSIS OF THE OPERATIONS LEVEL IN OSFA

The following discussion considers the information resources and QC needs at the level of operations or program delivery for the Pell program. Two divisions are not covered in the following analysis: Division of Quality of Assurance (DQA) and Division of Systems Design and Development (DSDO). DQA concerns are considered throughout this manuscript, while the goals and objectives system in DSDD is addressed in the above section. In addition to a discussion of the other divisions, the role of OSFA Regional Offices is considered. The specific topics considered in this section are:

- Division of Policy and Program Development, Pell Grant Branch
- Division of Program Operations, Pell Grant Branch
- Division of Certification and Program Review
- Division of Training and Dissemination
- OSFA Regional offices

Division of Policy and Program Development, Pell Grant Branch

The DPPD Pell Grant Branch is one of three branches within the Division of Policy and Program Development. This office is responsible for the development of program regulations and budget packages as a part of the regular policy and budget

cycles within the Department of Education. The branch is divided into two sections: policy and analysis. The policy section is in charge of regulation development, while the analysis section generates a budget package with policy options that goes to the Secretary, conducts periodic analytic studies, and supports the application processing contractor.

As with its counterparts in DPPD, the primary function of the Pell Grant Branch is to translate the general policy direction of the Pell Grant Program given it by the Office of the Secretary into specific tasks needed to operate the program. Budgetary, legislative, and regulatory changes are formulated where needed and become part of the regular cycle for setting the program parameters for operation. Unlike the other branches within the division, however, the Pell Grant Branch also controls the processing of application forms for the program. This function adds additional responsibility of the branch for developing the application forms and ensuring the efficient processing of the forms and notices of eligibility. It also blurs the distinction between the roles that policy development and operations play in the overall delivery of the program.

QC Procedures

In terms of the branch's policy development function, the branch chief outlines a number of activities which must be accomplished during a particular month and a number of ongoing activities which the staff can be working on. This list is gone over with each section chief so that priorities may be set. The list also allows for a way of reviewing which tasks get done and which do not. This system controls the internal workings of the branch given the set of tasks imposed on it by the senior policymakers in the Department. However, the tasks given to this branch, like those of other branches in the division, are highly variable and change with the political situation. This means that the list of activities and their priorities must be amenable to change.

As far as the integrity of the program's delivery is concerned, the branch function is the front end of the process. The policy development aspect of the branch does not have any QC procedures per se. The branch can only maintain quality to the extent it can foresee how the delivery system will work. The basis it uses for any kind of review of activities over the year is through the overall policy process.

The processing oversight function of the branch requires a different type of management approach. The branch's role is oversight and not production of the work. The branch performs the same type of tasks as those in the policy development function, that of translating policy into specific operations. The branch must then go one step further and ensure that specific tasks are performed correctly. A main function of the Branch is to respond to ad hoc requests for information and analysis from OPBE, OMB, and Congress.

To monitor the Pell Grant processing contract, the branch receives weekly and monthly progress reports from the processor detailing several indicators of processing. These reports compare this year's production with last year's production with the contract standards. These reports reflect the production aspect of the processing and not so much the quality of the processing. To the extent that effective management indicators can be quantified, the reports adequately reflect the status of the processing.

Information Resources

In order to carry out its policy development function of generating the necessary budget projections, the branch relies on a cost estimation model that uses as its data a file of applicants and recipients. The model has the capability of simulating a set of program parameters and estimating a total cost for the program. The list of objectives for each month allows members of the branch to know what the activities will be and allow section chiefs to set priorities based on the most reliable information

at the time. The branch receives information through many sources, but one formal method is the branch chief meetings with the division head. Information from these meetings on policy directions is passed to the respective branches for implementation and information on the feasibility of the policy guidelines and then passed back through to the policymakers.

The weekly and monthly management reports from the processing contractor provide the main source of information on the condition of the processing. In addition, ad hoc reports on specific aspects of the system can be requested from the contractor.

Information Needs

Due to its nature of having both policy development and operation functions, the branch has a wide range of needs to ensure proper integration of functions. First, the branch needs better information between the back end of the process, that is, from the Division of Program Operations. DPO has control over the institutional fund disbursement and accounting. The policy implementation done by the Pell Grant Branch has a direct impact on the fund control and allocation of funds to institutions. Second, since the branch has the primary responsibility for implementation of policy, the branch needs better information on the general direction of that policy with as much lead time as possible. This may not be possible due to the unpredictableness of political situations, but the branch must have a full amount of information as soon as possible.

Division of Program Operations, Pell Grant Branch

The Division of Program Operations is charged with the actual carrying out of ED operations for the Pell Grant, Campus-Based, and GSL programs. ED's operational role involves largely the disbursement of Title IV funds to institutions and the reconciliation of fund expenditures at the institutional level. Because this division

essentially controls the purse strings for the Title IV programs this is a critical area for QC.

The DPO Pell Grant Branch is responsible for the disbursement and monitoring of Pell Grant funds to institutions. The branch has three sections: Fund Control and Disbursement (FC&D) Systems, and the Alternate Disbursement System (ADS):

- The fund control and disbursement section has two units. The Fund Control Unit is responsible for accounting functions, including updates to the universe file. The Disbursement Unit processes the progress reports and validation rosters submitted by the institutions for funding authorizations and serves as the liaison with institutions. Essentially, they monitor the flow of funds to institutions throughout the year.

- The Systems section maintains the data base on all institutions receiving Pell Grant funds and tracks the number of SARs submitted by each institution. This is done through the Program Information and Monitoring System (PIMS).

- The ADS section handles the direct disbursement of Pell Grant funds to students for those institutions on the ADS system.

QC Procedures

The Pell Grant Branch currently uses the following QC procedures to monitor operations:

- The PIMS staff refers error-prone and potentially fraudulent schools to the Division of Certification and Program Review.

- Through the PIMS subsystems, this branch identifies discrepancies between SARs and the accompanying progress reports submitted by institutions.

- The Pell Grant Branch tracks transaction processing errors made by institutions on progress reports and other submissions. Schools which make excessive transaction errors are contacted.

- The branch has a system to identify late report filers and institutions that continue to overestimate funding requests.

- Validation roster submissions are monitored. The branch can freeze funds for institutions which fail to return a roster after 60 days.

- The PIMS system uses a reasonable test on institutional fund requests. Each request for funds is compared to the expected total funds to be allocated to that institution.

Information Resources

The Basic Grant Branch contains information sources available for possible use in a QC system. PIMS produces a wide range of reports including ageing reports, unreasonable reports, receipts, control reports, and error reports. PIMS is comprised of five subsystems: the Annual Initialization Subsystem, the Universe Subsystem, the Progress Report Subsystem, the Accounting Subsystem, and the Student Eligibility Report Subsystem. The information available and the function of each is described as follows:

- The Annual Initialization Subsystem is used to perform all functions which are necessary for beginning processing of a new school year. This process facilitates a timely mailing of authorization information to eligible institutions.

- The Universe Subsystem maintains the master universe file of institutions which are eligible for consideration for participation in the Pell Grant Program. The universe file contains demographic, classification, enrollment, participation status, obligation, expenditure, and recipient count data as well as a variety of monitoring information.

- The Progress Report Subsystem performs all of the collection, editing, and correction of data submitted to ED on the progress report. The information reported in this document is evaluated within the system to validate institutions' requests for additional BEOG funds. Reports are produced regarding errors on data submitted, count, and amounts of excessive (unreasonable) requests for funds by institutions. Based on this data, various statistical reports, ageing reports unreasonable reports, error records, progress reports, and Student Validation Rosters are produced, as well as various control reports.

- The Accounting Subsystem performs all the functions related to the actual obligation of BEOG funds to institutions. The subsystem updates the master institution universe file with obligation information and produces letters and institutional/state/regional reports on obligation of funds. Also, various error and control reports are produced to monitor funds to institutions. The subsystem passes obligation transactions to the ED finance group to match the disbursed funds. Various reconciliation reports exist to monitor discrepancies in obligation and disbursement of funds.

- The Student Eligibility Report Subsystem performs all activities related to recipient-level fund control in Pell PIMS--the SAR returned to ED by the institution to the means through which development of data bases on the Pell recipient level is accomplished. SAR data reported are collected,

edited, and verified against application data collected by the Pell application processor system. Various control reports, error reports, and summary fund control processing and statistical reports are produced.

Other sources of information exist for QC outside of PIMS, such as:

- Processing, disbursement, and reconciliation data from ADS
- Information on phone and letter inquiries made by institutions. This data may not be in useable form at present but are potentially a resource.

In addition, the branch is currently developing a program cost projection model to estimate program costs based on the most up-to-date disbursement information. When completed the model should provide additional QC checks in the disbursement process.

Information Needs

In interviews the Pell Grant Branch expressed the need for uniform quality control measures for contractor data entry error. Greater system integration with the processor is needed to catch error and to ensure that students are being paid with the correct SAR. This branch also needs better integration and more feedback from the Program Review Branch in the areas of institutional eligibility, audit results, and authorizations of money to institutions approved during a program review.

Division of Certification and Program Review

DCPR Certification Branch

The Certification Branch is responsible for the certification of new institutions entering the Title IV programs. The new institutions may be either new to all the Title IV programs or adding a new program (e.g., Pell Grants to an existing Campus-Based school). The Certification Branch is the third step in the ED approval process for new institutions, after accreditation and eligibility reviews. The branch consists of three sections: Coordination, Administration Analysis, and Financial Analysis. Each plays a specific role in the Certification Review Process.

This branch is also responsible for recertification of institutions that have changed ownership. This review is the most extensive type performed by the branch.

Since there is a track record available to analyze, the branch will determine any obligation to ED from the old ownerships for operations from Title IV programs. If necessary, Regional Office Program Reviewers will visit the institution and review records there.

The Certification Branch currently uses the following QC procedures to monitor their operations:

- Supervisory review of the Certification Reviews, including a review of a checklist to ensure that all steps have been performed
- Branch chief review of "cover sheet" on which each reviewer has signed off if the Certification Review is not proceeding on time, with the Branch Chief following up with the staff involved

DCPR Validation Branch

The Validation Branch is responsible for development and review of the yearly Pell Grant validation procedures for all actors (processor, institution, and students.) A notice of proposed rule making has been issued to add a Campus-Based validation process, but currently validation is performed only on Pell Grants. Additionally, this branch handles all ADS validations (2,600 per year) and institution referrals of problem cases (100 per year). Some cases involve collection of overpayments referred to ED regional offices, and about 20 cases per year are referred to the Inspector General for prosecution. The Validation Branch currently uses the following QC procedures to monitor their operations:

- Supervisory review of ADS validations performed by the branch prior to closing of cases (one person handling all institution referrals)
- A weekly report of work completed within by each staff member, used for internal monitoring purposes
- Time standards for completion of annual handbook and selection criteria, when ADS validations are required within 30 days of receipt

DCPR Audit Review Branch

The Audit Review Branch is responsible for review and disposition of audits performed on institutions for the Pell Grant and Campus-Based programs. (Audits are not presently required for GSLP.) The branch processing of audits is the same for both programs. The audits are performed by outside CPAs or internal or state auditors. After completion of the audit, the report is submitted to the Regional Office Inspector General for Audit (IGA). (The branch has no regional personnel.) The Inspector General checks the report for completeness by the Audit Guide and forwards it to the branch. The branch consists of three sections, each serving specific geographic regions. Processing of the audit is performed in the appropriate section, and institutional agreement of final disposition and any corrective action is obtained. At that point the case is closed. The Audit Review Branch currently uses the following QC procedures to monitor their operations.

- Cases are required to be closed within six months of receipt. Additionally, each reviewer is required to close 13-15 cases per month for an annual total of 161 cases.
- The Section Chiefs and Branch Chi[illegible]review all cases. Deficiencies noted will be pointed out to the staffer who then processes the cases.
- This process serves as QC on the audit itself. The regional IGAs review the auditors' work papers, as required.

DCPR Program Review Branch

The Program Review Branch is responsible for monitoring institutional and lender performance in the Title IV programs. Program Reviews are very similar to audits just outlined but concentrate more on program operations and less on annual financial reviews. Additionally, when a Program Review is performed, all programs are examined. The reviews are performed by Regional Office staff but scheduled by the Central Office. This process focuses the Program Review process on the problem schools. (Approximately 1,100 institution and 900 lender reviews are performed annually.)

After completion of the review field work (usually three to five working days) the reviewer drafts a report outlining findings and suggesting corrective actions. A number on a scale from I to VI is assigned (I being clean, VI being referral to Inspector General). When institutional agreement with findings is obtained, the report becomes final, and the case is closed. The following QC procedures are currently used by the Program Review Branch:

- All cases are reviewed by a supervisor in the Regional Office. (In some cases the supervisor participates in the field work.) All cases assigned a "high 3" or above are reviewed in the Central Office.
- Program review findings are compared with audit results for consistency. Follow-up reviews are also scheduled in many cases to monitor implementation of corrective actions.
- Institutional reviewers have a standard of one and a half closed cases per month; lender reviewers have a standard of two cases per month.
- Timing standards for cases require adherence to the central office schedule—10 days (after completion of field work) for the draft report and 30 days for the final report.

DCPR, Information Resources

The Division of Certification and Program Review has the following information sources available for possible use in a QC system:

- The School Monitoring System (SMS). This system is not implemented and is still in the developmental stage. In our interviews with the DCPR branch chiefs, we were told that, when implemented, this system will contain a data base of all institutions participating in the Title IV programs, as well as the results of all audits and reviews performed by DCPR.
- Information on all validations performed by the Validation Branch (primarily ADS validations)
- Information pertaining to all program reviews and audits performed by DCPR. Until SMS is implemented this information will have to be retrieved manually from the case files but is a potential resource.

DCPR, Information Needs

All the DCPR Branch Chiefs interviewed stated that current information resources are not adequate to meet their needs. They all acknowledged they are not

able to disseminate adequate information on the results of their monitoring efforts to other units of OSFA. Additionally, the Validation Branch desires an automated information system to track ADS validations and provide reports on findings. (This need will become acute if 100 percent validation is implemented and the branch becomes responsible for 35,000 validations.)

Division of Training and Dissemination

The Division of Training and Dissemination (DTD) is responsible for the student financial aid and fiscal officer training programs as well as preparation and dissemination of handbooks, update materials, and any other pertinent information needed in the field. They also handle inquiries from students, parents, financial aid officers, high school counselors, and the Congress. DTD does some in-house training but would like to have more responsibility and input in this area. Their training responsibilities span all of the Title IV programs.

QC Procedures

The main QC procedures within DTD focus on the training programs and the letter inquiries. Through a contractor DTD sponsors training programs at over 400 sites per year. In addition, 2,000 to 5,000 letters per week are either received or referred to this division. The principal reports received by DTD which may be used for QC are:

- Student/consumer complaint reports supplied through the Biospherics contract which conducts a student/consumer complaint survey three times per year
- Periodic reports from the Division of Programs Operations on the most common student errors dealt within that division
- Monthly reports from the training contractor giving the status of the training program including evaluation results on the effectiveness of the training sessions
- Control reports on the number of inquiries answered each week

Information Resources

DTD receives updates on all policy and regulatory changes in order to disseminate these to financial aid officers and others in the field. During the annual development of training materials they receive information from several divisions (DCPR, DPO, DPPD, and DQA) on policy changes, changes in validation and program review procedures, and in funding and disbursement procedures. They also have access to a wealth of information through the inquiries received from the field and those which come in from IAOs via the area desk representatives. One other source is the student/consumer complaint survey.

Information Needs

Our interview did not reveal precisely how DTD uses the information it receives. However, much of it seems to be used in the development of training curriculum and production of handbooks such as the Counselor's Handbook and the Q and A Handbook.

DTD feels QC in their division could be enhanced in two areas:

- Use of the large volume of inquiries as a QC monitoring tool
- Obtaining evaluation data from all other divisions on their in-house training needs

Currently, little or no analysis of letter and telephone inquiries other than quantitative tabulations of volume is being done. An analysis and categorization of inquiries according to content would help identify areas of greatest error and confusion. This information would contribute to the improvement of training and could be disseminated to other divisions for their use.

DTD would also like to develop some sort of monitoring mechanism including a routine information exchange to identify training needs in other divisions. At present DTD is not included in the planning and development of training programs in other divisions, a role they feel is relevant to their capabilities. An example given during

the interview was that of training the area desk representatives in DPO. Currently, this is contained within the division since the training would focus on system errors. These kinds of system and procedural errors occurring within that division are not routinely shared with other divisions.

OSFA Regional Offices

There are 10 OSFA Regional Offices located throughout the United States. Two Regional Offices--Atlanta and Philadelphia--were visited for this study. These offices currently perform the following functions:

- Institution, lender, and guarantee agency program reviews
- Training and dissemination
- GSL and NDSL claims processing
- Collections of GSL and NDSL claims (only in Atlanta, Chicago, and San Francisco)

This process and QC procedures for program reviews is detailed in the DCPR section.

With the exception of the three offices involved in collections, this is the major function performed in the regions. The collection process is currently split, with some accounts being referred to collection agencies. Therefore, the collection function in the region includes:

- Monitoring the collection agency
- Calling students to urge repayments, etc.
- Reconciling exceptions (such as checks posted to suspense account)
- Write-off of balances, as appropriate
- Updating the GSL system for such things as address changes, status changes

QC Procedures

- Procedures used in monitoring of collection agency
  - Audit transactions and monthly commission invoice

- On-site monitoring which includes listening to phone calls and obscuring each receipt processing
- Review of accounts to ensure that standards detailed in the RFP are maintained

- Procedures used in internal QC for collections
  - Monitoring of telephone calls
  - Testing of telephone calls to collection personnel to measure response
  - Supervisory review of keypunched data to the GSL system and monthly spot checking of outputs to inputs

Information Resources

Each region maintains information pertaining to all program reviews performed. In addition, the Regional Office IGA maintains records of audits received.

In Atlanta the collections function (Division of Accounts Management) maintains information on all GSL and NDSL accounts for Regions I to IV they are responsible for. They also have transaction runs, ledgers, etc., from the GSL system (plus the ability to query the systems).

Information Needs

The region personnel we met stated that current information resources are inadequate to meet their needs. They desire:

- An automated review in information systems that could:
  - Report on trends, etc.
  - Track recoveries
  - Prepare needed activity reports for control office
  - Monitor performance standards
  - Compare reviews to audit findings
- Modifications to GSL system that
  - Will allow automated audit of monthly commission invoice

- Automatically sample accounts for detailed review and comparison to standards

- Make other corrections to specific errors and lack of controls they see in the system

Other Issues

Region personnel with whom we met raised additional points regarding the current monitoring process. Specifically, they felt a shift in focus was needed for institution program reviews to allow in-depth investigation where major accounting problems or fraud and abuse were evident. An additional concern was raised with lenders in that no outside audit is currently required and lender reviews are only able to cover 10 percent of all active lenders on an annual basis.

This issue is basically an ED policy issue, covered in depth in our deliverable on the site visits. It is mentioned here because it is the major concern to come from our visits and because, if appropriate, we could consider it during design of the institution and GSL monitoring systems discussed in the next chapter.

CONCLUSIONS

The three-tiered analytic framework provides an effective lens through which to view the QC needs and information resources for the Pell Grant Program. The types of QC needs identified in the functional analysis clearly vary by level of organization for OSFA student aid programs. There is an obvious interdependency of information sources, both between levels from management to operations and between units/divisions and branches at the operations level.

At the policy level, QC concerns relate primarily to the quality of overall program delivery. Outside of OSFA, in ED and OMB there is a concern that payment error in the Pell program be assessed on an annual basis. Additionally, analysts in OPBE are interested in receiving timely analysis of policy options for corrective

actions involving legislative or budget action. These same concerns are apparent within OSFA, along with an accurate awareness that critical parts of the policy cycle (planning, budgeting, and regulation) and program delivery (application through reconciliation be performed on a timely basis. This suggests that a policy level QC management information system is a desirable development, especially if such a system provides:

- Policy analysis for corrective action alternatives
- Early warnings for critical problems with program delivery or policy development
- Analysis of the effects of critical problems with the policy or delivery cycles
- Periodic assessment of overall payment error in the delivery of Pell Grants to the management level. Quality control for the Pell program is hindered by the lack of a program emphasis in the formal organization structure of OSFA. The functional organization with the office makes programmatic developments more difficult because responsibilities for the program are spread across divisions with no formal linkages between critical program functions. Therefore, the timely flow of information between functional units can be inhibited. The analysis needed by another division may take second priority behind performance of key activities within the division.

The goals and objectives system currently being implemented by the Division of Systems Design and Development has the potential of overcoming this key problem with program management if appropriate QC enhancements are developed. If a systematic review and analysis of the data entered in the system were undertaken it would be possible to develop a QC monitoring and tracking system for critical points in the program delivery and policy cycles. Such a system would require:

- Development of critical paths and flow charts for the Pell delivery cycle
- Analysis of information in the goals and objectives system to identify early warning problems
- Development of a monitoring system that reports early warnings for deviations from the critical path for the delivery and policy cycle

At the operations level, QC issues are more abundant. Branches and divisions have developed their own QC procedures, as needed, usually on an ad hoc basis. As a result, there is a wide variation in the awareness of staff within branches about QC issues. Some branches have developed fairly sophisticated approaches to QC, while others are confronted by basic problems. The branches are critical to QC in two essential ways:

- Most of the information needed for policy- and management-level QC systems must be generated or already exists at the operational level in OSFA divisions and branches.

- There are numerous places at the operational level where QC subsystems could be developed that would:

  - Provide QC information for management and policy

  - Provide linkages between functional areas (across divisions)

  - Identify corrective action options for critical error-prone areas within divisions

The OSFA goals and objectives system is one information resource that gathers data directly from operating units and has direct applicability to the design of a QC system. In addition, there is potential to develop QC subsystems in the error-prone areas analyzed in the Stage One study--e.g., for applicants, processor, institutions, and OSFA. One advantage of the functional organization structure in OSFA is that it is possible to identify possible host divisions for subsystems for each of these actors. The next chapter presents a preliminary design for a modular QC subsytem that interfaces with the functional organizational structure in OSFA.

CHAPTER 4

PRELIMINARY QC SYSTEM DESIGN FOR PELL GRANT PROGRAMS

This chapter presents a preliminary design for the Pell Grant QC system. A modular QC system design is presented, with six basic subsystems. The possible integration of the other student aid programs--Campus-Based and GSL--into the overall design is also considered. Before a discussion of each subsystem, an overview of the proposed Pell Grant QC system is presented noting the interface between the QC system and the OSFA hierarchy.

QC SYSTEM OVERVIEW

The preliminary QC system design identifies modular components that interface with the current delivery system based on the functional analysis of the QC needs, resources, and systems in OSFA. It is now apparent that:

- Existing data sources and management processes for the Pell program provide a basis for the design of an internal QC system.
- It is possible to design a QC system with modular components that can be developed incrementally.

The organizational perspective of the Pell Grant QC system is reconsidered in Figure 4-1. Given the current operating environment in OSFA, it is possible to design an integrated Pell Grant QC system through a strategy of providing technical support to OSFA divisions to facilitate QC efforts and systems currently under development. According to this view, the modular systems in the overall QC system would be:

- A QC Subsystem for Assessing Annual Overall Payment Error in the Pell Grant Program to provide external assessment of error in the Pell delivery system, operated by the Division of Quality Assurance

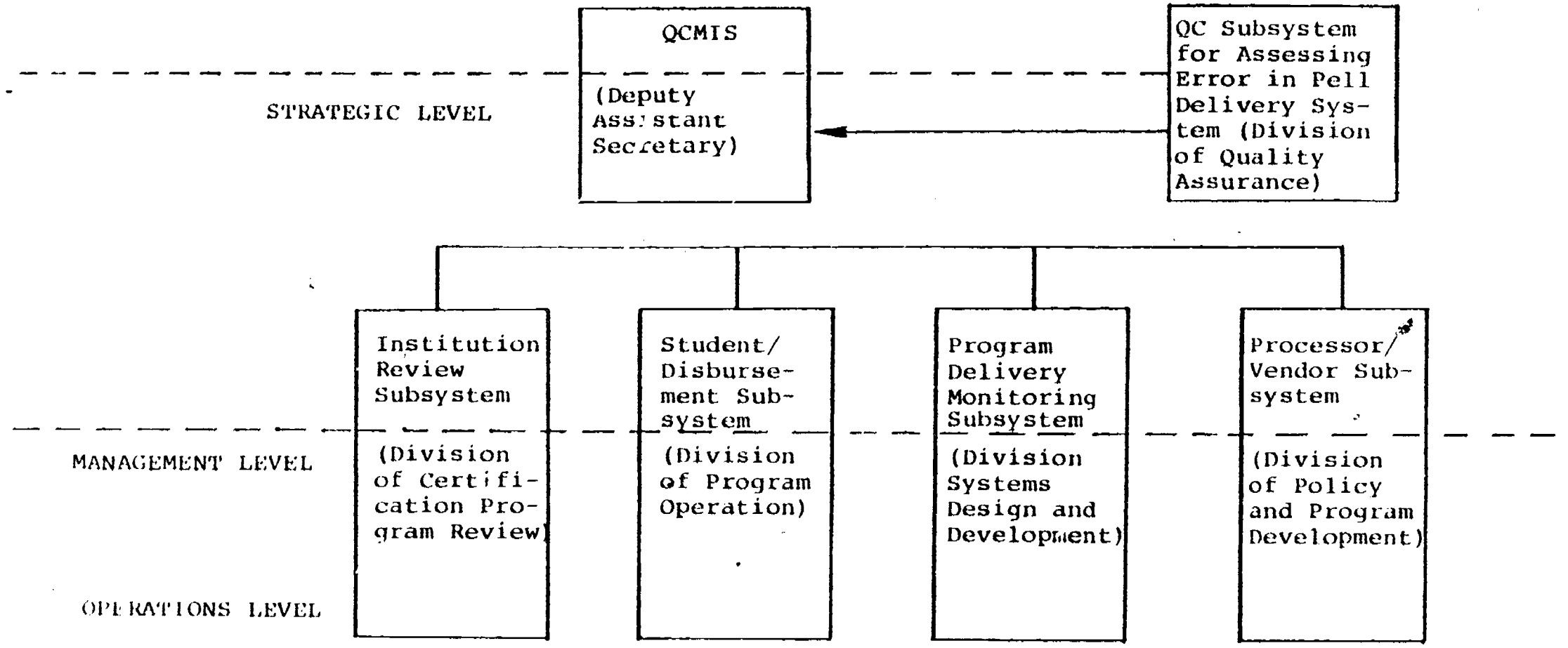

FIGURE 4-1

AN ORGANIZATIONAL PERSPECTIVE OF THE PELL GRANT QC SYSTEM IN OSFA

- An Institution Review QC Subsystem to provide systematic reporting from the Pell Grant component of the Schools Monitoring System (SMS) operated by the Division of Certification and Program Review

- A Student/Disbursement QC Subsystem to provide technical support to the Pell Grant Branch, Division of Program Operations, in the use of student error-prone profiling to build additional checks on the institutional disbursement process

- A Processor/Vendor QC Subsystem to provide technical assistance in implementing QC procedures for the Pell Grant processor, probably housed in the Pell Grant Branch, DPPD

- An OSFA Goals and Objectives Monitoring QC Subsystem to provide technical support to the Division of Systems Design and Development in the implementation and enhancement of the OSFA goals and objectives process

- A Policy-Level QC Management Information System to provide monitoring of OSFA operations and policy analysis for policy relevant variables for the Deputy Assistant Secretary for Student Financial Assistance, housed administratively in the Division of Policy and Program Development

The first of these subsystems would provide OSFA with a capacity for detecting and documenting overall payment error on an annual basis. It would provide an external measure of delivery system performance, much as the Stage One study measured total error in the Pell Grant Program. Such a subsystem would provide only a limited capacity to analyze corrective action options or assess the effects of such options once they were selected and implemented. This requires a QC system that provides a mechanism for controlling or at least coordinating all phases of organizational activities which have a bearing on the quality of the delivery of student aid.

In combination, the other five subsystems provide a system for internal control, as well as for QC. Four of the modular subsystems would provide a capacity to statistically monitor performance of a major actor in the Pell delivery system: the students, processors, institutions, or OSFA. As a result, the success of specific corrective actions could be tracked and assessed through these subsystems in combination with the QCMIS, which would provide a policy-level analytic capacity for OSFA.

Thus, the QCMIS would utilize the outputs of the other subsystems in order to analyze policy (correcting action) options and to assess the effects of selected options. Eventually, if the internal QC system proved to be an effective way of monitoring and correcting error, the external QC subsystem would be less important. In fact, it might be possible to do the same analyses with the combined internal QC system.

These subsystems constitute targets of opportunity for technical assistance as well as for modular QC subsystem development. Each component of the subsystem is explained more fully in the following section. The following discussion covers five basic topics for each proposed subsystem:

- Statement of the problem
- Existing procedures
- Location of the subsystem
- Description of the subsystem
- Benefits to OSFA of implementing the subsystem

QC SUBSYSTEM FOR ASSESSING ANNUAL OVERALL PAYMENT ERROR

Statement of the Problem

In addition to having management information from functional areas within OSFA related to the performance of the Pell Grant delivery system as an input to policy deliberations, it is important that policymakers have an annual measure of overall error in the delivery of student aid. Therefore, as a part of the QC system design, it is essential that a system for assessing the overall payment error in the Pell program be included. The purpose of the system would be to provide an annual measure of overall payment error in the Pell program.

Existing Procedures

Currently, OSFA has no ongoing system for measuring payment on error in the Pell program and providing an external check on the performance of the entire system

on an annual basis. While DCPR performs a review function for all student aid programs, it does not gather the type of evaluative information required to monitor system performance. The Stage One QC study was the second attempt by OSFA to undertake such an external monitoring effort. The purpose of the external system for assessing error in the delivery system is to provide an ongoing system for routinely (probably annually) collecting evaluative information on how the Pell delivery system is performing.

Location of the Subsystem

The actual position of the external subsystem in the overall QC system design is easy to explain. It would be external to the QCMIS but provide reports directly to it. The location in OSFA is more difficult to specify. The function may be performed by DQA.

Subsystem Description

The Stage One study provided a comprehensive analysis of error in the Pell Grant delivery system. Overall error in the program was measured and the greatest source of error identified. In the future it may be desirable to conduct external QC studies, similar to the Stage One study, which collect data beyond the capability of an "internal" QC system and provide an overall measurement of program performance. It is possible to conceive of this process as an ongoing system for assessing payment error.

Future external QC studies, of course, would not necessarily have the same design, scope, or study population as the Stage One study. For example, it is possible that OSFA regional personnel can collect data on the effects of validation, rather than using the independent field interview method used in Stage One. A combination of approaches may also be possible to test the validity and accuracy of different collection methods.

The purpose of this area of technical assistance would be to provide the Division of Quality Assurance with specifications for an ongoing system for assessing payment error. Therefore, the emphasis of this system design effort would be on the mechanics of conducting this type of data collection and analysis. The study design would cover the following areas:

- Sampling: Various sampling designs and procedures would be considered. The strengths and weaknesses of each approach would be thoroughly considered. Various sampling and study bias issues such as estimating, sampling error, sample size, survey nonresponse estimation, and sampling techniques for limiting data collection costs would be included.

- Data Collection: The costs and benefits of three methods of collecting data could be reviewed: field interviewing (as was used in the Stage One study), telephone interviewing, and mail surveys. The system design would give a step-by-step guide for implementing each survey method, would provide a time line for each, and would analyze staff and other resource needs. Problems specific to interviewing aid recipients and collecting data from student financial aid files would be considered in detail.

- Study Instruments: The system design would detail various approaches in developing interviewer-administered questionnaires, self-administered questionnaires, and protocols for telephone interviewing. Pilot testing of survey instruments and the OMB/FEDAC forms clearance process would also be considered in the overall design.

- Data Base Development: The design would cover procedures and resources required to clean, edit, and enter survey data into a data file.

- Data Analysis: The subsystem design would review possible statistical analysis techniques applicable to assessment--from simple descriptive statistics to complex multivariate statistics, analyze the merits of available statistical software packages, identify hardware needs, and identify staff and training needs.

Benefits to OSFA

The primary benefit to OSFA of implementing the subsystem for assessing error in program delivery would be that it would provide an ongoing system for monitoring the performance of the overall Pell Grant delivery system.

INSTITUTION REVIEW QC SUBSYSTEM

Statement of the Problem

Postsecondary institutions in the Regular Disbursement System (RDS) play a major role in the current Pell Grant delivery system. They verify student eligibility, calculate the amount of award, disburse the award to individual recipients, and perform validations on students selected by OSFA. These activities could be routinely monitored as part of the institution review subsystem of the Pell Grant QC system.

Current institution monitoring activities are detailed in the following section. However, there is no system implemented currently that can quantify institutional error, particularly as it relates to the Pell Grant Program. It is necessary to quantify institutional error by dollar amount, type, and number of occurrences. This will assist OSFA in planning and implementing policy changes, procedural changes, and corrective actions designed to reduce error. It will also furnish OSFA with a more complete list of "problem schools." Training and technical assistance could then be targeted to those institutions.

Existing Procedures

Institutions are currently monitored by the Division of Certification and Program Review. Monitoring activities include program reviews and audits, which are performed by independent accountants on an annual or biannual basis (institution option). The independent accountants are engaged by the institution, and the report is furnished to ED and the institution. The Regional Office of IGA receives the audit report and reviews it for compliance to the Pell Grant Audit Guide and completeness. The report is then processed by the Audit Review Branch (ARB) in Washington. After completing this review the ARB reviewer submits a letter to the institution outlining the agreed findings and prepares a coding sheet detailing the findings for the School Monitoring System (SMS).

The SMS is currently in the developmental stage. A file of institutions to be monitored does exist, and ARB has developed a list of audit deficiency codes. These are entered into SMS as audit reviews are completed. Currently, SMS cannot manipulate or process these data. No outputs or reports are produced. After implementation, this problem should be remedied.

Location of the Subsystem

The institution review subsystem would provide an interface point between SMS and the Pell Grant QC system. It would be housed in DCPR. The QC subsystem will not require separate data entry since output from the SMS would be an input to this QC subsystem.

Subsystem Description

The proposed subsystem would have the following information flow:

- As audits and program reviews are completed in the field, Regional Office personnel would enter findings in the subsystem (school, deficiency codes, dollar values, staff identification status).

- These would be updated as the cases are reviewed in Washington, and institution agreement obtained. This would provide the basis input to the QC subsystem.

- The QC subsystem would utilize predefined QC measures and standards to monitor institutional performance, using the reviewed institutions as the basic sample.

- The subsystem would produce the following types of outputs

  - Listing of schools with specific error (such as improper validation)

  - Reports on review results including overdue cases to monitor performance against standards

  - Statistical analysis of findings (such as trends)

If the institution validation option of IRS 1040s for all recipients is implemented, information on the results of this option would be integrated into the Institution

Review Subsystem. The level of integration could include a tracking subsystem for 1040 validation or a findings reporting subsystem. It would also be possible to develop an institution QC manual as part of this paper as many institutions are not automated, and developing the telecommunications between automated institutions and OSFA regional offices may prevent or delay integration of this process.

Benefits to OSFA

Major benefits of this activity will flow mainly to DCPR but will also assist other units of OSFA in the operation of the Pell Grant delivery system. These benefits include:

- Measurement of reviewer performance against standards for timeliness and number of cases completed
- Early notification of overdue audits and program reviews
- Ability to respond to queries on specific schools
- Reduction in paperwork generated by ARB reviewers and program reviewers
- Quantification of institutional error by:
  - Amount
  - Type
  - Number of occurrences
- Ease in dissemination of information to specific OSFA units regarding institutional error
- Identification of areas or procedures on which to focus DTD training modules

STUDENT/DISBURSEMENT QC SUBSYSTEM

Statement of the Problem

The student/disbursement subsystem would both monitor performance against standards and determine error levels. Information currently collected in OSFA could

technically be better utilized to monitor QC measures and standards. Specifically, the purposes of this subsystem would be:

- To identify and quantify the amount of student application error, the types of errors, and the prevalence of such errors
- To utilize these data to reduce the errors or the tendency toward error in the fund disbursement to error-prone institutions and students
- To identify institutions with unreconciled disbursement records and initiate required corrective actions or program reviews
- To assist in the development of policy changes and the necessary corrective actions to reduce and better control both the amount and the frequency of various types of application errors

Current Situation

The basic elements of a student/disbursement subsystem are already in place. Both front-end (i.e., award processing) and back-end (i.e., audit processing of disbursement data) checks are currently in existence in Pell Grant processing. Front-end processing procedures exist to maintain some QC measures for the keying of application data by the application processors. The processor provides a basic data source for improved QC on student and institutional performance. Front-end QC checks are currently made on the SAR data in PIMS. After the SAR is produced for a student, the data on the form are verified and validated prior to determining the amount of Pell Grant funds to be disbursed to the student. In addition to front-end processing checks, there are back-end disbursement checks in PIMS.

The Pell Grant Branch of DPO is also implementing a system for identifying error-prone institutions based on edit checks. The purpose of this QC subsystem would be to further systematize these processes so that the number of errors can be monitored and further reduced.

Location of the Subsystem

The proposed student/disbursement subsystem combines and analyzes data generated by the front-end application processing and the back-end disbursement

processing. This subsystem would help identify errors and allow for error profiles to be developed for both students and institutions. This effort would reduce the amount of time DPO staff spend reconciling input errors to the student subsystem of PIMS. It would also provide a structured process for routine reporting of QC procedures that have been or are being implemented in DPO. The logical location of this subsystem would be in DPO.

Subsystem Description

This subsystem design activity would provide technical assistance to the Pell Grant Branch, DPO, in the development of a student/disbursement subsystem.

The information flow of the student/disbursement subsystem would include:

- Inputs from PIMS giving the number and types of students and institutional errors identified and corrected in the front-end processing of institutional progress reports, according to the edit formats currently being developed. Refinement of QC measures and standards would be required as a part of the subsystem design.

- A process for providing an automated routine for reporting on errors identified in PIMS and the disbursement process. (It is also possible that error-prone modeling could be used to improve the disbursement process.)

- Outputs giving

  - Reports to DCPR on error-prone institutions that merit review

  - Routine reports to the Deputy Assistant Secretary on the types of errors corrected in the disbursement process and the resultant dollar savings

  - Trend data on problem areas in the disbursement process as an input to the QCMIS

Benefits to OSFA

The establishment of a student/disbursement subsystem can provide procedures for routinely monitoring error and identifying areas for corrective action. The major benefits of such a QC subsystem are:

- Reporting of appropriate QC information on a timely basis so that corrective actions can be taken
- Development of standards and measures required for monitoring student data and funds disbursement
- Development and refinement of student and institution error-prone profiles, which can be used to anticipate error rather than react to problems

A student/disbursement subsystem would result in more timely reporting on error-prone areas in the Pell program. When the student/disbursement subsystem is fully operational, it is possible that the subsystem would replace the QC subsystem for annual assessment of payment error (external QC). However at the present time, the student disbursement subsystem is the most difficult to conceptualize since many of these features have been implemented or are being implemented by DPO. Therefore it should perhaps be developed after other subsystems.

PROCESSOR/VENDOR QC SUBSYSTEM

Statement of the Problem

The Pell Grant processors are private contractors who process Pell Grant applications. Students send application forms to the processing contractor, who performs data entry, edits the forms and sends a Student Aid Report to the student. The purposes of the processor/vendor QC subsystem are to reduce errors by the processors and to reduce processor costs.

Existing Procedures

The current central processor is the System Development Corporation (SDC) in Santa Monica, California. Multiple Data Entry (MDE) contractors are the College Scholarship Service (CSS) in New Jersey, the Pennsylvania Higher Education Assistance Agency (PHEAA) in Pennsylvania, and the American College Testing (ACT) Program in Iowa. Each of these organizations presently has a QC program in place,

but the degree of effectiveness of the programs varies considerably. For example, PHEAA has instituted an application serialization and tracking system which ties into its on-line data entry system and greatly reduces the opportunity for losing applications. The other processors have not implemented such a procedure.

Aside from lost applications, the major QC concern for MDE processors is the accuracy of data entry. Stage One found overall error rates in data entry to be rather low. Approximately 1 data entry error was found for every 37 applications. It was also found that ACT, which uses marksense scanning, had an error rate four times higher than PHEAA and CSS, which use key entry and verification techniques.

It is at the central processor, SDC, where a QC subsystem would be the most valuable. SDC has a QC plan in effect. It incorporates appropriate QC at these points:

- SAR processing
- Roster production
- Reports and statistical tables
- Correspondence
- Telephone inquiry
- Archives and storage
- Privacy and security
- Energy conservation
- On-line data correction
- Special handling
- Program materials distribution
- Microfiche and microfilm products
- ADS (Alternate Disbursement System)

- Validation services

In addition to QC performed at these group levels, SDC has formed an Independent QC Review Team (IRT). SDC's QC plan employs serialized forms, reports, schedules, and charts, and at least in theory seems reasonably comprehensive. But because of cost overruns it would seem that the plan does not do an adequate job of controlling duplication of effort and inefficiency. In addition, the Stage One report specifies certain improvements which ought to be made in Pell Grant processing at the processor level. Therefore, an overall QC system should incorporate:

- Existing SDC procedures where appropriate
- Cost-saving measures
- Stage One recommendations where appropriate
- On-site monitoring and audit of statistical reports

Location of the Subsystem

A QC system for the processor would supply information to OSFA on the internal operations of the processor and possibly on the applicants. It would be one part of an overall QC system and would serve as a link between the student and OSFA. The information supplied by the system will be evaluated by OSFA, and corrective actions would be taken when error levels were exceeded. It would probably be located in DPPD.

Subsystem Description

The processor QC vendor subsystem can be broken down into three parts: inputs, processes, and outputs.

- The inputs to a processor/vendor QC subsystem would include the following:
  - Statistical data on keypunch error rates
  - Statistical data timeliness of SER production

- Statistical data on phone inquiry completion
- Statistical data on overall production
- Statistical data on validation activities
- Statistical data on application rejection rates and reasons for rejection

- In general, the QC system process would be analysis of the input data to determine if error rates were within specified ranges. This presupposes the existence of error ranges, and, in fact, one of the first tasks in developing a QC system would be the establishment of acceptable ranges.
- The outputs would be a series of reports corresponding most likely on a one-to-one basis to the inputs. The reports would be designed to highlight (flagging with asterisk, etc.) unacceptable error rates.

At the present time, the Policy and Program Development Division is responsible for monitoring the processor contract, and it would logically be involved in any QC system which included the Pell Grant processor. Cooperation between this group, the Division of Program Operations (for the Alternate Disbursement System), and the Division of Quality Assurance would be required to ensure the proper functioning of a processor QC system.

Benefits to OSFA

The benefits to OSFA of such a processor/vendor subsystem would be twofold. First, the accuracy of the data in the Pell Grant system would be improved. Even though the processor does not contribute substantially to the overall error, there is still good reason to take steps to reduce error regardless of its source. Secondly, the efficiency of the system would be improved with a corresponding reduction in costs.

OSFA GOALS AND OBJECTIVES MONITORING QC SUBSYSTEM

Statement of the Problem

Until recently OSFA has lacked a capacity to monitor the performance of the student aid delivery system. The goals and objectives system currently being

implemented by the Assistant Deputy Secretary for Student Financial Assistance would potentially provide such a mechanism. Technical assistance could be provided during the Stage Two QC study to assist with the implementation of this system, as well as to perform analysis necessary to develop a system for monitoring the Pell Grant delivery system.

Current Procedures

During recent months the Deputy Assistant Secretary for Student Financial Assistance has been implementing a goals and objectives system for student aid delivery. The system includes identification of:

- Goals (OSFA wide)
- Objectives (to be performed by divisions)
- Activities required to implement objectives (by branches within divisions)
- Subactivities required to complete activities (by section within branches)
- Steps required to implement subactivities (by unit and individuals in OSFA)

The current flow of information in this process includes top-down specification of goals and objectives and bottom-up specification of steps required to implement these goals. The goals themselves include specifics about time frames for each activity, subactivity, and step. This system is currently being automated by the division of system design and development.

Currently, the system provides a simple mechanism for monitoring whether or not OSFA goals and objectives are being performed on a timely basis. The system currently does not provide a mechanism for performance of specific programs, since the information is organized by division rather than program. The system has the potential for providing program specific information about the delivery of the Pell Grant and other student aid programs (as an input to the policy model).

Subsystem Description

The primary purposes of the subsystem development activity would be to provide:

- Technical support required to implement and monitor the OSFA goals and measure process
- Analytic support needed to generate QC measures and standards for the Pell Grant delivery system

The technical support would include programming and systems design of support for the Division of Systems Design and Development, necessary for implementing the OSFA goals and measures process. This will include:

- Design and enhancement of information flow and reporting for the subsystem
- Programming of sample reports for OSFA branches, divisions, and the Deputy Assistant Secretary

The analytic support would include the additional programming, systems analysis, statistical analysis, and policy analysis required to provide a system for monitoring performance of the Pell delivery system (and of other student aid programs if considered a high priority in OSFA). Specifically, this analysis might include (but not be limited to):

- Analysis of the time frame for the overall system delivery and the flow of information between divisions and branches
- Input-process-output analysis for critical program functions (e.g., application processing, disbursement) with development of performance standards and tolerance levels for critical objectives
- Analysis of activities, performance, including specification of performance standards for one-time and ongoing activities
- Identification of critical path flows:
  - The program delivery cycle
  - The policy (planning, budgeting, and evaluation) cycle

Benefits to OSFA

The major benefits of this technical support activity would be:

- Timely implementation and use of the OSFA goals and objectives process
- Improved use of the goals and measures system for the purposes of improved program management and QC

POLICY-LEVEL QC MANAGEMENT INFORMATION SYSTEM

Statement of the Problem

The management and control of the Pell program require timely information between the various subunits within OSFA. The purposes of the QCMIS concept identified here are to provide:

- A monitoring tool for OSFA management to assess current system performance
- A model of the system structured to permit the simulation of system operations under various changes in both policy and organizational variables

The Current Situation

The nature of the Pell program components is one of time and information interdependency. OSFA branches with responsibility for one aspect of the Pell program can usually perform effectively when completion times by related components are known and maintained, or when adjustments to known completion times can be appropriately anticipated. At present a substantial volume of data is collected and used by OSFA branches and divisions. The data collected are frequently required by other divisions as secondary or abstracted data. This interdependency, and the timely completion of various activities required to collect and transmit this data, are crucial to subsequent decisions and program operations.

The timing of activities and the information flow for OSFA are currently being integrated into the OSFA goals and objectives system, coordinated by the Division of

Systems Design and Development. The relatedness of data and subsequent actions, while well known within divisions, is not currently well articulated across divisions in OSFA. The automated goals and objectives system being implemented by DSDD has the potential of increasing OSFA policymakers' knowledge about the interrelatedness of program information. The effect, for example, of delays in award-level approval may be manifested as higher student error rates due in part to the lack of response time to reflect changes in publications. Monitoring of division and branch activities is dependent upon timely information flow, which in the case of most prevalent errors requires matching of information flows from different system components over a consistent time period.

The description of the relationship between components on a time/information flow basis must account for a multitude of possibilities. The development of a QC management information system would provide the tools to anticipate those contingencies disruptive to the timely flow of operations.

Location

The QCMIS would logically use data on goals through steps generated by DSDD as part of the newly created goals measures system. It would also use information generated from program regulations developed in the Division Policy and Program Development. The logical placement of the subsystem would be in one of these two divisions. The primary user of the system would be the Deputy Assistant Secretary of Student Financial Assistance.

Description

Each branch and division in OSFA provides input to the OSFA goals system. This data, along with data generated from other QC subsystems (described earlier), would provide the basic inputs to the QCMIS subsystem. This subsystem would provide a

procedure for monitoring performance of the Pell delivery system and the potential for correcting errors in the system. A description of the direct and indirect relatedness of their flows, dimensioned by time of occurrence, is the objective of the QCMIS. As currently conceptualized the flow of information in the QCMIS would be as follows.

- Inputs for the QCMIS would be generated routinely from each of the QC subsystems. As part of the OSFA goals and objectives monitoring subsystem, critical path flows would be generated for the policy and program delivery cycles. Routine performance reports from the OSFA subsystem would provide the basic input to the QCMIS. Reports from other subsystems on critical error-prone points would provide an additional input. Other program and economics inputs would be identified as needed.

- The QCMIS process would be comprised of two interrelated computerized simulation models:

  - One based on the critical path flow of the policy cycle

  - One based on the critical path flow of the program delivery cycle

- Outputs from the QCMIS will include:

  - Early assessments of the effects and costs of deviations from the critical path for the policy cycle

  - Early assessments of the effects and costs of deviations from the critical path for the program delivery cycle

  - Ad hoc analytic reports assessing the potential effects of corrective action options

- Special features could be developed to interrelate the critical path concept with an error-prone modeling capability. Such features would be dependent on the implementation of the above mentioned subsystem so, as additional subsystems are developed, additional error-prone modeling capabilities could be added to the QCMIS.

Benefits to OSFA

The QCMIS would provide OSFA staff with three principal benefits related to policy assessment, selection of operational alternatives, and improved efficiency of the QC monitoring process. These benefits are:

- Policy assessment through micro-simulation
- Assessment of operational activities
- Efficiency of QC monitoring

First, the QCMIS would provide the facility for simulation of the Pell delivery system in order to detect the effects of actual or anticipated changes in policy variables as a result of legislative action, changes in program operations, and time delays in one aspect of program delivery. In addition, OSFA staff may wish to use the MIS model concept to simulate alternative policies and procedures before making final policy recommendations. The simulation will provide staff with the knowledge about the probable effects of policy or program changes on the delivery system performance, error rates, and monitoring functions.

Second, in addition to the facility for simulation of policy variables, the QCMIS could provide OSFA staff a tool for the assessment of alternative operational strategies. Input to the QCMIS is based on subsystem data streams which are reflective of the delivery system structure. OSFA staff may wish to investigate the effects of alterations to the delivery system structure as it presently exists. Subsystems with the greatest dependency on timely data may not currently be responsible for its collection, and such lags in information flow, as may result, will be identifiable within the QCMIS. A simulated shift of structure to provide such a subsystem with immediate access to the data can be performed without disrupting current operations.

Third, the QCMIS provides a mutlilevel description of activity within and between each division in OSFA with the responsibility for the Pell delivery system. These activities are expressed as information/time linkages which afford OSFA staff substantial flexibility in simulation policy and operational effects. The linkages also

provide a framework on which audit and QC assessments can be made. Quality control assessments expressed in terms of expectations for the Pell delivery system by branch and division can be readily derived from the QCMIS approach. Conforming to standard QC approaches, this aspect of the QCMIS can include system tolerance conditions, systems procedures monitoring, and error-prone profiling for the OSFA function. This would result in identification in tolerable error levels for each branch and division with the responsibility for Pell program delivery, and such an approach would provide OSFA staff a management device capable of producing performance expectancies for the system as a whole and for subsystems independently. An actual versus expected performance analysis generated by the QCMIS would provide OSFA with the most accurate and timely QC monitoring tool.

OTHER STUDENT AID PROGRAMS

It is possible that other student aid programs can be integrated into the modular design outlined above. Two types of design considerations would need to be considered in order to accommodate other programs:

- Subsystems that could be modified to accommodate other programs
- New subsystems for other programs

In order to fully address these design issues it would be necessary to conduct a functional analysis for the Campus-ased, Supplemental Educational Opportunity Grant (SEOG), College Work Study (CWS), National Direct Student Loan (NDSL), and Guaranteed Student Loan programs. However, in spite of this void, it is possible to speculate about how the other programs might be integrated into this framework. First, it is necessary to review some basic differences between the organization of the three program areas--Pell, Campus-Based, and GSL. Specifically, it is important to recognize:

- Pell is an entitlement program that has a coherent set of information sources for institutions and students

  - PIMS in DPO

  - The processor contractor in DPPD

  - The SMS system in DCPR

- Campus-Based is not an entitlement program. Therefore it has a significantly different allocation process, since institutions are directly responsible for award calculation and disbursement. There is no student data base for Campus-Based programs.

- GSL is also an entitlement program, like Pell, but it lacks the coherent data bases available for Pell. There is no student system. DCPR's lender reviews are less extensive than institutional reviews.

In spite of these limitations, several of the subsystems discussed above could be modified or extended to include other programs. This might include:

- Extension of the OSFA subsystem to include reports specific to all three programs

- Modification of the institution review subsystem to include reports and analysis specific to all three programs (the data are currently organized to make this a definite possibility)

- Modification of the subsystem for annual assessment of overall payment error to include Campus-Based. (GSL would be impossible to measure in this framework, unless lenders and state agencies were included in the process.)

- Extension of the QCMIS to include the other programs

During the interviews, some additional critical error-prone areas were identified for GSL and Campus-Based programs. As a result, it is possible to identify some additional subsystems that would result in reduced error. Specifically:

- An interest payment subsystem for GSL to provide basic controls on this system

- A FISAP subsystem for the allocation of Campus-Based funds

While it is possible to extend the basic system design to include Campus-Based and GSL programs, it is important to recognize the importance of program specific

controls in the overall delivery system. A major conclusion of Chapter 4 was that at a managerial level in OSFA, it is essential that a QC system provide program specific QC measures and standards. The functional organizational structure in OSFA inhibits this development. When designing an overall QC system, program specifics and QC checks must be developed by divisions in OSFA.

CONCLUSIONS

The basic three-tiered information system perspective is useful in the design of an overall QC system for the Pell program. Each level of organization in OSFA requires different types of QC needs resources. In the functional analysis, three levels of QC requirements were identified for the Pell program:

- At the policy level there is a need for analysis of
  - Corrective action options
  - Critical problems and their implications for the policy and delivery cycles
  - Overall annual measures of payment error
- At a program management level it is essential that program specific QC measures and standards be developed and monitored.
- At the operations level, a series of ongoing QC issues were identified that can be addressed through systematic enhancement of existing information systems.

Given existing QC requirements and information resources it is possible to propose a preliminary design that identifies modular QC components that address system needs at each of these levels. Accordingly, a five-component QC system was proposed. This included:

- A policy level QC management information system to provide:
  - Analysis of QC corrective action options
  - Analysis of problems with the program delivery cycle

- Analysis of problems with planning budget and evaluation cycle

- An external QC subsystem for annual assessment of overall payment error in the Pell program

- An OSFA QC goals and objectives subsystem as a source of critical path flow models for the policy cycle (planning, budget, and evaluation) and program delivery cycle for the Pell program

- Student/disbursement QC subsystem for identifying error-prone institutions and student profiles based on analysis of application and disbursement data

- Institution review subsystem for developing QC standards and measures for postsecondary institutions

- Processor/vendor QC subsystem for monitoring performance of the Pell processing contractor

It is possible to integrate student aid programs into this basic framework. Three of the subsystems--policy level QCMIS, OSFA QC, and institution/review can be modified to include both GSL and Campus-Based programs. The external QC also could be modified to include Campus-Based programs. Also, additional subsystems can be identified for the disbursement function in the other programs.

- An interest payment subsystem for GSL

- A FISAP QC subsystem for the Campus-Based fund allocation

A critical issue when considering the specific design options desired, including where the basic design should be expanded to other programs, is that the QC system should facilitate program specific linkages between functions, through the development of QC measures and standards. The preliminary QC system design for the Pell program is sensitive to program requirements. If GSL and Campus-Based programs are added to this framework, these components should also be designed to respond to program specific requirements.

CHAPTER 5

STRATEGIES FOR QC SYSTEM DEVELOPMENT

The focus of this paper thus far has been on the design of a QC system for the Pell Grant Program, a preliminary version of which was presented in Chapter 4. According to the strategic approach to QC system development being used for this task, the next steps in the overall process are to:

- Select and prioritize modular subsystems for development
- Proceed with systems development of selected subsystems

Before proceeding with these steps, however, it is necessary to consider two other issues related specifically to the strategies used to actual development of QC subsystems. Specifically, these issues are:

- The technical approach to QC subsystem development
- The development of a corrective action component of the overall QC system

TECHNICAL APPROACH

The successful use of the strategic modular approach to QC subsystem development requires that sound systems development methodology be used to develop modular subsystems. Due to the modular design and implementation strategy, the system design activity will require careful planning and coordination. Individual analysts will be responsible for the design of individual subsystems, while the task manager and Project Director will maintain responsibility for:

- Designing an overall QC system with the necessary linkages between modular subsystems
- Planning phased development of modular subsystems with necessary linkages between subsystems
- Coordinating the activities of individual analysts with responsibility for the development of modular subsystems according to predefined steps

QC System Design

The overall system design will emphasize the development of a functional QC system that enhances processes and systems already in place in OSFA and utilizes existing information when possible. The QC system must provide QC analysis reports and information required at three levels:

- Policy level: The overall QC system must provide the types of QC information, reporting, monitoring, and analysis required for improved policymaking.
- Management Level: QC subsystems must combine to provide the types of information tracking, monitoring, and analysis required to improve the quality of program delivery.
- Operational Level: Individual QC subsystems must provide the technical and analytic support required to enhance the QC functions within division and branches within OSFA.

When designing the QC system with modular components, it will be important to recognize that the strategic approach to QC system development will actually provide two services:

- A predefined system development effort that uses a sound systems methodology
- Technical assistance to OSFA divisions to enhance their operating systems.

Phased Development of QC Modules

Planning for the phased development of modular QC subsystems will involve a range of organizational, procedural, and systems considerations. First, the development of modular subsystems will require close collaboration between Advanced Technology and divisions and branches in OSFA, since divisions will have the responsibility for implementing and maintaining individual subsystems. This organizational arrangement must be made initially by the Division of Quality Assurance, but the daily management of these activities will be the responsibility of the project and task managers. Planning for the compatibility between subsystems will be the

responsibility of the task manager and will require an assurance that the necessary linkages are built into each subsystem, which will be developed independently in a phased fashion. The arrangements made with each OSFA division must include the assurance that sound systems development methodology will be used.

Second, procedures will be developed early in the project to allow for the phased development of individual modules. In some cases the development of modular subsystems can proceed independently. For example, development of a QC subsystem for monitoring overall payment error can proceed independently. In other cases, phased development must recognize the interrelationship between subsystems. For example, development of the QCMIS will depend in part on implementation and refinement of the OSFA goals and objectives system. The phased development of subsystems recognizes these interdependencies where they exist and requires a logical phased development of modules. Procedures used for subsystem development must provide for the review of linkages between systems during each step of the system development methodology.

Finally, it is critical that a sound systems development methodology be used for the phased development of modular QC subsystems. Systems development methodologies typically includes six steps:

- Survey of current systems, procedures, and resources
- Functional analysis of operating requirements
- System conceptualization (diagram actions and flows of information)
- System design, with specifications for development (including programming for automated systems)
- System development (including programming for automated systems)
- System implementation (including actual implementation and testing of new procedures, programs, and processes)

To assure a technically sound approach to the QC subsystem development activity, these steps must be adapted to the modular approach used in this project.

Steps in Subsystem Development

The subsystem development effort will have two purposes. First, it will provide technical support to OSFA divisions and possibly even the Office of the Assistant Deputy Secretary, for the refinement of existing subsystems. The implementation and maintenance of these enhancements will require involvement of Division personnel, as the design must be responsive to needs internal to the host division. Second, each modular QC subsystem should be an integral part of the overall QC system design and reporting system. This will require strict adherence to a specified methodology. The steps in the system development methodology must serve both purposes.

1.0 Systems Survey. For sound systems development, each QC subsystem will need analysis of existing operating systems in the division as a basic input to the system design. To assure that necessary technical support is given the host OSFA division, the user's needs must also be surveyed. The system survey should:

- Analyze functions of current system and subsystems in the host division (1.1)
- Identify potential QC checks for the QC subsystems (1.2)
- Determine areas for technical assistance related to QC (1.3)
- Identify linkages to other QC subsystems (including QCMIS) (1.4)

2.0 Functional Analysis. The functional analysis is a detailed assessment of the organizational setting relative to the functions of the subsystem. At a minimum the functional analysis should:

- Identify structural elements within the organizational hierarchy (within the division/branch and between divisions) (2.1)
- Identify the purpose of the QC subsystem (2.)
- Determine the potential outputs of the QC subsystem

3.0 QC Subsystem Conceptualization. After the results of the functional analysis are reviewed and approved by the task manager and OSFA Division personnel, the general conceptualization of the subsystem can be developed. With the functional analysis completed, the subsystem conceptualization should:

- Identify QC subsystem components (the flow of activity, procedures, and interfaces) (3.1)

- Determine QC subsystem component activities (3.2)

- Identify major QC subsystem interfaces both for manual and automated processes (including interface with other modular QC subsystems) (3.3)

4.0 QC Subsystem Design. Based on the conceptual model of the QC subsystem, and any changes or modifications to the subsystem that result from reviews by OSFA personnel or the task manager, the subsystem design can be undertaken. This will include detailed specifications for:

- Developing procedures for QC subsystem operations (4.1)

- Identifying types of technical assistance required to implement the system (4.2)

- Developing data acquisition and analysis plans (4.3)

- Developing programming protocols (only automated QC subsystem) (4.4)

5.0 QC Subsystem Development. When the user requirements and subsystem design are established work can proceed on the subsystem development. Prior to proceeding with QC subsystem development, DQA, the project manager, and the task manager should be assured that concerns about the overall QC system are addressed. Once these concerns are addressed, work can proceed on actual subsystem development, which will include:

- Development of computer programs (as appropriate) (5.1)

- Development of QC subsystem documentation (as appropriate) (5.2)

- Conduct of appropriate analysis (including development of computer programs to translate or analyze data as an input to the subsystem) (5.3)

6.0 QC Subsystem Implementation. Implementation of the subsystem will require direct collaboration between staff of the host division and Advanced Technology. Specifics on installation will vary from subsystem to subsystem. The installation process should:

- Establish test plans and acceptance criteria (6.1)

- Test the QC subsystem (6.2)

- Train OSFA staff and others in QC subsystem operation (6.3)

While the actual distribution of departmental needs (and corresponding levels of effort and types of technical assistance) will vary across targets, these steps represent

the foundation of our systems approach to problem areas. Within the steps for each target, specific tasks are identified, more to give flavor to our approach in each area than to provide a definitive statement of work. The appendix includes a systematic review of the following targets of opportunity:

- Annual assessment of overall payment error in the Pell Grant Program
- Institutional QC--procedures and performance standards
- Processor/vendor QC
- OSFA goals and objectives management tracking system
- Policy level QC management information system (QCMIS)
- FISAP process for institution allocations
- GSL interest payment subsystem

A target of opportunity has been specified for each of the subsystems discussed in Chapter 4, except the student/disbursement subsystem. This was not included since many of the special features in such a system are currently being implemented. Additional targets of opportunity were developed for the FISAP allocation process and GSL interest payments. These were identified as critical error-prone areas in the OSFA interviews.

CORRECTIVE ACTIONS

Another critical element in the overall design of a QC system is the strategy used to initiate corrective actions. This will require that attention be given to the entire QC cycle, identified in Figure 1-1.

While staff from Advanced Technology are working on the design of individual QC modules, the task manager will undertake the design of an overall QC monitoring system that considered the entire QC loop. The purpose of such a system would be to utilize information generated by QC subsystems to complete the QC cycle. The specific steps addressed in this design will be:

- Mobilize for measurement.
- Compare actual performance with standards.
- Management decide corrective action needed.
- Take corrective action.
- Repeat cycle.

At each set outlined above, a management decision is required in OSFA. The decisions will include:

- Decisions about implementing QC modules (mobilizing for measurement based on cost/benefit analysis)
- Decisions about performance that merits corrective actions based on analysis of QC data
- Decisions on which corrective action to take (after analysis of policy and management options)
- Decisions to implement, fund, and manage selected corrective action
- Decisions to repeat or continue measurement in critical areas

A systematic approach to completing the QC loop for critical error-prone areas will be developed during Stage Two. This will include consideration of:

- New OSFA procedures required to implement the QC monitoring system
- The formation of policy-level QC council, possibly headed by the Deputy Assistant Secretary
- The types of policy analysis required to implement this system, including utilization of the policy level QCMIS

Based on consideration of these and other factors identified by the Division of Quality Assurance and senior OSFA personnel, Advanced Technology could design an overall QC monitoring system. The specific content of this system would be identified as the Stage Two study continues. Some of the key activities necessary to develop an overall QC monitoring system are the following.

- Develop Plan for QC Corrective Action System: Research and analyze alternative structures for an overall QC corrective action system in OSFA. Will include consideration of:

- Formation of QC corrective action council, possibly headed by Deputy Assistant Secretary

- A corrective action reporting system using study results

- A system for developing and disseminating corrective action policies and procedures

- Develop QC corrective action decision framework: The effective development of a QC corrective action system will require detailed analysis of OSFA policy and management procedures, as well as Federal laws and regulations affecting the Pell Grant Programs. On the basis of such analysis, Advanced Technology will develop a corrective action decision framework that will include:

  - Corrective action decision heriarchy that identifies corrective actions requiring new legislation, executive order, action by the Secretary of Education, as well as decisions that can be made internal to OSFA

  - Corrective action decision criteria that relate types of action to degree of variance from specified measures

- Develop analytic plan for corrective action: In many instances corrective actions will require detailed analysis of policy and decision points. An analytic plan should provide:

  - Decision criteria for analyzing policy options in specified areas for corrective action

  - Analysis standards for corrective action analysis

  - Report for... for corrective action analysis that will provide input with the QC corrective action system

CONCLUSION

An overall framework for developing a QC system for the Pell program has been identified in this paper. The overall objective of the paper has been to develop a preliminary design of a Pell program QC system. Based on a functional analysis, of the Pell delivery system, a modular QC system design was proposed. At this time it is critical that ED select and prioritize QC subsystems for development. An action plan has already been prepared by Advanced Technology on this topic and submitted to DQA for review.

APPENDIX

TARGET OF OPPORTUNITY: Annual Assessment of Overall Payment Error in the Pell Grant Program

Description of Problem(s):

- Object of QC: Overall Pell delivery system
- Host: DQA

1.0 OSFA System Survey

1.1 Analyze functions of current system

- Determination of program error
- Reporting of program error
- Corrective actions

1.2 Identify potential QC checks for QC subsystem

- Measurement of overall program error
- Error tolerance levels
- Comparative performance standards

1.3 Determine areas for technical assistance related to QC

- QC sample design
- Analysis plans
- Corrective action planning

1.4 Identify linkages to other QC subsystems

- All other OSFA QC subsystems

2.0 Functional Analysis of OSFA Subsystem

2.1 Identify structural elements of the organizational hierarchy

- Deputy Assistant Secretary
- DQA
- OMB

2.2 Identify the purpose(s) of the QC subsystem

- Reduce fraud and abuse
- Assure program integrity and intent
- Identify opportunities for corrective actions

2.3 Determine the potential outputs for the QC subsystem

- Annual error report
- Standards deviation report
- Corrective actions target report

3.0 QC Subsystem Conceptualization

3.1 Identify QC subsystem components

- Data collection and analysis
- Error detection and reporting
- Corrective actions

3.2 Determine subsystem component activities

- Data collection and analysis: sampling, modeling
- Error analysis and reporting: validation, measurement, evaluation, reporting
- Corrective actions: short-term, long-term structural

3.3 Major QC subsystem interfaces

- Policy level QC MIS
- Goals and objectives
- Institutional

4.0 QC Subsystem Design

4.1 Develop procedures for QC subsystem operations

- Data collection and analysis
- Error detection and reporting
- Instigation of corrective actions

4.2 Identify types of technical assistance

- Sampling
- Modeling
- Designing corrective actions

4.3 Develop data acquisition and analysis plans

- Application--reported, validated
- Institutional records
- Processor

4.4 Develop programming protocols (automated only)

- Structured programming requirements for system
- Module Testing
- Module compatibility testing procedures

5.0 QC Subsystem Development

5.1 Develop computer programs (automated only)

- Applicant sampling
- Error detection and application validation
- Modeling, related analysis

5.2 Develop QC subsystem documentation

- System users manual
- Sampling and validation manual
- Corrective action development procedures

5.3 Conduct appropriate analyses

- Error-prone
- Validation methodologies
- Trend

6.0 QC Subsystem Implementation

6.1 Design test plans and acceptance criteria (automated only)

- Operational tolerances review
- Documentation compliance review
- Validity of tolerance standards

6.2 Test QC of subsystem

- Validation, error detection
- Error-prone modeling
- Sampling

6.3 Train OSFA staff, others in QC subsystem operation

- Sampling
- Error detection
- Validation
- Use of model

TARGET OF OPPORTUNITY: Institutional QC - Procedures and Standards

Description:

- Object of QC: Institutions
- Host: Primary - DCPR, Secondary - DTD

1.0 OSFA System Survey

1.1 Analyze functions of current system

- Program review and audit information
- Training materials
- Institutional reporting and disbursement

1.2 Identify potential QC checks for QC subsystem

- Timeliness of reporting (institution and DCPR)
- Standards for award calculation
- Standards for program management

1.3 Determine areas for technical assistance related to QC

- Assistance for analysis of SMS data
- Training in QC procedures
- Identifying error-prone institutions and corrective actions

1.4 Identify linkages to other QC subsystems

- Policy level QCMIS
- Operations/disbursement
- FISAP MIS

2.0 Functional Analysis of OSFA Subsystem

2.1 Identify structural elements of the organizational hierarchy

- DCPR structure and procedures
- Other Divisions: DPO, DPPD, DTD
- Deputy Assistant Secretary

2.2 Identify the purpose(s) of the QC subsystem

- Establish institutional QC standards
- Quantify institutional error
- Plan for corrective action

2.3 Determine the potential outputs for the QC subsystem

- Institutional error reports (trends, institutions)
- Exception reports to DPO
- Corrective action procedures

3.0 QC Subsystem Conceptualization

3.1 Identify QC subsystem components

- Institutional reporting and analysis
- Disbursement by DPO
- Institutional corrective action reporting

3.2 Determine subsystem component activities

- Reporting and analysis: identify error-prone institutions
- Disbursement: report exceptions to DPO
- Corrective actions: institutional self-correction

3.3 Major QC subsystem interfaces

- Internal: DCPR-SMS, regions
- OSFA: QCMIS, goals and objectives, PIMS, FISAP
- Institutional interface

4.0 QC Subsystem Design

4.1 Develop procedures for QC subsystem operations

- SMS analysis and reporting
- Reconciliation
- Corrective actions

4.2 Identify types of technical assistance

- Manual development
- Training
- SMS analytical support

4.3 Develop data acquisition and analysis plans

- Acquisition of SMS data
- Institutional practices derived from case studies
- Disbursement

4.4 Develop programming protocols (automated only)

- Structured programming requirements
- Module testing
- Module compatibility testing procedures

5.0 QC Subsystem Development

5.1 Develop computer programs (automated only)

- SMS data acquisition, analysis, reporting
- Error-prone modeling
- Institutional corrective actions feedback

5.2 Develop QC subsystem documentation

- System user manual
- Disbursement procedures manual
- Multi-level institutional QC manual

5.3 Conduct appropriate analyses

- Exceptions
- Trends
- Corrective actions effects

6.0 QC Subsystem Implementation

6.1 Design test plans and acceptance criteria (automated only)

- Review of operational tolerances
- Documentation compliance review
- Validity of institutional QC standards

6.2 Test of QC subsystem

- Reporting and analysis test for SMS
- Error-prone and disbursement test
- Corrective actions test

6.3 Train OSFA staff, others in QC subsystem operation

- DCPR for SMS analysis system
- DTD for corrective actions
- DPO for disbursement

TARGET OF OPPORTUNITY: Processor/Vendor QC

Description:

- Chief of QC: Pell Grant Processor
- Host: DPPD

1.0 OSFA System Survey

1.1 Analyze functions of current system

- Receive process applications
- Generate SARs
- Maintain and report applicant data

1.2 Identify potential QC checks for QC subsystem

- Existing contractor procedures
- Cost saving measures
- Stage One corrective action recommendations

1.3 Determine areas for technical assistance related to QC

- Operations analysis
- Quality control procedures
- Overall payment error

1.4 Identify linkages to other QC subsystems

- Policy level QCMIS
- Goals and objectives
- Overall payment error

2.0 Functional Analysis of OSFA Subsystem

2.1 Identify structural elements of the organizational hierarchy

- Structure and procedures DPPD, DPO
- Deputy Assistant Secretary, Other OSFA divisions
- External actors

2.2 Identify the purpose(s) of the QC subsystem

- Improve data accuracy
- Improve efficiency and reduce processing costs
- Develop SAR data base--for analysis and modeling

2.3 Determine the potential outputs for the QC subsystem

- Exception reports
- Cost reports
- SAR data base

3.0 QC Subsystem Conceptualization

3.1 Identify QC subsystem components

- Sampling data analysis
- Cost/schedule control
- SAR modeling

3.2 Determine subsystem component activities

- Sampling and analysis
- Cost analysis/schedule implications
- Participate projections

3.3 Major QC subsystem interfaces

- OSFA QCMIS, PIMS, goals and objectives
- Internal contractor
- Institutional interface

4.0 QC Subsystem Design

4.1 Develop procedures for QC subsystem operations

- Sampling
- Cost/schedule control
- Modeling

4.2 Identify types of technical assistance

- Data analysis
- Standards and measures development
- Modeling

4.3 Develop data acquisition and analysis plans

- Production and cost data
- Existing contractor QC plan and reports
- Applicant data

4.4 Develop programming protocols (automated only)

- Structured programming requirements
- Module testing
- Module compatibility testing procedures

5.0 QC Subsystem Development

5.1 Develop computer programs (automated only)

- Sampling
- Cost/schedule control
- Modeling

5.2 Develop QC subsystem documentation

- System users manual
- Technical systems documentation
- Cost control procedures manual

5.3 Conduct appropriate analyses

- Error
- Cost analysis schedule implication
- Trends forecasting

6.0 QC Subsystem Implementation

6.1 Design test plans and acceptance criteria (automated only)

- Review of operational tolerances
- Documentation compliance review
- Validity of standards and measures

6.2 Test QC of subsystem

- Sampling test
- Cost/schedule control test
- Contractor QC system test

6.3 Train OSFA staff, others in QC subsystem operation

- Sampling
- DTD DQA for cost/schedule control, monitoring contractor QC procedures
- DPPD modeling and analysis

TARGET OF OPPORTUNITY: OSFA Goals and Objectives Management Tracking System

Description:

- Object of QC: OSFA
- Host: DSDD/Deputy Assistant Secretary for Student Financial Assistance

1.0 OSFA System Survey

1.1 Analyze functions of current system

- Goals and objectives identification and tracking
- Resource allocation
- Organizational linkages identification

1.2 Identify potential QC checks for QC subsyster

- Early warning of critical problems
- Performance monitoring
- Opportunities for corrective actions

1.3 Determine areas for technical assistance related to QC

- System enhancement and implementation
- Performance analysis
- Corrective action planning

1.4 Identify linkages to other QC subsystems

- Policy level QCMIS
- OSFA Divisions' reporting requirements
- Corrective action reporting

2.0 Functional Analysis of OSFA Subsystem

2.1 Identify structural elements of the organizational hierarchy

- Deputy Assistant Secretary
- Division Directors
- DSDD structure and procedures

2.2 Identify the purpose(s) of the QC subsystem

- Track critical operations
- Measure performance against goals and objectives
- Identify corrective actions

2.3 Determine the potential outputs for the QC subsystem

- Early warning reports
- Performance reports
- Corrective actions

3.0 QC Subsystem Conceptualization

3.1 Identify QC subsystem components

- Critical area tracking
- Performance measurement
- Program analysis

3.2 Determine subsystem component activities

- Tracking critical areas: schedule slippages, etc.
- Performance measurement: Division reporting
- Program analysis: analysis of delivery problems by program

3.3 Major QC subsystem interfaces

- QCMIS: early warning tracking
- Divisions: routine reports
- Programs: corrective action analysis

4.0 QC Subsystem Design

4.1 Develop procedures for QC subsystem operations

- Critical area tracking
- Performance measuring
- Program/corrective action analysis

4.2 Identify types of technical assistance

- System development/enhancement
- Policy analysis
- Program/corrective action analysis and planning

4.3 Develop data acquisition and analysis plans

- Goals and Objectives Data
- Performance Standards
- Program Information

4.4 Develop programming protocols (automated only)

- Structured programming requirements for OSFA system
- Module testing
- Module compatibility testing procedures

5.0 QC Subsystem Development

5.1 Develop computer programs (automated only)

- Goals and objectives
- Early warning
- Program analysis

5.2 Develop QC subsystem documentation

- System users manual
- Early warning procedures manual
- Program data analysis guide

5.3 Conduct appropriate analyses

- Critical point
- Performance
- Corrective action

6.0 QC Subsystem Implementation

6.1 Design test plans and acceptance criteria (automated only)

- Review of operational tolerances
- Documentation compliance review
- Validity of program analysis guide

6.2 Test QC of subsystem

- Early warning test
- Performance measuring test
- Program analysis test

6.3 Train OSFA staff, others in QC subsystem operation

- Early warning system
- Corrective actions
- Program analysis

TARGET OF OPPORTUNITY: Policy Level QCMIS for Pell Grant Program

Description

- Object of QC: OSFA - All actors in Pell subsystems
- Host: Deputy Assistant Secretary, Director, DPPD

1.0 OSFA System Survey

1.1 Analyze functions of current system

- OSFA goals and objectives
- Program Laws, regulations, policies
- Planning and evaluation

1.2 Identify potential QC checks for QC subsystem

- Deviations from critical delivery schedules
- Deviations from planning, budgeting and evaluation (policy) cycle
- Measures of adequacy of internal resources

1.3 Determine areas for technical assistance related to QC

- Simulation modeling
- Costing, forecasting analysis
- Critical path scheduling and related analysis

1.4 Identify linkages to other QC subsystems

- Goals and objectives
- Overall payment error
- Other Pell subsystems

2.0 Functional Analysis of OSFA Subsystem

2.1 Identify structural elements of the organizational hierarchy

- Deputy Assistant Secretary
- Policy Level: OMB, OPBE, Congress, Associations,
- OSFA

2.2 Identify the purpose(s) of the QC subsystem

- Delivery cycle management
- Policy cycle management
- Simulate policy and program options

2.3 Determine the potential outputs for the QC subsystem

- Delivery system performance reports
- Critical performance criteria
- Analysis of policy options

3.0 QC Subsystem Conceptualization

3.1 Identify QC subsystem components

- Program delivery cycle monitor
- Policy cycle monitor
- Simulation model

3.2 Determine subsystem component activities

- Program cycle: critical path analysis
- Policy cycle: critical path analysis
- Simulation: assessment of policy options

3.3 Major QC subsystem interfaces

- Goals and objectives subsystem
- All other Pell QC subsystems
- Corrective action plans as input to other Pell subsystems

4.0 QC Subsystem Design

4.1 Develop procedures for QC subsystem operations

- Monitoring of program delivery cycle
- Monitoring of policy cycle
- Use of simulation model

4.2 Identify types of technical assistance

- Critical path scheduling
- Performance analysis
- Policy analysis

4.3 Develop data acquisition and analysis plans

- Program Data (laws, regulations, etc.)
- Goals and objectives system report
- Conditional variable inputs (program participation rates)

4.4 Develop programming protocols (automated only)

- Structured design requirements [programming systems]
- Structural design of critical path (program logic model)
- Specification of conditional variables

5.0 QC Subsystem Development

5.1 Develop computer programs (automated only)

- Delivery monitoring
- Policy monitoring
- Simulation modeling

5.2 Develop QC subsystem documentation

- Monitoring procedures
- Model operations manual
- Policy analysis guide

5.3 Conduct appropriate analyses

- Critical path analyses
- Relationship between delivery and policy cycles
- Relationship among conditional variables

6.0 QC Subsystem Implementation

6.1 Design test plans and acceptance criteria (automated only)

- Review of operational tolerances
- Documentation compliance review
- Validity of systems and simulation output

6.2 Test of QC subsystem

- Delivery monitor
- Policy monitor
- Simulation model

6.3 Train OSFA staff, others in QC subsystem operation

- Program delivery monitoring
- Policy monitoring
- Simulation monitoring

TARGET OF OPPORTUNITY: FISAP Institutional Allocation Process

Description:

- Object of QC: Institutions
- Host: Primary - DPO, Secondary DCPR, DTD

1.0 OSFA System Survey

1.1 Analyze functions of current system

- Application process
- Processing of applications
- Allocation of funds

1.2 Identify potential QC checks for QC subsystem

- Reasonableness standards
- Standards for funds allocation
- Standards for account reconciliation and close-out

1.3 Determine areas for technical assistance related to QC

- Standards development and implementation
- Error prone area analysis
- Corrective action identification

1.4 Identify linkages to other QC subsystems

- Operations/disbursement
- Policy level QCMIS
- Institutional Subsystem

Functional Analysis of OSFA Subsystem

2.1 Identify structural elements of the organizational hierarchy

- DPO structure and procedures
- Other Divisions: DPPD, DTD, DCPR
- External actors: NAP, contractor

2.2 Identify the purpose(s) of the QC subsystem

- Reduce application error
- Enhance timeliness and effectiveness of allocation process
- Control OSFA processing errors

2.3 Determine the potential outputs for the QC subsystem

- Deviation from reasonableness standards report
- Processing error reports
- Operational analysis file

3.0 QC Subsystem Conceptualization

3.1 Identify QC subsystem components

- Application review
- Allocation process review
- Reconciliation

3.2 Determine subsystem component activities

- Application: reasonableness test, error analysis
- Allocation: monitoring schedules, corrections, appeals
- Reconciliation: compare FISCOP data to disbursements

3.3 Major QC subsystem interfaces

- Policy levels QCMIS
- EDPMTS
- Institutional QC subsystem

4.0 QC Subsystem Design

4.1 Develop procedures for QC subsystem operations

- Application review
- Allocation process review
- Reconciliation

4.2 Identify types of technical assistance

- Standards Development
- Allocation procedures enhancement
- Corrective actions analysis

4.3 Develop data acquisition and analysis plans

- Acquisition of FISAP data
- Acquisition of institutional practices data
- Program data: EDPMTS, formulae, regulations, etc.

4.4 Develop programming protocols (automated only)

- Structured programming requirements for FISAP system
- Module testing
- Module compatibility testing procedures

5.0 QC Subsystem Development

5.1 Develop computer programs (automated only)

- Reasonableness test
- Comparison of FISAP with EDPMTS data
- Distributional analysis

5.2 Develop QC subsystem documentation

- Reasonableness test
- Users manual
- Reconciliation procedures

5.3 Conduct appropriate analyses

- Trends
- Simulation
- Distribution

6.0 QC Subsystem Implementation

6.1 Design test plans and acceptance criteria (automated only)

- Review of operational tolerances
- Documentation compliance review
- Validity of reasonableness standards

6.2 Test of QC subsystem

- Reasonableness test
- Test data matches between FISAP and EDPMTS

6.3 Train OSFA staff, others in QC subsystem operation

- Reasonableness
- Comparison of FISAP and EDPMTS data
- Distributional analysis

TARGET OF OPPORTUNITY: GSL Interest Payment Subsystem

Description:

- Object of QC: GSL lenders, processor
- Host: DP

1.0 OSFA System Survey

1.1 Analyze functions of current system
- Lender billing
- Contractor processing
- Disbursement/EDPMTS

1.2 Identify potential QC checks for QC subsystem
- Inputs: Billing procedures, lender file
- Processes: General accounting
- Outputs: Late payments multipayments

1.3 Determine areas for technical assistance related to QC
- Accounting procedures
- Manual procedures
- General QC procedures

1.4 Identify linkages to other QC subsystems
- Goals and objectives
- Institution subsystem

2.0 Functional Analysis of OSFA Subsystem

2.1 Identify structural elements of the organizational hierarchy
- DPO structure and procedures
- Other ED - Deputy Assistant Secretary, Credit
- Management Task Force
- External Actors

2.2 Identify the purpose(s) of the QC subsystem
- Assure accuracy of lender billing
- Establish sound internal control
- Establish control over payments

2.3 Determine the potential outputs for the QC subsystem
- Lender file update
- Internal process reports [Error cross-check of
- manual/automate payment files]
- Summary payment report system

3.0 QC Subsystem Conceptualization

3.1 Identify QC subsystem components
- Lender file review
- Internal accounting/auditing procedures
- Payment reconciliation

3.2 Determine subsystem component activities
- Lender: Update file
- Internal: Cross-check interest billing with other GSL subsystems
- Payment: Reconcile manual and automated payment procedures

3.3 Major QC subsystem interfaces
- Goals and objectives
- Institutional
- DCPR lender review

4.0 QC Subsystem Design

4.1 Develop procedures for QC subsystem operations
- Update
- Prepayment audit and error correction
- Reconciliation

4.2 Identify types of technical assistance
- Documentation
- Accounting and auditing
- Manual procedures

4.3 Develop data acquisition and analysis plans
- Lender file
- Interest payments file
- Disbursement tapes

4.4 Develop programming protocols (automated only)
- Structured programming requirements
- Module testing
- DBMS schema analysis
- Module compatibility testing procedures

5.0 QC Subsystem Development

5.1 Develop computer programs (automated only)
- Lender update control
- Interest billing prepayment
- Reconciliation

5.2 Develop QC subsystem documentation
- System users manual
- Technical systems documentation
- Reconciliation procedures

5.3 Conduct appropriate analyses
- Currency of lender file
- Error
- Trend analysis for account reconciliation

6.0 QC Susystem Implementation

6.1 Design test plans and acceptance criteria (automated only)
- Review of operational tolerances
- Documentation compliance review
- Validity of reasonableness standards

6.2 Test of QC subsystem
- Update
- Duplicate payment test
- Reconciliation test

6.3 Train OSFA staff, others in QC subsystem operation
- Update of lender file
- Prepayment audit and error correction
- Reconciliation procedures