Research Project 2
System Requirements Document

Prepared 03/11/2011

Business Systems Solutions and Development
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Edmonds Community College
CIS 233 Systems Analysis

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Date: March 11, 2011
To: Patrick Jay, Vice President and Accounting Manager
From: B.S.S.D
Subject: Systems Requirement Document

As a follow-up to the Preliminary Investigation Report, Business Systems Solutions and Development has conducted a systems requirements analysis for the proposed automatic payment system for Bank of Xanadu. Attached is our report that contains the results of the investigation. This report includes our analysis of the scope of the problem, a current and proposed systems analysis, a functional requirements assessment, alternatives analysis, and recommendations for continuing the project. You will find all relevant source documents in the Appendices.

The upcoming Presentation Meeting on Thursday, March 17, at 1:00 PM will be an opportunity for us to present our analysis and recommendations to you. We are available before the meeting to answer any questions you may have.

System Requirements Document

Automatic Contractual Payment System

for

Bank of Xanadu

Bellevue, Washington

Prepared 03/11/2011

Business Systems Solutions and Development

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TABLE OF CONTENTS

Preliminary Investigation Report

I MANAGEMENT SUMMARY

The following Systems Requirement Document has been prepared by Business Systems Solutions and Development (BSSD) for your review. This document presents the results of our in-depth analysis of the existing contractual payment system currently employed by Bank of Xanadu in Bellevue, Washington and documents the steps performed during this stage of the systems development life cycle. Patrick Jay, the Vice President and Accounting Manager, approached our firm to determine the feasibility of building an automatic payment system for the services provided to the bank by contracted vendors.

By interviewing personnel associated with the AS-IS system, we were able to identify the primary problem as being the amount of time it takes to maintain the Excel spreadsheet and cross reference data between it, invoices, and contractual stipulations. This has made managing the existing system inefficient and time consuming. We were also able to identify the system's current processes (refer to Section II.A.5) and a number of weaknesses (refer to Section II.B.2). In addition to an analysis of the current processes and functional requirements, BSSD also identified data information requirements (including system inputs/outputs), requested improvements, and system limitations. We then performed a careful analysis of the hardware used in the AS-IS system and we have concluded that it will be sufficient to support the primary system requirements of the TO-BE system.

During our analysis we sought to determine what functions a new TO-BE system would be required to perform, the scope and feasibility of the project, expected benefits and costs, and any constraints that we might have while proceeding with the design and implementation phases of the new system. Our Analysis has allowed us to define an appropriate course of action for a solution to these systems requirements needs. We have outlined a proposal system that defines the scope of the new TO-BE system, including its functional requirements, objectives, and what benefits it will provide over the AS-IS system. BSSD has also provided an alternatives analysis to identify options that are currently available using existing solutions, custom solutions, or other potential solutions such as outsourcing.

By examining the available solutions and the Bank of Xanadu's system needs, BSSD has determined that the most appropriate and fiscally responsible solution would be to design and implement a Microsoft Access based database system for the management of contractual payments. As the current system's primary user is familiar with Access, it will reduce the amount of training required to fully implement the system. As Bank of

Xanadu already uses Microsoft Office Professional, which includes Access, there would be no initial investment needed to purchase the software.

This Systems Requirement Document presents our analysis and investigation of the Bank of Xanadu's requirements in order to implement an automatic payment system for contractual services. Additional information has been included in the appendices section. We believe that upgrading to an automatic payment system is a necessary step in order to make managing contractual payments a fiscally responsible endeavor. An inordinate amount of time is currently being wasted trying to maintain a system that is inadequate for Bank of Xanadu's current and future needs, thus BDDS is requesting permission at this time to proceed onto the Design Phase of the project.

Preliminary Investigation Report

II CURRENT SITUATION ANALYSIS

A. Current Information System

1. Introduction

On February 04, 2011, BSSD delivered a Preliminary Investigation Report (See Appendix A) to Patrick Jay recommending that Bank of Xanadu continue to the Analysis phase of the Systems Development Life Cycle. The Analysis phase is an in-depth examination of the current systems processes, related personnel, and the relationships between them. Using this information, the Analysis Phase outlines and identifies the functions the proposed system needs to perform.

This section analyzes the current AS-IS system by evaluating:

- The problems associated with it.
- Its strengths and weaknesses.
- The processes and functions currently in place.
- The roles of the personnel who use or benefit from it.
- Its information requirements.
- The computer software and hardware currently used in its operation.

By using a data flow diagram to analyze the flow of information within the current system, BSSD will isolate any bottlenecks in the system and determine the most useful properties and processes that are already in-place. These processes may be salvageable for use in the new TO-BE system (See Section III, Proposed System Overview).

2. Analysis Approach

a. We will be using a DFD (Data Flow Diagram, see Appendix B) and an FDD (Functional Decomposition Diagram, see Appendix B) to visually depict how data flows in and out of the current system. A DFD is a model that shows how data flows between the system and external entities of the system. The graphical depiction identifies each source of data and how it interacts with the processes within the system to reach a common output. A FDD is a model that shows the individual

elements and their hierarchal relationship to each other within a process.

b. The use of these models will help us to show how data is exchanged between external entities and the processes within the system, and how each process transforms the data itself. Using this diagram will help BSSD visualize how data is processed in the current system. This in turn will allow us to determine where improvements to current processes can be made in the new system.

3. Problem

The bank currently employs a stop-gap Excel based workbook that documents negotiated terms stipulated in individual contracts, invoices, accruals, and related data required for the generation of monthly reports. The labor intensive research and documentation required to maintain the payment system has created a bottleneck that currently requires significant amounts of overtime to ensure an accurate accounting ledger. The vice president and accounting manager at Bank of Xanadu's Bellevue, Washington branch, Patrick Jay, has requested that an automatic payment management system be developed that will address the deficiencies of the current system.

4. Stakeholders

a. Patrick Jay, Vice President & Accounting Group Manager

Patrick Jay is the Accounting Group Manager of the Bellevue, Washington branch of Bank of Xanadu. He is responsible for initiating the Information Systems Work Request (dated 01/25/2008) seeking a solution for managing contractual payments to outsourced services.

b. Dave Spencer, Accounting Group

Dave Spencer is the primary user of the as-is system. He is responsible for creating and maintaining the Excel workbooks that are being used to track current invoices and contract obligations, including cross-referencing and documenting fee maximums, hourly rates, time limitations, and other negotiated stipulations.

c. Rob Watt, Contract Group
Rob Watt is one of the members of the Bank of Xanadu's Contract Group. In his capacity as a contract writer, it is often up to him to resolve conflicts that may arise in the payment system due to errors in maintaining an accurate balance sheet, contracted hourly rates, contract time limitations, etc.

d. Contractors
Contractors perform the outsourced work for which they or their firms were contracted to do. They provide labor, technical knowledge, and practical skills, etc. as needed by the bank. By providing the services the bank needs on a contractual basis, contractors and vendors can save the bank a significant amount of money because they no longer need to retain in-house, full-time employees to perform those functions.

e. Payables Group
The Payables Group is responsible for making payments to the contractors for services rendered to the bank.

f. Management Group
The Management Group describes the department heads as well as the Project Managers. Project Managers are responsible for each contract and defining or revising their terms. They are responsible for correcting any discrepancies between contractual and billing/invoice data. The department heads are responsible for managing the charges to their divisions. The Management Group receives three monthly reports from this system.

g. Accounting Group
The automatic payment system is under the Accounting Group's operational umbrella. By having a more efficient system in place they will not have to invest as much time in its management and they will benefit from having that additional time to focus on other work requirements. The Accounting Group receives two monthly reports from the contractual payment system.

5. Processes

The current processes are the result of a stop-gap measure that was initiated about one month ago in order to manage the payments to contracted vendors. The system was created by one person, Dave Spencer, thus the processes are the results of what

he could put together with his limited knowledge of Excel in order to have a system in place as soon as possible and practical.

The current process is started when the contract department hand delivers a hard copy of the contract to the accounting department.

a. After it is received, the contract information is verified. The contract will be recorded into the system. This includes the vendor, hourly rates, begin and end date, fee maximum, and any other negotiated terms or limitations.

b. If there are any problems, a Contract Exceptions Memo will be filled out and sent with the contract back to the Contract Department for corrections. The Buyer will resolve any problems or conflicts with the contract and return it to the Accountant.

c. The Accountant will update the contract information in the system. The original hard copy contract is filed away after it has been corrected or its accuracy has been confirmed.

d. At some point after the work stipulated on the contract is performed the contractor submits an invoice for services rendered to the bank.

e. Once the invoice is received, the information is verified and checked against the terms, rates, and limitations stipulated in the contract.

f. If there are any problems the invoice goes back to the Contract Department and the Contract Department must resolve the conflicts with the contract.

g. Once the issue is resolved the invoice goes back to the Accounting Department.

h. If there are no issues with the invoice it stays in Accounting Department.

i. The Accounting Department then takes the invoice and processes a payment which is then sent to the Accounts Payable Group (a subgroup of accounting).

j. The Accounts Payable Group then cuts a check to the contractor.

k. Vendor Inquiries are investigated and responded to.

l. Depending on the date an invoice is received and entered into the system, accrual debits are entered into the books after the checks have been cut. The accrual is reversed once the debit is paid.

m. Reports are generated at the end of each month for Management and the Accounting Department.

6. Data/Information

a. Description
The information requirements for the system include the contractual terms and limitations, invoice and vendor information, accrual entries, generated reports, and exception memos. This information is required in order to successfully enter and process contracts and invoices to manage the contractual payment system. This information is represented by the inputs and outputs of the system as listed below. (Refer to Appendix B Requirements Catalog)

b. System Inputs

Inputs of the system include data about vendors, buyers, programmers, project managers, and contacts gleaned from invoices and contracts. For further breakdown of individual system inputs see (Appendix B).

c. System Outputs

- General Ledger Report – balances money charged to expense accounts for contract programmers that accounts payables cut checks for.

- Accrual Report – account for invoices and accruals [expenses within a period of time, they need to make sure an expense account is used when the expense occurs (in the same month)

- Expense Recap Report – details the expenses by division and unit, sent to bank units.

- Fee Maximum VS. Actual Report – these reports identify fee maximum, what's been paid, and percentage of what's been used.

- Monthly Contract Recap Report – sent to the Project Managers, these reports recap what has been paid for each contract that they manage.

- Contract/Invoice Exception Memos – Memos generated when there is invalid or incomplete information on a contract or invoice which is then sent to the buyer.

- Data Entry Sheet – This is used to create a new vendor, bank contact, bank unit, or bank division record.

7. Technology

a. The current system computer hardware is a generic PC computer with accompany external peripheral and accessories such as printers, fax machines, routers, etc.

b. The current system computer software being used is Microsoft Office Professional, specifically the Microsoft Excel component.

B. Current System Attributes

1. Strengths

a. Dave Spencer is generally the only person who accesses the Excel workbook. He states it is easy to use because he is comfortable with using the basic functions of Excel.

b. Many of the formulas used in the Excel workbook will work for calculations we will need to reproduce in the new system.

2. Weaknesses

a. There are no uniform standards for data entry into the system, which can cause errors when other people are needed to help enter data into the current system

b. It is time consuming to enter the data from the contracts into the system.

c. It is time consuming to cross reference and match the terms stipulated in the contracts with the invoices received.

d. The current system does not maintain a running balance of charges made against the contract fee maximums, thus increasing the possibility of overpayments if the invoices are not properly entered.

e. If the primary user of the system (Dave Spencer) is out of the office, the work load backs up.

f. The current user (Dave Spencer) works significant amounts of unpaid/salaried overtime to maintain the system.

g. The current system cannot handle the number of invoices received without significant labor, thus it will not be able to handle future demands as more contracted services are put into place at the bank.

Preliminary Investigation Report

III PROPOSED SYSTEM OVERVIEW

A. Overview of the Proposed Solution

1. System Description

The purpose of the new system is to provide an automated way to track and manage contractual payments based on negotiated terms, rates, and limitations. A database system will provide a controlled automated way to track the data. The system will provide forms for contract and invoice related data entry and the generation of monthly reports. It is intended to ensure accuracy and consistency in data entry and the calculations based upon the results of those inputs. The new system will also reduce the amount of time currently spent manually maintaining balances, cross referencing contractual terms and invoice entries, and generating monthly reports.

2. Scope

The proposed automatic payment system will allow the Bank of Xanadu's Bellevue, Washington branch to track and manage contractual payments based on negotiated terms, rates, and limitations. To accomplish this, the system will use a database to store information input from contracts and vendor invoices to maintain account balances and generate reports. This information will include data about vendors, contractors, contracts, invoices, project managers, bank units, divisions, inquiries, memos, exceptions and reports to include such items as names, addresses, amounts, and balances. (See Appendix B Requirements Catalog for an in-depth analysis of functional requirements and data inputs/outputs).

The proposed system will remove redundant and repetitive data while making information retrieval quicker and easy to locate. Additional activities that are within and outside the project scope are as follows:

i. In Scope

In scope items for the Information Systems Work Request for an automated payment system include:

    a. The installation of the new system into the current bank system will be done by BDDS. The functions of this system will include:

        1. Providing forms for the generation of monthly reports from data entered from invoices, payments, and contractual stipulations to include:

        2. Generation of several memo types, including contract exception, invoice exception, and general memos.

        3. Calculating and maintaining a balance of fee maximums, cross-reference and match hourly rates and time limitations between negotiated contract terms and invoices received for services rendered.

    b. Necessary training of employees shall be part of BSSD's responsibility.

    c. This program is for the Bellevue location only.

    d. Support for system debugging and upgrades after implementation.

ii. Out of Scope

Items not in the scope of this project include:

    a. Creating any spreadsheet programs that are needed.

    b. Developing any IT infrastructure solutions (that is the responsibility of their own IT department).

    c. Creating any kind of payroll/ check printing program.

    d. Data migration between systems.

    e. Providing an RDBMS program for the bank system

B. Benefits and Objectives

1. Objectives

- To provide an automated way to track and manage contractual payments based on negotiated terms, rates, and limitations.

Preliminary Investigation Report

This will more efficiently track expenses as they relate to contract stipulations.

- To ensure accuracy and consistency in data entry. Using data integrity constraints, the system will help prevent errors and inconsistent data generation.

- To generate General ledger reports, Accrual reports, Expense recap reports, Fee maximum vs. actual reports, and Monthly contract recap reports. This will allow users to generate pre-formatted reports from the system.

- To reduce the amount of time managing the current system. Maintaining the current system and cross referencing and validating data between contracts and invoice entries is labor intensive and time consuming. Creating a system that can do these calculations automatically will reduce the amount of man-hours required to maintain an accurate system ledger.

2. Benefits

- It will be an automated payment system – the system will automate processes that are currently being performed manually, thus saving considerable amounts of time and labor.

- Information validation – the system will help ensure data integrity by controlling data input and the resulting outputs.

- Increased capacity to process invoices – an automated system will require less time to enter, validate, and process vendor invoices

- Decrease in cost of processing payments – an automated system will be less time-consuming and therefore will reduce the cost of processing payments.

- Less back log of payments to be made – with the time savings that an automated system provides, the back log of payments should decrease.

- Decrease in daily stress – an intangible benefit gained from greater efficiency.

- Increased goodwill among co-workers – another intangible benefit. A more efficient operation can help foster new areas of collaboration within the work force.

- The new system is expected to reduce the extensive labor currently required to manually check and cross-reference data between existing contracts and invoices received for services rendered.

- The successful implementation of an automatic payment system will increase the productivity and efficiency of the accounting department when dealing with invoices and payments for contracted work. By reducing the need for uncompensated, salaried overtime, the new system may also reduce the occurrences of accounting errors while promoting a more satisfied workforce environment.

- An automated system would provide a more efficient way to calculate and track these items, while also reducing the amount of time required to enter and maintain the relevant data, reduce the possibility of incorrect data entry, and reduce the amount of overtime currently being worked to manage the system. The automatic system would also greatly simplify generating monthly reports for the Accounting Group and management as required.

- An automatic system that is capable of cross-referencing data and calculating necessary balances and rates could potentially reduce the amount of time being spent updating or extending contracts or searching for data entry errors.

- An automatic payment system would reduce the likelihood of errors in calculating fee maximum balances, hourly rates, and time limitations, thus reducing the possibility of delaying payments due to errors from the Accounting Group.

- By using an automatic system, the Management and Accounting Groups will receive reports quicker and the accuracy of the reports will be more reliable.

IV FUNCTIONAL REQUIREMENTS

A. Introduction

This section examines the functional requirements of the new system and what is needed for it to be successfully implemented. Functional requirements are statements that describe what the system does. They define the functions that a system must have and what the system must be capable of doing. Functional requirements directly relate to a process that the system must perform or what data and information it needs to process or contain.

B. Analysis Approach

The functional requirements of the new system described in this section are a description of what the new system needs to accomplish. It is not a description of how the requirements will be implemented. A discussion of how the system will implement these requirements will take place during the Design phase of the project. By creating a use case diagram we can identify the processes and external entities (actors) of the system and how they relate to each other. These processes and the steps required to complete them make it easier to identify the system's functional requirements, which are defined in the Requirements Catalog (see Appendix B).

1. Use Case Diagram (See Appendix B)

A use case diagram is a graphical representation of a system and its component parts, including the actors or external entities, the processes of the system as represented by use cases, and the relationships or dependencies between them. The use case diagram shows the associations between the actors and the processes within the system itself, and its development is part of the process of gathering and defining the main functions of the systems and how they are related to the actors outside the system. The primary function of the use case diagram is to identify which system functions are performed by which actor.

Use cases are created through interviews and observation of how the current system works from the user's point of view. Once the use cases are identified, each case is divided into the component steps needed to process the inputs to the system and its outputs.

All steps are then summarized as a single use case in the use case diagram.

2. **Use Case Scenario** (See Appendix B)

A use case scenario is a narrative or functional analysis that specifies a process or task to be accomplished and the detailed steps that must be performed to accomplish it. It verbally describes what the use case diagram graphically represents.

The use case scenario provides the use case name, an id number, a brief description of the process, what triggers it, related cases that use or extend it, its normal flow of events, where exceptions may occur in the process, any conditions that must pre-exist before the process can occur, any post-conditions after it has occurred, any data / information requirements, assumptions that can be made about the use case, and any business rules that can be derived from it.

3. **Proposed System Use Cases** (See Appendix B)

The Use Cases we have identified are:

    1.0   Receive Contract
    2.0   Contract Exception
    3.0   Update Contract
    4.0   Receive Invoice
    5.0   Invoice Exception
    6.0   Update Invoice
    7.0   Pay Invoice
    8.0   Vendor Inquiry
    9.0   Generate Accruals
    10.0   Generate Accounting Reports
    11.0   Generate Management Reports

4. **Requirements Catalog** (See Appendix B for details)

The Requirements Catalog is a list of statements that define the functional requirements of the automatic payment system. These statements detail a specific function or action that the system must be capable of performing. They are directly related to the normal flow of events as denoted by the steps that are detailed in each Use Case Scenario.

V SYSTEMS ANALYSIS SUMMARY

A. Conclusions

The analysis of the current system leads us to the following conclusions:

AS-IS System

- There is no uniform method of entering data into the current system. This can lead to errors when additional users are needed to assist in entering data.

- All of the information in the current system in manually entered and managed. This creates a greater potential for error.

- The current system is labor intensive and requires significant amounts of overtime to manage.

- It is time-consuming to cross reference the invoice items with the stipulations in the contracts in the current system.

- The current system does not maintain a running balance of charges made against the contract fee maximums, thus increasing the possibility of overpayments.

- Accruals are manually performed in the current system. This can cause errors if all invoices and balances have not been properly accounted for.

TO-BE System

- An automated system will be able to use the current formulas for data entry, allowing for the migration of data from the current system to the new system.

- The new system will provide a means to enforce consistent data entry standards through the use of data integrity constraints.

- The new system will save time using an electronic cross-referencing of invoice items with contract information.

- The new system will be able to store and maintain a running balance of charges made against the contract fee maximums, making it less likely that overpayments will be made.

- Accruals in the new system will be automatically calculated and managed, thus reducing the potential for errors and time spent maintaining the system.

- The new system will require less time to manage due to many of the processes that are currently performed manually being automated in the TO-BE system.

B. Systems Comparison

The current system requires a computer and the use of Microsoft Excel to create workbooks for entering and calculating data. It also requires the printing of reports for the various users interacting with the system using word processing software. The current system has no automated functions with the exception of the formulas used for basic calculations in the Excel workbooks.

The new system will have a user-friendly interface and will enforce data integrity by using data entry constraints. The new system will maintain account and fee maximum balances and perform basic ledger and accrual calculations. It will store invoice data and generate monthly reports currently created by users of the system. It will be required that the new system store contract information and cross reference this information with invoice data entries to maintain accuracy of contract balances.

The following table compares common system functions and characteristics between the current AS-IS system and the proposed TO-BE system and how each process or characteristic is implemented.

SYSTEMS COMPARISON CHART		
SYSTEM COMPARISON	**AS-IS**	**TO-BE**
PROCESSES:		
Balance Computations	**Manual**	**Automatic**
Calculations	**Manual / Excel**	**Automatic**
Input Information	**Manual**	**Manual/Scanned**
Cross Referencing Data	**Manual**	**Automatic**
	Manual	**Automatic**

Generate Reports Accruals	Manual	Automatic
DATA / INFORMATION:		
Enforced data entry standards	No	Yes
Accurate	No	Yes
Repetitive / redundant	Yes	No
Data Integrity	No	Yes
HARDWARE:		
Computer	Yes	Yes
Printer	Yes	Yes
Fax	Yes	Yes
Invoice Scanner	No	Yes
SOFTWARE:		
Microsoft Office Professional	Yes	Yes
Database	No	Yes
GENERATED REPORTS		
User friendly	Yes	Yes
Easy to navigate	No	Yes
Easy to calculate	No	Yes
GUI	Yes	Yes
Easy to input information	No	Yes
Automatic	No	Yes
INTERFACE		
User friendly	Yes	Yes
Easy to navigate	No	Yes
GUI	Yes	Yes
Easy to input information	No	Yes

Preliminary Investigation Report

VI ALTERNATIVES ANALYSIS
A. Software Alternatives

Software alternatives come in two broad categories, existing and custom. A number of third party software solutions have been created to provide database system solutions for common usage needs, while custom software packages can be created for specific needs.

❖ **Existing Software Solutions**

There is currently a number of existing software packages that can be purchased directly or through a value added reseller. Lower to middle range solutions can be purchase from stores or online and are generally adequate for most systems that do not need customized functions or large scale implementation. Many of these software packages come with a GUI for ease of use and are generally cost effective methods for introducing an information system into the workplace.

Some of the more popular software packages include:

- **Microsoft Access**

  Access is an entry-level database management system that offers a flexible environment for database developers and users. It makes use of the familiar Microsoft Office interface and allows for integration with larger-scale enterprise databases such as Microsoft's SQL Server and Oracle. Access can be purchased separately or as part of the Microsoft Office Professional package.

  Features:
  - Macros
  - Database Sharing on Web
  - Conditional Formatting on Reports and Forms
  - Data Type Gallery
  - File-level Trust
  - Ribbon Interface and Backstage View
  - SmartArt Templates
  - Screen Capturing and Clipping Tools
  - Expression Builder
  - Import Excel spreadsheets
  - Customizable Data Entry Forms

Current Prices:

Edition	Price
Access 2010	$140
Office 2010 Professional	$500

- **MySQL**

  MySQL is an open-source relational database management system that can be used in conjunction with GUI interface programs such as Toad to simplify the user experience. The RDBMS is available for free software projects but also has several commercial editions available as well.

  Features:
  - Scalability
  - Performance
  - Partitioning
  - Backup/Recovery
  - Data Dictionary
  - Schema Synchronization
  - Forward/Reverse Engineering
  - Visual Data Modeling
  - Unique Storage Engine Architecture
  - Transaction Rollback
  - Crash Recovery
  - Extensive Language Support
  - Network Monitoring and Advisory
  - Audit Trail
  - Data Migration (from other RDBMS)

  Current Prices:

Edition	Sockets	License (Annual)
MySQL Standard Edition	1-4	$2,000
MySQL Standard Edition	5+	$4,000
MySQL Enterprise Edition	1-4	$5,000
MySQL Enterprise Edition	5	$10,000

Higher level software packages are often used for larger databases and corporate level systems that require some customization. These packages vary in price based upon how many licenses are required and which version of the software is used. These packages include:

Preliminary Investigation Report

- **Microsoft SQL Server**

  Microsoft SQL Server is a powerful relational database management system catering to high-end users with advanced needs. The Standard SQL Server Edition is used as a production database server for the small to mid-size companies or departments. It is the default edition installed on most systems and is designed to run on the Windows 2003/2008 Server Platform. The standard edition supports the majority of the tools Microsoft has built for the SQL Server. SQL Server automates, streamlines, or eliminates many routine database management tasks.

  Features:
  - Activity Monitor
  - Performance
  - Scalability
  - Security
  - Backup and Data Compression
  - Data Collector and Management Warehouse
  - SQL Server Audit
  - Transparent Data Encryption
  - Resource Governor

  Current Prices:

Edition	License	Software Assurance
SQL Server Standard	$7, 171	$1,793
SQL Server Enterprise	$27,495	$6,874

- **Oracle Database**

  Oracle is a powerful relational database management system that offers a large feature set. Along with Microsoft SQL Server, Oracle is widely regarded as one of the two most popular full-featured database systems on the market today

  Features:
  - Automatic Storage Load Balancing and Management
  - Automatic Diagnostics Repository
  - Automatic Maintenance Tasks and Memory Management
  - Scalability
  - Capture/replay database workloads
  - Virtual Columns

Preliminary Investigation Report

- Partitioning
- Secure Backup
- Data Integration
- Intelligent Data Placement
- File Access Control & Snapshot
- Query Result Cache
- Table Compression

Current Prices:

Edition	User	License	Update/Support
Oracle Standard	$350	$17,500	$3,927
Oracle Enterprise	$950	$47,500	$10,659

These prices are for the database software alone. Additional packages are available for other purposes including diagnostics and secure backup.

- **IBM DB2**

  DB2 is a relational database system developed by IBM Corporation, originally for use on large mainframe computer systems. It has since been ported to a variety of platforms including SunOS, Solaris, Linux, Windows 95/98/NT/2000 and HP-UX.

  Features include:
  - Advanced Access Control
  - Autonomics
  - Data Compression
  - Geodetic Data Management
  - High Availability Disaster Recovery
  - Performance Optimization
  - Scalability
  - pureXML
  - Security
  - Reliability
  - Virtualization
  - SQL Skin

  Current Prices:

CPU's	Workgroup Edition	Enterprise Edition
1	$7,500	$25,000
2	$15,000	$50,000
4	$30,000	$100,000

Preliminary Investigation Report

8	$60,000	$200,000
16	$120,000	$400,000
32	$240,000	$800,000

❖ **Custom Software Solutions**

Custom database information systems can also be created to address the unique needs and issues of the client's system. These solutions are designed and programmed from scratch, and are usually commissioned for niche database systems or those with complex needs. As Bank of Xanadu has outsourced all of their programming services, creating a custom solution in-house is no longer a possibility, thus this could only be accomplished by hiring an outside firm or programmers.

B. Outsourcing

Outsourcing the automatic contractual payment system to another firm is an additional consideration that will be reviewed. Many firms provide systems management services for those companies that may not wish to invest in their own or who have decided that outsourcing is a more practical or cost effective solution for the work that needs to be provided. These services perform accounting and systems management work that would normally be performed by in-house employees.

Some of these companies maintain their own databases and manage the data information at their own facilities. Other companies, such as AtoZTasks.com, provide services to remotely manage the customer's existing database. Pricing for outsourcing database management varies, depending on the amount of time required to maintain the system and the location of the company that performs the services. AtoZTasks.com, which is located in San Bernardino, Ca., provides three levels of data entry and management service:

- 40 hours/month $295.00
- 80 hours/month $595.00
- 160 hours/month $795.00

Some of the data entry services they provide include:

- Data Conversion
- Data Processing
- Form Filling
- Insurance Claims Processing
- Medical Billing

Preliminary Investigation Report

- Financial Processing
- Payroll Processing
- Medical Transcription
- Chronological Sorting
- File Conversion
- Document Scanning & Sorting
- Data Capture Services
- Records Retrieval Services

C. Manual Alternatives

The current payment management system uses a Microsoft Excel workbook and spreadsheets to maintain the account balances, accruals, reports, and data information. The payment system has limited capabilities provided by basic Excel functions that were created by the primary user, Dave Spencer. It may possible to extend the current Excel system using advanced functions to automate more of the calculations.

VII RECOMMENDATIONS

Final Recommendation

Using an existing software package is the most viable option of those solutions presented. However, choosing the appropriate database management system can be a complicated decision.

Low to medium level existing software packages present a more realistic return for the initial financial investment. Most of these programs are sensibly priced and are capable of addressing the needs of Bank of Xanadu's new payment system. These programs, such as Microsoft Access and MySQL, are readily available from local stores or downloadable. Either of these software packages would provide sufficient resources to manage the automatic payment system.

High level software packages are customizable and extremely powerful solutions that would adequately address the Bank of Xanadu's current and future needs. However, the high level programs addressed here, Microsoft SQL Server, Oracle, and IBM DB2, can be extremely expensive software packages. Depending on the software versions and number of licenses required, implementing these programs can cost tens or hundreds of thousands of dollars. These programs are also considerably more powerful than what this system needs, thus employing them for this payment management system would be akin to overkill.

Custom software solutions are also a viable option to create an automatic payment system. A new system can be designed and programmed to meet the needs of the Bank of Xanadu to enhance and automate the current system and its processes. However, designing and programming a new system from scratch is time consuming and unlikely to fit into the time constraints as dictated by Patrick Jay. It is likely to be significantly more expensive than most other options presented here, and, considering the relatively simple needs of the proposed system, designing and programming a unique system to manage automatic payments would be an excessively wasteful decision.

Outsourcing the automatic payment system to a contracted firm is a viable solution. Most firms offer affordable services and they create and maintain their own databases at their facilities. This would reduce overhead costs at Bank of Xanadu and free up personnel to perform other duties. However, outsourcing this system to another firm may violate privacy issues and could cause logistics problems. Account numbers and customer/client

information would now be available to an outside firm whose security may be less secure than that in place at the Bank of Xanadu. The Bank of Xanadu currently maintains access to the contract and invoice hard copies that are filed at the individual branches. Relying on a contracted firm may require that these contracts and invoices be stored or managed at their facility, thus restricting the Bank of Xanadu's access to them

Continuing to use Excel to implement an automatic payment system is impractical. Creating advanced functions to automate more of the calculations is possible, but continuing the use of an Excel workbook does not address a number of issues and problems identified with the current system. These include, among others, issues with data redundancy, data integrity, cross-referencing and matching contractual terms and invoice entries, and a lack of data entry standards. It is also beyond Excel's ability to generate reports and process accruals, thus the software package is inadequate for implementing a data information system for the payment system's current and future needs.

While there are a number of affordable programs available, BSSD recommends that Bank of Xanadu implement an automatic payment system using Microsoft Access for the following reasons:

- Microsoft Access is part of the Microsoft Office Professional Suite which Bank of Xanadu already employs at the Bellevue, Washington branch, thus there will be no initial costs for purchasing the software.

- Microsoft Access can perform the necessary functions required by Bank of Xanadu and should be sufficient to address future growth of the new system.

- The primary user of the current system, Dave Spencer, is familiar with the software. This will also reduce potential training costs and implementation times.

- Access uses the familiar Microsoft GUI interface. This will make the software more comfortable for use by those familiar with Microsoft products.

- Microsoft Access is a popular database solution capable of integrating with larger-scale enterprise databases such as Microsoft's SQL Server and Oracle. This ensures that the current system can be expanded if necessary to accommodate for system growth.

VIII TIME ESTIMATES

Estimated Schedule

BSSD uses the System Development Life Cycle (SDLC) model to build custom databases for our clientele. At this time we have completed the Planning and Analysis phases. The remaining phases to be completed are:

- **Design**: During this phase, BSSD will create the blueprint based on the results of the Analysis Phase to satisfy the requirements for the automatic payment system. This phase will start April 4th, 2011 and is scheduled to end on May 19, 2011.

- **Implementation**: BSSD will build, program, and deliver a fully functional automatic payment system during this phase. This phase is scheduled to start on May 20, 2011 and will end on June 10, 2011.

- **Operation:** BSSD will support, maintain, and enhance this system until June 6, 2016. Bank of Xanadu can negotiate a continuation of the support contract with BSSD to extend our support after this date or the system and its maintenance will be turned over to Bank of Xanadu at that time.

The following chart identifies the phases of the Automatic Payment System and their individual tasks. The phase and task durations, start and finish dates, predecessors, and the team member performing the tasks are identified in the columns adjacent to the task names. These phases and tasks have been plotted on a Gantt chart to provide a simplified visual reference representing the task duration and how the allotted time for the individual tasks relate to each other. (Refer to Appendix C)

	Task Name	Duration	Start	Finish	*	Resource Name
1	**Design Phase**	**34 days**	**Mon 4/4/11**	**Thu 5/19/11**		
2	Build Tables	3 days	Mon 4/4/11	Wed 4/6/11		Bruce Norman
3	Input Test Data	2 days	Thu 4/7/11	Fri 4/8/11	2	Stuart Crome
4	Build Forms	2 days	Mon 4/11/11	Tue 4/12/11	3	Stuart Crome
5	Build Sample Reports	2days	Wed 4/13/11	Thu 4/14/11	4	Don Voges
6	Build Sample Queries	2 days	Mon 4/11/11	Tue 4/12/11		Sean Ryan
7	Write Programming Code for Database	2 days	Wed 4/13/11	Thu 4/14/11	6	Bruce Norman
8	Design Switch Board	1 day	Fri 4/15/11	Fri 4/15/11	7	Don Voges
9	Design Splash Screen	1 day	Mon 4/18/11	Mon 4/18/11	8	Don Voges
10	System Testing Functionality, Data Integrity Constraints	2 days	Tue 4/19/11	Wed 4/20/11	9	Stuart Crome
11	User Feedback	14 days	Thu 4/21/11	Tue 5/10/11	10	

12	User Feedback Improvements	7 days	Wed 5/11/11	Thu 5/19/11	11	
13	**Implementation Phase**	**16 days**	**Fri 5/20/11**	**Fri 6/10/11**		
14	Install Access on Computers	1 day	Fri 5/20/11	Fri 5/20/11		Sean Ryan
15	Install Document Scanner	1 day	Fri 5/20/11	Fri 5/20/11		Bruce Norman
16	Testing Implemented System	5 days	Mon 5/23/11	Fri 5/27/11	15	Stuart Crome
17	Training	10 days	Mon 5/30/11	Fri 6/10/11	16	Stuart Crome
18	**Operational Phase**	**5 years**	**Fri 6/10/11**	**Fri 6/10/16**		
19	On Going Support	5 years	Fri 6/10/11	Fri 6/10/16		Bruce Norman

* Predecessors

IX CONCLUSION

Bank of Xanadu's current contractual payment system requires significant amounts of time to manage and to cross-reference invoice data with negotiated contractual terms and limitations. In order to resolve this issue, Patrick Jay of Bank of Xanadu's Bellevue, Washington branch, has contacted BSSD to determine the feasibility of building an automatic payment system for the services provided to the bank by contracted vendors.

BSSD has conducted a careful analysis of Bank of Xanadu's AS-IS payment system, its processes, actors, and their associated relationships. By conducting interviews with the personnel who use or benefit from the program and observing the processes and functions of the system in its current state, we have isolated the system's functional requirements and drafted a proposal system to meet those needs.

After performing an alternatives analysis to determine what software options would be best suited to Bank of Xanadu's needs, we have chosen to eliminate commercial and custom software as being too expensive for the needs of this system. We have also chosen to reject outsourcing this system due to information privacy concerns. An improved manual system would still require significant amounts of time to cross-reference data and to maintain the system. Based upon the proposed system's expected functionality, the bank's requirements, suggested input from personnel interviews, and the need to create a feasible system that will properly address these issues, BSSD recommends that the Bellevue, Washington branch of Bank of Xanadu commission the design and implementation of a Microsoft Access database system to manage their TO-BE automatic contractual payment system.

Unless the current system is upgraded, the amount of time spent entering, processing, and cross-referencing vendor, contractual, and invoice data will continue to grow as the system matures and expands. This will require further resources that will affect the bank's profitability, employee morale, and customer satisfaction. We are therefore requesting that you accept our recommendation and allow us to proceed with the Systems Design Phase of the project life cycle.

APPENDICES

APPENDIX CONTENTS	
I. APPENDIX A BACKGROUND DOCUMENTATION	**Pg 39**
• Preliminary Investigation Report …………………..…………..	Pg 40
II. APPENDIX B DEVELOPER DOCUMENTATION	**Pg 85**
• Functional Decomposition Document ………………………….	Pg 86
• Data Flow Diagram ……………………………………………..	Pg 87
• Use Case Diagram ……………………………………………..	Pg 88
• Use Case Scenarios ………………………..………...………..	Pg 89
• Requirements Catalog ………………………..………………..	Pg 110
A. System Inputs …………………………………………..	Pg 110
B. Functional Requirements ………………………………..	Pg 110
I. Process-oriented Requirements …………………..	Pg 111
II. Information-oriented Requirements ……………….	Pg 115
III. APPENDIX C ADDITIONAL DOCUMENTATION	**Pg 117**
• Gantt Chart ………………………………………………..	Pg 118

APPENDIX A
Background Documentation

Research Project 1
Preliminary Investigation Report

Prepared 02/04/2011

Business Systems Solutions and Development
Bruce Norman, Sean P. Ryan, Stuart Crome, Don Voges

Edmonds Community College
CIS 233 Systems Analysis

CIS 233: <u>*Evaluation Criteria*</u> *– Preliminary Investigation Report*

Team Members: Bruce Norman, Sean P. Ryan, Stuart Crome, Don Voges

Category	Evaluation Criteria	Points	Grade	Comments
Content:	❑ Covers all the requested points ❑ Includes all required components ❑ Addresses proper audience ❑ Has appropriate level of detail ❑ Follows guidelines in text ❑ Body of report contains <u>all sections</u> specified above ❑ Demonstrates that <u>critical thinking skills</u> were used to determine the true nature of the problem and scope of the project.	60		
Format:	❑ Follows suggested format	10		
Style:	❑ Uses a professional, easy to read, style with correct English & proper grammar	10		
Clarity:	❑ Makes all the points clearly from the reader's point of view	10		
Layout & Neatness:	❑ Uses proper margins & spacing: **one inch** on left, right, top, & bottom ❑ Uses consistent fonts with *<u>no less that a **12 point font** minimum</u>* (headings may be larger size if desired) ❑ Includes a header or footer with document title and page numbers ❑ Uses bullets and white space to <u>good effect</u>	10		
Total Points		100		
Overall Comments:				

Preliminary Investigation Report

Automatic Contractual Payment System

for

Bank of Xanadu

Bellevue, Washington

Prepared 02/04/2011

Business Systems Solutions and Development

Bruce Norman, Sean P. Ryan, Stuart Crome, Don Voges

Edmonds Community College
CIS 233 Systems Analysis

TABLE OF CONTENTS

Preliminary Investigation Report

I. INTRODUCTION

The Bank of Xanadu has enjoyed significant growth in recent years. In an effort to increase profitability and update its business model, the bank has decided to outsource any functions and duties not directly related to its core competencies and business practices. Our investigation centers on the need to develop an automatic payment system capable of managing contractual obligations and expenditures for these outsourced services. By updating the existing manual system, Bank of Xanadu hopes to significantly reduce the time and effort it takes to manage and maintain its contractual payments system.

The current system employs an Excel workbook that documents negotiated terms stipulated in individual contracts, invoices, accruals, and related data required for the generation of monthly reports. The labor intensive research and documentation required to maintain the payment system has created a bottleneck that currently requires significant amounts of overtime to ensure an accurate accounting ledger. For this reason, management has determined that a new, automated system for tracking contract payables is needed. The new system is expected to reduce the extensive labor currently required to manually check and cross-reference data between existing contracts and invoices received for services rendered.

Business Systems Solutions and Development (B.S.S.D) has been requested to investigate the feasibility of an automated payment system for Bank of Xanadu by the Bellevue, Washington branch's Vice President/Accounting Group Manager, Patrick Jay. A B.S.S.D. team consisting of Bruce Norman, Sean Ryan, Stuart Crome, and Donald Voges has analyzed the current system, interviewed current users and related personnel, and defined a number of issues and requests that the new, automatic system will need to address. The information that follows is the result of our preliminary investigation.

II. SYSTEMS REQUEST SUMMARY

Bank of Xanadu has chosen to streamline its business model to focus on its core competencies and business operations. For this reason, Bank of Xanadu is outsourcing any services that are not directly related to its banking functions and processes. To facilitate contractual payment to the providers of these outsourced services, Bank of Xanadu has decided to implement an automated payment system to replace the manual Excel workbook system that is currently in place. The new payment system must address a number of issues that render the current system inefficient and inadequate for future needs. In order to create an effective way to track the outsourced expenses, the new system must reduce or eliminate bottlenecks in the current payment system caused by the amount of time it takes to:

- Manually enter the contractual information
- Receive and process incoming invoices
- Prepare accurate accruals
- Determine whether the invoices are submitted within the contract's time limitations
- Confirm that the contractual hourly rate matches the invoice hourly rate
- Calculate whether sufficient funds are available within the contract for payment of the received invoices

The objective of the work request is to identify and recommend an automated system for the management of contractual payments per established contract agreements and limitations.

III. BACKGROUND

Swellvue Savings & Loan was originally founded in 1978 in Washington states' Puget Sound area by a small group of individuals with a commitment to sound banking practices.
The company's slogan, "No Boundaries", exemplifies their mission of putting the customers' needs first, no matter what. The exceptional service of these three initial branches allowed the company to expand throughout the Northwest region of the United States and into California. Over the course of the next decade the company expanded its operations through mergers and acquisitions, transforming the organization into the global banking entity now known as Bank of Xanadu.

The Bank of Xanadu's board of directors moved the corporate headquarters to the Cayman Islands in 2000 to take advantage of the tax benefits available to offshore banking operations. By encouraging the development of smaller satellite banks around larger central hubs in financially stable areas, Bank of Xanadu's 100, 000 employees now service over 10 million customers worldwide. Each satellite branch operates under the umbrella of its local central bank, which has its own administrative, accounting, and human resources services. Central banking hubs and international banking centers, although they have a degree of autonomy, both report directly to the corporate headquarters.

Banking centers employ a variety of service professionals to manage customer relations as well as an internal IT staff to maintain and support the computer systems and database programming and development. The banking centers and corporate headquarters are responsible for the management of their own payroll, real estate, utility, asset, and contractual expenses, although the corporate office generally manages system-wide enhancements that affect the entire banking system.

In order to increase their competitiveness and profitability, the Bank of Xanadu has chosen to focus on their core business processes. For this reason the company is now outsourcing any services that do not directly relate to their banking services. This corporate-wide change to their business model has promoted the need to develop an automated payment system for contractual services. This new system will be initially implemented at its Bellevue, Washington branch and potentially expanded to Bank of Xanadu's other banking centers.

IV. PRELIMINARY INVESTIGATION FINDINGS

i.   Problem Description

Due to a recent change to Bank of Xanadu's business model, any services not directly related to the company's core banking functions and services will be outsourced to contracted firms and/or individuals. The bank currently employs a stop-gap Excel based workbook to manage the contractual payments for these services, but it is extremely time consuming to accurately maintain this manual system. The vice president and accounting manager at Bank of Xanadu's Bellevue, Washington branch, Patrick Jay, has requested that an automated management system be developed that will address the deficiencies of the current system.

ii.   Project Stakeholder

i.   **Patrick Jay, Vice President & Accounting Group Manager**
Patrick Jay is the Accounting Group Manager of the Bellevue, Washington branch of Bank of Xanadu. He is responsible for initiating the Information Systems Work Request (dated 01/25/2008) seeking a solution for managing contractual payments to outsourced services. The successful implementation of an automatic payment system will increase the productivity and efficiency of the accounting department when dealing with invoices and payments for contracted work. By reducing the need for (uncompensated/salaried) overtime, the new system may also reduce the occurrences of accounting errors while promoting a more satisfied workforce environment.

ii.   **Dave Spencer, Accounting Group**
Dave Spencer is the primary user of the as-is system. He is responsible for creating and maintaining the Excel workbooks that are being used to track current invoices and contract obligations, including cross-referencing and documenting fee maximums, hourly rates, time limitations, and other negotiated stipulations. An automated system would provide a more efficient way to calculate and track these items,

while also reducing the amount of time required to enter and maintain the relevant data, reduce the possibility of incorrect data entry, and reduce the amount of overtime he currently works to manage the system. The automatic system would also greatly simplify generating monthly reports for the Accounting Group and management as required.

iii. Rob Watt, Contract Group

Rob Watt is one of the members of the Bank of Xanadu's Contract Group. In his capacity as a contract writer, it is often up to him to resolve conflicts that may arise in the payment system due to errors in maintaining an accurate balance sheet, contracted hourly rates, contract time limitations, etc. An automatic system that is capable of cross-referencing data and calculating necessary balances and rates could potentially reduce the amount of time he may be spending updating or extending contracts or searching for data entry errors.

iv. Contractors

The automated payment system will increase the efficiency of the invoicing and payments system, potentially reducing the amount of time it takes to make payments to those contracted individuals and firms that perform the essential functions and services that the bank no longer performs itself.

v. Payables Group

The Payables Group is responsible for making payments to the contractors for services rendered to the bank. An automatic payment system would reduce the likelihood of errors in calculating fee maximum balances, hourly rates, and time limitations, thus reducing the possibility of delaying payments due to errors from the Accounting Group.

iii. *Project Scope*

iii. In Scope

In scope items for the Information Systems Work Request for an automated payment system include:

> e. Development of a database system that will allow the Bank of Xanadu's Bellevue, Washington branch to track and manage contractual payments based on negotiated terms, rates, and limitations.

f. The installation of the new system into the current bank system will be done by B.D.D.S. The functions of this system will include:

4. Providing forms for the generation of monthly reports from data entered from invoices, payments, and contractual stipulations to include:

i.   General ledger report – a report that balances of charges to the expense account for contract programmers with the checks issued by the accounts payable department. (There is only one expense account for contract programmers.)

ii. Accrual report – a report that tracks expenses within a period of time to make sure an expense account is used when the expense occurs (within the same month).

iii. Expense recap report – a report that summarizes expenses, organized by division and bank unit.

iv. Fee maximum vs. actual – a report that shows the fee maximum, what has been paid and the percentage of what has been used.

v.   Monthly contract recap – a report that shows what has been paid against the contracts managed by project managers.

5. It was also mentioned that it would be nice if the new payment system included a way to manually generate memos in addition to the monthly reports. (See Issues)

6. Calculating and maintaining a balance of fee maximums, cross-reference and match hourly rates and time limitations between negotiated contract terms and invoices received for services rendered.

g. Necessary training of employees shall be part of B.S.S.D's responsibility.

h. This program is for the Bellevue location only.

Preliminary Investigation Report

   i. Support for system debugging and upgrades after implementation.

    iv. Out of Scope

Items not in the scope of this project include:

  f. Creating any spreadsheet programs that are needed.

  g. Developing any IT infrastructure solutions (that is the responsibility of their own IT department).

  h. Creating any kind of payroll/ check printing program.

  i. Data migration between systems.

  j. Providing an RDBMS program for the bank system

iv. *Current Procedures*

The current process is started when the contract department hand delivers a hard copy of the contract to the accounting department.

  n. After it is received, the contract will be recorded into the system.

  o. If there are any problems, a Contract Exceptions Memo will be filled out and sent with the contract back to the Contract Department for corrections.

  p. The contract is filed away after it has been corrected or its accuracy has been confirmed.

  q. At some point after the work stipulated on the contract is performed the contractor submits an invoice for services rendered to the bank.

  r. Once the invoice is received, it is checked against the terms, rates, and limitations stipulated in the contract.

  s. If there are any problems the invoice goes back to the Contract Department and the Contract Department must resolve the conflicts with the contract.

t. Once the issue is resolved the invoice goes back to the Accounting Department.

u. If there are no issues with the contract it stays in Accounting Department.

v. The Accounting Department then takes the contract and processes a payment which is then sent to the Accounts Payable Group (a subgroup of accounting).

w. The Accounts Payable Group then cuts a check to the contractor.

x. Checks are paid weekly. Checks are run once a week except for last week of month then they are run twice.

v. *Current System Strengths*

c. Dave Spencer is generally the only person who accesses the Excel workbook. He states it is easy to use because he is comfortable with using the basic functions of Excel.
d. Many of the formulas used in the Excel workbook will work for calculations we will need to reproduce in the new system.

vi. *Current System Weaknesses*

h. There is no uniform standards for data entry into the system, which can cause errors when other people are needed to help enter data into the current system

i. It is time consuming to enter the data from the contracts into the system.

j. It is time consuming to cross reference and match the terms stipulated in the contracts with the invoices received.

k. The current system does not maintain a running balance of charges made against the contract fee maximums, thus increasing the possibility of overpayments if the invoices are not properly entered.

l. If the primary user of the system (Dave Spencer) is out of the office, the work load backs up.

m. The current user (Dave Spencer) works significant amounts of unpaid/salaried overtime to maintain the system.

n. The current system cannot handle the number of invoices received without significant labor, thus it will not be able to handle future demands as more contracted services are put into place at the bank.

vii. New System Requested Features

The new system will need to check invoice and contract data for consistency and accuracy. Information may be entered by various individuals and therefore, needs to be entered and processed in a consistent manner and with the minimal amount of ambiguity. Checks to contractors are paid weekly and must comply with contract stipulations regarding the amount that is budgeted for each contract.

The client has stated that three features are the most important for the system. It should match the service dates on the invoice for the contractor's work with the actual work that has been done. It should make sure the hourly rate matches the hourly rate on contract. It should make sure the dollars paid out does not exceed the contract fee maximum. The client has stated that it would be nice to automatically generate memos as well as the five monthly reports that are currently issued.

The reports that are generated will need to comply with the information entered. That is, the system will need to minimize the amount of incomplete or inaccurate data on the back end (the data source) and the resulting reports. We believe it will need to be designed in a user-friendly interface to avoid confusion, which can create incomplete or inaccurate data. Data integrity is of great importance for this system.

viii. Project Constraints

The client has required that the system be up and running by June 11. This would require the installation of the system before that date, leaving time for testing. A test plan would need to be created based on information gathered from use cases. Network resources would need to be put in place for user access and storage of data. Using the Systems Development Life Cycle, an analysis of the current system will generate a Systems Requirements Document. From there, an analysis of the system requirements will generate a Systems Design Specification. The construction and installation of the system will take place following the creation of the Systems Design Specification.

IT administrators have assured us they have the ability to support such a system. They currently have a functioning intranet on which the new system can be run. Infrastructure hardware (servers, routers, cabling) may need to be purchased and tested. Once this is in place, programming work can begin with the installation of applications for data management. Following this stage, the system will be tested for compliance with the client's requirements. A timeline will need to be created for project milestones to ensure the project is on schedule and meets the client's deadline of June 11.

ix. *Project Feasibility*

i. Operational Feasibility

After weighing many options it has been proposed to design a new information system using a database to address the shortcomings of the current system. We here at B.S.S.D believe that this approach will greatly improve upon the current system. The new system will automate many of the calculations and functions that are currently being handled by the Excel system, such as processing incoming programming invoices, preparing accruals, determining whether the invoice falls within the time limitations, and calculating whether there is enough funding left on the contract to pay the invoice. The primary user of the new system will be Dave Spencer, who has indicated that he is proficient in the use of Excel's basic functions and has a limited knowledge of Microsoft Access. We feel that with minimal training any current or future users of the proposed system will be able to efficiently manage and maintain its database information. We are confident that from an operational standpoint this is the most viable solution.

ii. Technical Feasibility

From a technical stand point all the necessary hardware and software to design the new system is readily available. Items needed to facilitate the new system are as follows:

- Computers

- Database Management Software (Microsoft Access, Oracle, MySQL, SQL Server, etc.)

- Document Scanners

- Printers

Training will also be required to help familiarize all the users of the system with all the features of the database system. This will ensure that the new system will be utilized to its fullest capacity.

We have not come up with any other alternatives at this time that are either more efficient or feasible than the proposed system. Upon interviewing Patrick Jay we learned that the company has used general ledger accounts to handle invoices but it was indicated to us that this was not a viable solution to the current problem. There was a discussion about modifying the current Excel work book system, but after further review we feel that even with major modifications the current system would still fall short of expectations.

The Bellevue, Washington branch is where implementation of the new system will take place. This will not have an impact on any other banking centers and will not interrupt current operations due in part because there is only one person (Dave Spencer) using the Excel system on a regular basis.

At this time we also believe that a database is a good alternative to the current system because it is compatible with many other software programs used today and a database is capable of facilitating all of the client's requests.

iii.   Economic Feasibility

In an interview with Patrick Jay, when asked about funding for the new system, he indicated that basically money was not an object. That being said I don't expect the cost of developing this new system to be excessive, not to mention that the benefits of the new system will outweigh the costs. As far as operational expenses I believe the new system will save a substantial amount of money in terms of man hours processing payments. Other costs associated with this will include but are not limited to B.S.S.D's fee for the system, scanners, database software, training to use the new system, and possibly other hardware such as new computers.

x.   *Expected Benefits*

i.   Tangible Benefits

- Automated payment system

- Information validation

- Increased capacity of processed invoices

- Decrease in cost of processing payments

- Time savings over using the Excel system

- Increased data integrity

- Less back log of payments to be made

- Increase in time spent doing other activities

- Service provider satisfaction

ii.   Intangible Benefits

- Experience in using multiple system to manage payments

- Decrease in daily stress

- Increased goodwill among coworkers

- The experience of being part of the implementation of a new Information System

- Dave Spencer will be no be required to work so much overtime to maintain system

xi.   Time and Cost Estimates

i.   Time Estimate

Analysis Phase

- 2/07/2011 Start date

- 3/17/2011 System Requirements Document delivery date

ii.   Cost Estimate

Preliminary Cost Estimate $70,000.00

V. RECOMMENDATION FOR ACTION

After looking over the Information System Work Request and conducting interviews with Patrick Jay, Rob Watt, and Dave Spencer about processes involved with the current payment system and the needs for the future system, we believe we should move forward with the Analysis Phase of the project to further gather information to be used in the design of the new Information System. Our analysis strategy is as follows:

- Observe current system operations
- Perform in depth interviews with current users and related personnel
- Create a Requirements Definition
- Informal benchmarking
- JAD (Joint Application Development) sessions
- Deliver a Systems Requirement Document based upon the results of our analysis strategy

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VI. APPENDIX

A. Meeting Notes

01/28/2011

Interview with Patrick Jay, Rob Watt, and Dave Spencer

What is the budget? -- open ended. Not a million dollar project, but the initial roll-out is open-ended. It includes everything you need (hardware, training, etc.)

Current processes? -- Process is started when contract dept hand delivers a copy (hard copy) of the contract to the accounting department. After it is received, the accountant will record the contract into the system. If there are any problems, the accountant fills out a memo with the contract back to the contract dept. If everything is OK, the contract is filed away. At some point after that the work stipulated on the contract is performed and the contractor submits and invoice. Once the invoice is received, it is checked against stipulations in the contract. If there are any problems, the invoice goes back to the contract dept. The contract dept must then resolve the conflict. Once this issue isresolved, the invoice goes back to the accounting department. The accounting department processes a payment which is then sent to the accounts payable group (subgroup of accounting). The accounts payable group cuts a check.

Checks are paid weekly. At the end of the month there are 2 check runs.

Programs they are familiar with? -- knows a little about Access, knows Excel very well.

Does the company use other software? -- we use general ledger accounts for invoices but we can't use those for these systems.

Company has an intranet, so web interfaces are OK.

The biggest bottleneck is that it takes a long time to process the invoices. What takes it the longest is finding out if there is enough money in the contract to continue making payments. Currently you have to pull all the

invoices and using an adding machine to tally them up. You have to make sure you have kept track of all invoices.

I'm getting more and more of these invoices and I'm working a lot of hours.

Specific operations that can't be disrupted? -- no, I'm the only one using the spreadsheets.

I know Excel pretty well and it's easy to use.

Weaknesses -- sometimes I have to get a backup person to enter the invoices, but they may not always enter them the way they should, we need to make sure information is entered correctly.

Need to have the system up and running by June 11 (not flexible).

[Dave] Examples of information collection -- sample of Appendix A contract; 1 vendor name, programmer's name, rate per hour paid to programmer, start and end date of the contract, total fee maximum of the contract, name of PM, contact unit within the bank (four-number units such as 3707) The body of the contract is all the same for each contract.

What do you want the new system to do? --(3 most important) match the service dates on the invoice for the contractor's work, make sure the hourly rate matches the hourly rate on contract, make sure the dollars paid out does not exceed the contract maximum. Would be nice to automatically generate memos, I put out. i'm not an expert at Excel.

[Patrick]Interact with banking centers? -- we want to try this out, it will remain local. Once we find its usable, we may roll this out. you will come up with a plan for how the data will be migrated and who will do it.

I have a number of invoices and they are growing every day. More and more contracts are being issued, and this will get worse becuse we took over Utopia Bank.

Projects are managed by PMs at the banking centers.

At the end of the month, 5 reports are generated.

1. General ledger report -balances $ charged to expense account for contract programmers with what the accounts payable people cuts a check for. There is only one expense account for contract programmers. accounting dept

2. Accrual report -- I have to account for invoices and accruals [expenses within a period of time, they need to make sure an expense account is used when the expense occurs (in the same month)]

If we get an invoice 2 days after the last day of the month, the expense

account will withdraw the money in the next month. So currently you have to go back to the previous month and manually enter a debit. Amounts accrued are reversed on the 10th of the month when the accounts are closed. When the check is cut the next month there is a debit to the account to zero out the amount. You need to be able to account for the accrual, but not the reversal. This is sent to the accounting dept.

3. Expense recap report -- by division and unit, sent to bank units

4. Fee maximum vs actual -- shows fee maximum, what's been paid and % of what's been used

5. Monthly contract recap -- shows what has been paid against the contracts they manage and is sent to project managers

There are no language requirements, just English. No currency calculations. Each bank does their own in their own contry.

We can handle from 50 to 100 invoices an week now.

I want the system to be used by more than myself (Patrick). There should be enough data integrity for other people to do it without screwing things up. (You want to audit all information before it goes out.)

Dave normally works till 9 first 2 weeks of month because of all the invoices that need to be done

Rules and regulations regarding how data is handled? -- this is confidential information, we don't want copies of invoices going outside the bank.

We don't have any backup procedures or programs for the data.

IT infrastructure can handle all kinds of solutions (administrators have assured us they have the ability to support this system).

Normal terms are net 30 for the bank. Some are 2/10 net 30 (if you don't take the 2% discount, you have 30 days to pay).

Forms -- 1. Exceptions memo (invoice problems); 2. Data entry sheet

[RITE0408 - a number assigned to the contract by the accounting dept. as primary key in the database]

A unit can exist in only 1 division.

Workbook -- Vendor, contact, Charge, ConProg, MemoLog, FeeMax, Invoices, Accruals, ExpRec, RptFeeVSAct, ConRecap

Preliminary Investigation Report

B. User Correspondence

Follow-up Memo

Business Systems Solutions and Development
Bruce Norman, Sean P. Ryan, Stuart Crome, Don Voges

Date: Monday, 1/24/2011
To: Patrick Jay, Vice President, & Manager
From: Bruce Norman, Systems Analyst
Subject: SUMMATION OF 01/21/2011 INITIAL PROJECT MEETING

Thank you for allowing me the opportunity to meet with you on Friday in your office to discuss the Automated Contractual Payments System Work Request that you submitted to B.S.S.D. Our initial meeting was very informative and I greatly appreciate the time you spent outlining the needs and requirements of your organization for this system. Your information has allowed me to understand the changes in your organization's business model and the reasons for needing a new, automatic payment system. You also highlighted some of the problems with your current system and we explored some practical solutions that will accommodate your branch's accounting needs.

As I understand it, Bank of Xanadu has chosen to focus on its core business competencies and has decided to outsource all services that are not directly related to its banking functions. These outsourced services will be provided by contracted businesses and professionals, but the current manual system for managing contractual payments is inadequate for your needs. Senior management has decided that an automated system is required and has entrusted each Accounting Group at your major bank centers with the development of their own management systems for these outsourced services. However, because of this new business model you no longer have in-house IT professionals capable of designing and implementing this system.

As a vice president and manager of the Bellevue, WA Accounting Group, you have decided to address this need by contracting a new automated system for payments made to contracted individuals and firms. You would like to reduce the bottlenecks in the current system, which uses Excel spreadsheets, by reducing the time it takes to enter the pertinent information, process invoices, generate accruals, determine invoice time limitations, and calculate balances to ensure availability of funds for contractual payments. For this reason, you are investigating solutions to update your manual contractual payment system to something more efficient and fully automated.

In order to accomplish this, B.D.D.S will employ the SDLC (Systems Development Life Cycle) to determine what solutions will work best for your needs. This will allow us to identify the scope of the problem in the Planning stage, which we will present to you in a preliminary investigation report. During the Analysis phase, we will analyze and document the current "as-is" system and develop solutions for the problems that need to be addressed. This will result in a systems requirement document. B.D.D.S will then develop the new "to-be" system and decide what its functionality should be, what software it will use, and what inputs/outputs will be required. This Design phase will result in the systems design specification. Once this is completed, the system will be created in the Implementation phase. During this phase, we will create the to-be system. This can include writing programs, data conversion, and testing and training, the results of which will be your new automatic payment system. This stage is followed up by the Operation and Support phase, which involves maintaining, upgrading, and debugging the system we provide.

In conclusion, you have stated that the existing manual payment system for managing outsourced services is inadequate for your current needs and is inefficient and time consuming. You are requesting a new, fully automated payment system that will perform the same functions as the current system, but reduces the problems associated with manual entry and management. To gather further information for the system's requirements and user needs, I would like the opportunity to meet with you and a few other members of your branch on Friday, January 27, 2011 at 2:00pm. If that time is inconvenient, please recommend an alternate time that might fit into your schedule better.

C. Assumptions

Bank of Xanadu will still have to file and store the original hard copy of the contract with the individual contractors.

Bank of Xanadu will do the migration of the data between the current and new systems.

The individual contractual stipulations and negotiated terms will still need to be manually entered into the system.

Bank of Xanadu will be responsible for purchasing and licensing their RDBMS software.

Bank of Xanadu does not have all the required hardware needed to implement the new system.

Bank of Xanadu will be responsible for the purchase of an additional hardware required to implement the system.

D. Issues

Is Dave Spencer's request for the system to allow the generation of memos inside the scope of this project?

E. Source Documents

Research Project #1 – Background and Problem Information

Company Background

Bank of Xanadu is a large global enterprise that offers a variety of products and services to a customer base of over 10 million people worldwide. They have over 100,000 employees worldwide. Corporate headquarters is located in exotic and tropical George Town, Cayman Islands, although the company was originally founded in Bellevue, Washington. With 28 major banking centers worldwide, there are currently over 2000 additional branch offices located in both the United States and 15 countries across the globe.

Major banking centers located in the U.S. include Aspen, Bellevue, Beverly Hills, Dallas, Denver, Las Vegas, Newport, New York, Palm Beach, Pine Valley, Savannah, and Scottsdale. Overseas banking centers are located in the Netherlands, China, Germany, Australia, South Africa, Indonesia, Great Britain, India, France, Canada, Chile, Brazil, Singapore, Japan, and New Zealand. The corporate headquarters employs about 200 people and each of the major banking centers has between 300 and 500 employees apiece. In addition to the major banking centers, smaller satellite branches employ anywhere from 25 to 50 employees each.

The original company was founded in 1978 by three young entrepreneurs who had each been previously employed by large banking conglomerates. They believed that by combining their successes and their expertise in the banking industry, they could eventually grow their little thrift into a nationally recognized banking enterprise. Originally there were just 3 small branches in the Puget Sound area of Washington State. The company was founded on a solid value system of good banking practices. It was one of the first to implement a policy of putting the customer first, no matter what. The company slogan, "No Boundaries", truly describes the personality of the company and its founders.

A tried-and-true methodology that assured quality and exceptional customer service is what made the company successful. What were once 3 small branches soon grew into a state-wide operation. It wasn't long before they had expanded across the entire Northwest and down into California. After more than a decade and over a dozen merger/acquisitions, what was once called Swellvue Savings & Loan had grown into the Bank of Xanadu and had become a truly global brand. Growth continued at breakneck speed, and by 2006 they had morphed into the gigantic worldwide banking behemoth they are today.

By early 2000, the board of directors decided to move corporate headquarters to George Town Cayman Islands, where the bank could enjoy all the tax benefits of offshore operations. Because of no direct taxation, the islands have become a thriving center for financial operations. More than 68,000 companies are registered in the Cayman Islands including almost 500 banks. Each of the major banking centers is located in financially upscale areas that have a large number of wealthy depositors. Many smaller branch operations

have spread out from these larger centers or "hubs". While most remain in close proximity to their "parent" center, some may lie as far as 100 miles away.

In the U.S., each of the smaller local branches reports directly to its designated banking center, which in turn reports directly to the corporate office. Worldwide, each of the international banking centers functions as a pseudo-independent entity within its respective country, but still reports directly to the corporate offices as well. Each banking center has its own administrative, accounting, and human resources functions, which they provide to their respective branches. The corporate office provides a similar structure that reaches out to the U.S. and international banking centers.

Banking Centers employ a wide variety of job descriptions, including contract, accounting, loan, and retail branch personnel. Each banking center also has traditionally had an internal IS staff of 15 to 20, comprised of programmers, analysts, network support staff, and help-desk personnel. The internal IS staff maintains corporate systems and also supports database development and programming. Banking centers process their own expenses, including those for payroll, utilities, real estate, and technology assets, just to name a few. The corporate office usually handles expenses just for its own operations, although some of the larger enterprise-wide technology expenses are handled at the by them as well.

The Problem

Over the years, as the bank has continued to grow, it has always had a policy of having all its workers be hired directly as employees of the company. Recently, with the economic downturn and uncertain economic future, senior management has decided to focus more closely on the bank's core competencies. Outsourcing all non-essential business functions not directly related to the business functionality of banking would allow them to save millions of dollars annually in terms of human resource overhead.

Because of this shift in corporate vision, almost 100 of the company's contract programmers and certain business analysts were redeployed at the end of December. All future programming will be handled by outside contractors working under very specific contractual terms. Currently, the bank has no automated system to handle these contractual payments, and has delegated the task of managing such payments to the accounting group at each banking center. It is up to the management of each accounting group to develop an accurate and dependable way to mange this problem.

Thus, to assess this problem, and in order to recommend appropriate solutions, a dedicated team of IT professionals will be assembled to work on this mission. The Bellevue center was chosen, as it was the original headquarters and senior management is closer to the employees at that location. All of you have been chosen to be on this very special development project. You have already been assigned to teams to work together to plan, investigate, analyze, recommend, design, and implement a solution to Bank of Xanadu's problem.

Bank of Xanadu

Corporate Headquarters: **George Town, Cayman Islands**
Major Banking Centers: **Amsterdam • Aspen • Beijing •Bellevue • Berlin • Beverly Hills • Canberra • Cape Town • Dallas • Denver • Hong Kong | • Kuala Lumpur • Las Vegas • London • Mumbai • Newport • New York • Nice • Ottawa • Palm Beach • Pine Valley • Santiago • Savannah • Sao Paulo • Scottsdale • Singapore • Tokyo • Wellington**

Information Systems Work Request

Date	1/25/08	Department	Accounting
Contact	Patrick Jay	Location	Bellevue, WA
Title	Vice President, & Manager	Email	pjammer@box.bank

Project Description (in brief):

The strategic direction and growth of the bank has put new emphasis on streamlining our internal procedures. Xanadu Bank is in the business of banking, and to remain profitable and competitive, we have shifted our focus to concentrate on our core competencies, outsourcing any functions and processes that are not part of these core business operations. Since we began this process late last year, we have redeployed all in-house programming positions, resulting in the need to use outside contractors to provide the necessary programming services. This move will save our company over one 1 million dollars annually in employee administrative and benefit costs.

The major problem we face now is finding a suitable way to track these new programming expenses to the scope of service stipulated in their official contracts. While the accounting department has hastily thrown together a stop-gap solution using an Excel workbook, it is taking an incredibly large amount of time to manually enter all the contractual information, receive and process the incoming programming invoices, prepare accurate accruals, determine whether the invoice falls within the time limitations, and calculating whether enough funding is left on the contract to pay the invoice. In recent strategic planning sessions, the senior management has determined that a new, more automated process for managing contractual payables is needed. The objective of this project is to investigate and recommend a solution to control payments in accordance to contractual time and fee limitations throughout the company.

Submitted by: _____   Date _____

Approved by: _____   Date _____

Bank of Xanadu
Corporate Headquarters: George Town, Cayman Islands
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• Beverly Hills • Canberra • Cape Town • Dallas • Denver • Hong Kong|
• Kuala Lumpur • Las Vegas • London • Mumbai • Newport • New
York • Nice • Ottawa • Palm Beach • Pine Valley • Santiago •
Savannah • Sao Paulo • Scottsdale • Singapore • Tokyo • Wellington

<u>**CORPORATE HEADQUARTERS:**</u>   *George Town, Grand Cayman*

Chief Executive Officer (CEO)   **Executive Vice President (EVP)**
   Patrick Dollarene   Carmelita Pesolera
Chief Financial Officer (CFO)   **Senior Vice President (SVP)**
   Sanjay Rupeedaal   Richard Poundstone
Chief Information Officer (CIO)   **Vice President (VP)**
   Isabella Realney   Dieter Markstein
Chief Operations Officer (COO)   **Assistant Vice President (AVP)**
   Hyacinth Randall   Keiko Yennokai

(Sample)
<u>**BRANCH OFFICES**</u>

Bellevue, WA	*Pine Valley, NY*	*Berlin, Germany*
Sr. Vice President	**Sr. Vice President**	**Sr. Vice President**
Anne Casey	Leonard Chou	Louisa Gartner
<u>Executive Secretary</u>:	<u>Executive Secretary</u>:	<u>Executive Secretary</u>:
Beth Rice	Jan Lawrence	Darth Weitmeier
Contract Group	**Contract Group**	**Contract Group**
<u>Manager</u>: Scott Sorenson	<u>Manager</u>: Cara DeSoto	<u>Manager</u>: Joachim Mohr
Rob Watt	Annie D'Ogie	Karl Meister
Sam Esposito	Joyce Donahue	Steffi Freund
Mark Martin	Ray Ortiz	Paula Grossman
David Hart	John Ackerman	Gerhard Arnott
Jagreet Kaur	S. Nelson-Leang	Tobias Stein
Anthony Lewis	Tuan Tran	D Voigtsberger
Accounting Group	**Accounting Group**	**Accounting Group**
<u>Manager</u>: *Patrick Jay*	<u>Manager</u>: Roy Brown	<u>Manager</u>: Franz Neuman
Dave Spencer	Shelly Grant	Karin Kratz
Kyle Watts	Tom Leman	Stephan Niebur
Tamisha Spencer	Pilita Basto	Dieter Janssen
Misty Barber	E Osei-Shearman	Astrid Gutentag
Payables Group	**Payables Group**	**Payables Group**
<u>Manager</u>: Lyle Newhart	<u>Manager</u>: Robert Stacy	<u>Manager</u>: Astrid Dorftier
Dawn Hill	Amy Hawkins	Gunther Merckel
Mark Martin	Leslie Hall	Hans Meistersohn
Ho Lee	Waylon White	Rudi Schertz
Bill Loos	Susan Cooper	Walter Lehmann
Lane Conway	Ed Eowpun'	Martin Edelmann
John Wallace	Tereasa Skelly	Gert Fromme

Preliminary Investigation Report

Bank of Xanadu
Corporate Headquarters: **George Town, Cayman Islands**
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Date: Friday, 11/30/07
To: Bank of Xanadu Bellevue Employees
From: Anne Casey, Sr. Vice President
Subject: MAJOR ANNOUNCEMENT

This will give you advance notice of a story that will be reported in tomorrow's newspapers. At a press conference today, the Bank of Xanadu board of directors announced that the company would immediately acquire Utopia National Bank, including their corporate headquarters and all 550 of their branch offices, for a sum of $15.1 billion dollars. This acquisition will greatly increase our global influence in Europe, Africa, and the Asian marketplace. This opportunity will expand our operations into eight new international cities, including Paris, Zurich, Rome, Cairo, Bangkok, Taipei, Manila, and Seoul, and add over 400 domestic branches – primarily in America's heartland. We are excited about this acquisition, and welcome Utopia into the Xanadu fold.

During our recent strategic planning meetings, we examined external opportunities and internal constraints of our business. We identified several fast-growing areas of banking that might represent new opportunities for Xanadu. We found that bringing Utopia into our business model would present the best opportunity for us to expand not only our global exposure, but also to expand our customer base and increase the available services that we can offer our customers. While Utopia will provide us a wider array of banking opportunities, we will need to streamline both business process models into one seamless operation in order to maintain economic profitability.

As a result, we decided to consolidate operating and networking systems into one global system. We are also in the process of recovering from the sub-prime mortgage fiasco that resulted in damaging losses for Xanadu, and particularly disastrous losses for Utopia. With losses of several billion dollars, Utopia was in no position to continue to operate as a financially profitable organization. This allowed Xanadu to execute a quick-and-dirty hostile takeover of their organization. With this said, we must now focus on our core competencies in order to return to financial profitability. After much strategic planning, we have decided to outsource all system programming and consulting duties that we once held in-house to outside contractors. We project that this will result in substantial annual cost savings in employee administrative and benefit expenses.

To address this constraint, we have decided to temporarily reorganize our IT resources and assign higher priority to internal projects that will streamline our procedures. As Xanadu employees, you know that our company always has looked ahead to the challenges and opportunities of the future. Our long-term mission is to grow ourselves into the largest and most profitable banking organization in the world. Our corporate values and the high-quality services we provide are the cornerstone of our success. In a market where many banks and thrifts are close to failing, we have been able to stave off serious financial distress, and with the acquisition of Utopia, believe we have positioned ourselves to achieve a rapid recovery and continue to grow our product and services worldwide. Our financial analysts and advisors have much work to do to complete the acquisition of Utopia. Internal procedures and external market opportunities will be scrutinized. If all goes as planned, we expect to see increased profits within the next two to three operating quarters. Thank you all for your hard work and dedication.

Preliminary Investigation Report
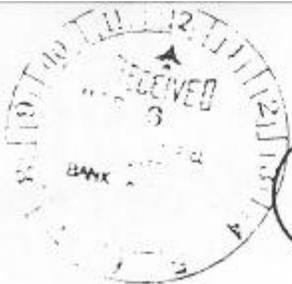
APPENDIX A

AGREEMENT TO PROVIDE PERSONNEL BETWEEN
Bank of XANADU
and Savings Association (BANK)
and

TECHNOLO...
MANAGEME... .34,
APPROVED
NAME _R L H_
DATE _2/ / /_

DAN VAN RITZ, INC. _____ (Contractor)

I.   All work and/or services provided under this Appendix shall be performed in accordance with the provisions of this Appendix and Master Agreement: _____

Project/Services Number: ___16358.000___   Charge Unit #: ___3620___ ←

Bank Project Manager/Phone: ___Peter Tripple___ 206/675-2696
                                    XANET   785-2696
II. Scope of Services: NEFAX   /675-2459

A.   Provide an overview of the project:
     Support product development projects, as well as acquisi-
     tion preparation for Demand Deposit Systems.

                                          RITE0408 ←

(See attached sheet for continuation of Scope of Services)

III. Fee Schedule: Total fee shall not exceed $ ___26,000.___

Name of Individual	Generic Job Level	Hourly Rate	Start Date	End Date
Dan Van Ritz	CSE	$65.00	2/16/08	4/15/08

A NEW APPENDIX A MUST BE EXECUTED TO AUTHORIZE PAYMENT BEYOND THE AMOUNT NOTED ABOVE IN III.: FEE SCHEDULE, OR TO AUTHORIZE WORK BEYOND THE COMPLETION DATE NOTED ABOVE.

Agreed and Accepted: Agreed and Accepted:

___DAN VAN RITZ, INC.___   BANK OF XANADU
(Contractor)   SAVINGS ASSOCIATION (BANK)

Signature: _____   Signature: _____

Vendor Officer: ___Dan Van Ritz___   Name: ___MaryLou Corrigan___

Title: ___President___   Title: ___Vice President___

Date: ___2/15/08___   Date: ___2/14/08___

                                        Countersigned: ___Christos Skeadas___

Invoices should be directed to: Name: ___Christos Skeadas___

Bank of XANADU   Title: ___Vice President___
Retail Automation Serv. #3464
P.O. Box 37000   Date: ___2/15/08___
BELLEVUE, WA 98002

ATTN: Bryan Davis   Bruce Fadem, Senior Vice President

AGREEMENT TO PROVIDE PERSONNEL BETWEEN
Bank of XANADU
and Savings Association (BANK)
and

DAN VAN RITZ, INC.   (Contractor)

II.   Scope of Services · Continued:

B.   List the specific tasks to be performed:

        Complete systems design specifications.
        Analyze and code in COBOL.
        Perform unit, system and integration testing.
        Provide installation support.

C.   List the deliverables expected to be produced:

        Detailed design specifications.
        Code.
        Test specifications.
        Unit testing, system testing.
        Conversion specifications.
        Installation specifications.

D.   List the specific technical expertise required (hardware, operating systems, programming languages, etc.)

        1.   IBM 30XX, TSO/ISPF, OS JCL, VSAM.
        2.   Ability to analyze and code in COBOL.
        3.   Design, coding and testing skills.
        4.   Accounting systems background required, banking preferred.
              Deposit systems/prior acquisition experience a plus.
        5.   Prior BofA experience a plus.
        6.   Strong communications and documentation skills.
        7.   Team player with good interpersonal skills.

E.   List the performance standards that will be used to determine quality of work (e.g., SDP, documentation standards, testing standards, etc.)

        Adherence to project standards.
        Code reviews.
        SDP.
        Test plans and test result reviews.

Page 2 of 2

Preliminary Investigation Report

Bank of Xanadu

Date: February 11, 2008

From: Dave Spencer, Accountant
              Financial Controller's Division
              Corporate General Accounting #3707

To: Rob Watt, Buyer
              Technology Acquisition Management #3411

Classification: Internal

Subject: CONTRACTOR INVOICE PROBLEMS

Vendor:

I am unable to process the attached invoice(s) for the following reason(s):

( )	No Contract on File
( )	Dollar Amount Exceeds Contract Fee by $
( )	Invoice Period Outside of Contract Dates
( )	No Time Sheet
( )	No Invoice/Time Sheet Approval
( )	Time Sheet & Invoice Discrepancy
( )	Billed Rate Different from Contract Rate
( )	Other:

Please provide the necessary information and return to me in unit #3707. Thanks you for your assistance in resolving these problems. If you have any questions, please call me at XanaduNet 785-1223.

Attachment included.

DATE	ACTION

Preliminary Investigation Report

Dan Van Rɪtz Consulting, Inc.
5820 Stoneridge Mall Road Suite #
Pleasanton. WA 98506

08MAR 19 PM 1:24

INVOICE 100154

SALESPERSON	INVOICE DATE
Dan	3/18/08

INFORMATION
Master Agreement #90-3167
Project/Service #
Charge Unit #3620

TO

BANK OF XANADU
General Accounting #3707
P.O. Box 37000
BELLEVUE, WA 98002

ACCT#	DATE	PERIOD		TERMS	PURCHASE ORDER #
	3/18/08	3/1-3/15 ←		Net 0	

HOURS	DESCRIPTION			UNIT PRICE	AMOUNT
88	Computer Consulting RT65			65.00	5720.00

RITE Ø408

RECEIVED
MAR 21 2008
Bank Gen Acco
#3707
BANK OF XANADU.

APPROVED FOR PAYMENT

BY

UNIT # 3620

		TOTAL	5720.00

— *Thank You* —

Preliminary Investigation Report

DAn VAn Ritz Consulting, Inc.

Contractor Time Sheet

Contractor Name: DaN VaN RiTz

Client Company: BANK OF XANADU

Period: From 3/1/08 To 3/15/08

Calender Days	Hours Worked	Calender Days	Hours Worked
1	8	16	
2		17	
3	8	18	
4	8	19	
5	8	20	
6	8	21	
7	8	22	
8		23	
9		24	
10		25	
11	8	26	
12	8	27	
13	8	28	
14	8	29	
15	8	30	
		31	

Total Hours: 88

Client Company Representative
Acceptance: _____ Charlyn Monix _____ 3,19,08

                  Signature   Date

Mail To: DAn VAn Ritz Consulting, Inc.

Preliminary Investigation Report

DATA ENTRY SHEET

Vendor Name:	Donny Wicks Associates
Vendor Number:	ZZ0002
Invoice Number:	329
Description:	A. Peckham 12/16/07 to 12/31/07
Invoice Date:	01/02/08
Due Date:	01/17/08
Invoice Total:	3,600.00
G/L Account:	507613
P.O. Number:	A. Peckham
Charge Unit:	9408

Processed by Dave Spencer   1/11/08

Vendor Information

Company Name	Vendor Number
Accelerated Information System	ZD0015
APEX	ZD0014
Beltam Systems Inc	ZD0003
Computer Helpers	ZD0018
Computing Experience	ZD0021
Dan Van Ritz Consulting	ZD0001
David Monroe Consulting	ZD0011
Donny Wicks Associates	ZD0002
EDS Temps Inc	ZD0006
Electric Enterprises Inc	ZD0005
Euro Systems International	ZD0008
Fix-em Right Inc	ZD0019
GE Consulting Consortium	ZD0010
Integrated Info Systems	ZD0012
International Consultants	ZD0013
Neo Computing	ZD0020
NW Consulting	ZD0009
PN Associates	ZD0007
Programmers are US	ZD0023
Quality Computer Pros	ZD0022
R N Andersen & Associates	ZD0016
Redford Group	ZD0017
Varjaraj Consulting	ZD0004
Western States Consulting	ZD0024
	ZD0025
	ZD0026
	ZD0027
	ZD0028
	ZD0029
	ZD0030

Vendor / Contact / Charge / ConProg / MemoLog / FeeMax / Invoices / Accruals / ExpRec / RptFeeVSAct / ConRec

Ready   NUM

Preliminary Investigation Report

Contact Information

Project Manager	Contact Unit	Phone	Division
Aporte, Manny	3426	785-2569	BAS
Beaverton, Andy	3686	785-2931	BAS
Bohner, Sheri	3738	785-4993	KXM
Chin, Lowell	3611	241-3099	MOM
Christian, John	7369	602-4680	PNW
Clark, Rudy	3479	622-2375	WDB
Crocker, Mark	5554	953-3316	NAB
DaLanda, Luis	5446	785-3133	BTR
Denbert, James	3627	785-5162	SST
Donaldson, Ryan	5852	785-3977	BTR
Gilbert, Steve	5054	785-2699	BAS
Hawkins, Dana	3594	624-3120	CBL
Jenkins, Ronald	3354	241-5050	MOM
Malaspina, George	3073	953-3860	NAB
Mondo, Gert	5863	785-5982	TPN
Omigawa, Joe	3498	622-9053	WDB
Peary, Alan	5852	485-4913	KXM
Putnam, Jed	3793	785-5129	TPN
Saunders, Rocky	5515	785-4351	KXM
Schaffer, John	3473	963-5912	NAB
Schrader, Kathy	3553	241-7645	MOM
Scott, Randy	3580	622-6047	WDB
Stromberg, Dieter	3858	785-2516	BAS
Tripple, Peter	3620	785-2696	BAS
Westmore, Alex	7365	602-4551	PNW

Vendor \ **Contact** \ Charge \ ConProg \ MemoLog \ FeeMax \ Invoices \ Accruals \ ExpRec \ RptFeeVSAct \ ConRec

Preliminary Investigation Report

Charge Information

Charge Unit	Division		Division	Charge Unit
3072	NAB		AMB	3117
3073	NAB		BAS	3410
3117	AMB		BAS	3426
3354	MOM		BAS	3620
3410	BAS		BAS	3667
3426	BAS		BAS	3686
3473	NAB		BAS	3858
3479	WDB		BAS	5054
3498	WDB		BTR	5446
3553	MOM		BTR	5852
3580	WDB		CBL	3594
3594	CBL		CCR	9408
3611	MOM		KXM	3738
3620	BAS		KXM	5515
3627	SST		KXM	5852
3667	BAS		MOM	3354
3686	BAS		MOM	3553
3738	KXM		MOM	3611
3793	TPN		NAB	3072
3858	BAS		NAB	3073
4508	RBD		NAB	3473
5054	BAS		NAB	5543
5446	BTR		NAB	5554
5515	KXM		PNW	7365
5543	NAB		PNW	7369
5554	NAB		RBD	4508
5844	TPN		SST	3627
5845	TPN		TPN	3793
5852	BTR		TPN	5844
5852	KXM		TPN	5845
5863	TPN		TPN	5863
7365	PNW		WDB	3479
7369	PNW		WDB	3498
9408	CCR		WDB	3580

Vendor / Contact / **Charge** / ConProg / MemoLog / FeeMax / Invoices / Accruals / ExpRec / RptFeeVSAct / ConRec

Preliminary Investigation Report

Contract & Programmer Information

Contract ID	Programmer	Vendor	Begin Date	End Date	Charge	Division	$/Hour	Fee Max	Contact Person	Unit	Phone	Project Description
alvar1208	Alvarado, Julio	GE Consulting Consortium	02/08/08	10/31/08	5054	BAS	30.00	50,000.00	Gilbert, Steve	5054	785-2699	
Antho0308	Anthony, Don	Electric Enterprises Inc	03/01/08	03/08/08	3667	BAS	78.00	8,000.00	Denbert, James	3627	785-5162	
Brown0391	Brown, Lou	EDS Temps Inc	12/17/07	06/17/08	3072	NAB	25.00	29,000.00	Clark, Rudy	3479	622-2375	Tax System Assistance
Crock0508	Crockett, Davy	Donny Wicks Associates	02/11/08	05/19/08	5554	NAB	50.00	24,000.00	Crocker, Mark	5554	953-3316	
Rotz0408	Dan Van Ritz	Dan Van Ritz Consulting	01/16/08	04/15/08	3620	BAS	65.00	26,000.00	Tripple, Peter	3620	785-2696	Demand Deposit Systems
Rotz0708	Dan Van Ritz	Dan Van Ritz Consulting	04/16/08	07/31/08	3620	BAS	65.00	50,700.00	Tripple, Peter	3621	785-2697	
Devar1208	Devaraj, Sanjay	Varjaraj Consulting	01/02/08	12/30/08	5844	TPN	57.00	120,000.00	Aporte, Manny	3426	785-2569	
Fletch1208	Fletcher, Carla	Euro Systems International	02/08/08	10/31/08	3793	TPN	30.00	50,000.00	Putnam, Jed	3793	785-5129	
forti0608	Fortier, Brian	EDS Temps Inc	01/02/08	06/30/08	3072	NAB	25.00	29,000.00	Clark, Rudy	3479	622-2375	
Ckauf0908	Kaufman, Chris	EDS Temps Inc	03/02/08	09/30/08	3498	WDB	25.00	30,000.00	Omigawa, Joe	3498	622-9053	
Kelle0708	Keller, Michael	EDS Temps Inc	01/15/08	06/15/08	3073	NAB	25.00	28,000.00	Clark, Rudy	3480	622-2376	
Lehre1208	Lehrer, Philip	Beltam Systems Inc	01/02/08	12/31/08	3117	AMB	52.00	70,000.00	Schaffer, John	3473	953-5912	
Mann0608	Mann, John	Neo Computing	01/01/08	06/30/08	5543	NAB	90.00	125,000.00	Saunders, Rocky	5515	785-4351	
Micha0608	Michael, Troy	Fix-em Right Inc	01/31/08	06/28/08	3594	CBL	55.00	6,000.00	Hawkins, Dana	3594	624-3120	
Peckh0908	Peckham, Art	Donny Wicks Associates	12/16/07	09/30/08	9408	CCR	60.00	88,600.00	Scott, Randy	3580	622-6047	
Quinn1208	Quinn, Perry	Electric Enterprises Inc	01/02/08	12/31/08	3738	KXM	65.00	135,720.00	Bohner, Sheri	3738	785-4993	
Scott0109	Scott, Ronald	Western States Consulting	02/01/08	01/31/09	5845	TPN	63.00	134,912.00	Peary, Alan	5852	485-4913	
Wilki0508	Wilkins, Peter	Donny Wicks Associates	12/01/07	05/30/08	9408	CCR	59.00	48,000.00	Scott, Randy	3580	622-6047	
Wolth0408	Wolthausen, JP	Fix-em Right Inc	02/11/08	04/12/08	3410	BAS	55.00	21,300.00	Mondo, Gert	5863	785-5982	
Wolth1208	Wolthausen, JP	Fix-em Right Inc	04/15/08	12/31/08	3411	BAS	55.00	21,300.00	Mondo, Gert	5864	785-5983	

Vendor / Contact / Charge / **ConProg** / MemoLog / FeeMax / Invoices / Accruals / ExpRec / RptFeeVSAct / ConRec

Preliminary Investigation Report

Problem Invoices to TAM

Memo Date	ID Number	Programmer	Company	Start Date	End Date	Invoice #	Invoice $	Reason	Response	Remarks
01/21/08	Wilki0508	Wilkins, Peter	Donny Wicks Associates	01/02/08	01/15/08	2364	600.00	Over AA Dollars	01/29/08	rec'd extension memo

MemoLog / FeeMax / Invoices / Accruals / ExpRec / RptFeeVSAct / Xanadu_Bank /

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Preliminary Investigation Report

Contract Fee Maximum

ID Number	Programmer	Invoice #	Date Paid	Begin Date	End Date	Rate	Total Hours	Total Invoice	Total to Date	Fee Max	Available $
BrownO391	Brown, Lou	509	01/11/08	12/17/07	12/31/07	25.00	70.0	1,750.00			
BrownO391	Brown, Lou	510	01/25/08	01/02/08	01/15/08	25.00	68.0	1,700.00			
BrownO391	Brown, Lou	511	02/08/08	01/16/08	01/31/08	25.00	70.0	1,750.00			
								Total:	5,200.00	29,000.00	23,800.00
fort0608	Fortier, Brian	3723	02/08/08	01/02/08	01/31/08	25.00	176.5	4,412.50			
								Total:	4,412.50	29,000.00	24,587.50
Lehre1208	Lehrer, Philip	101	02/08/08	01/02/08	01/31/08	52.00	165.0	8,580.00			
								Total:	8,580.00	70,000.00	61,420.00
Peckh0908	Peckham, Art	329	01/11/08	12/16/07	12/31/07	60.00	60.0	3,600.00			
Peckh0908	Peckham, Art	330	02/08/08	01/02/08	01/31/08	60.00	177.0	10,620.00			
								Total:	14,220.00	88,600.00	74,380.00
Wilki0508	Wilkins, Peter	1001	12/21/07	12/01/07	12/15/07	59.00	64.0	3,776.00			
Wilki0508	Wilkins, Peter	1002	01/11/08	12/16/07	12/31/07	59.00	66.0	3,894.00	7,670.00		
Wilki0508	Wilkins, Peter	1003	01/25/08	01/02/08	01/15/08	59.00	85.0	5,015.00			
Wilki0508	Wilkins, Peter	1004	02/08/08	01/16/08	01/31/08	59.00	82.0	4,838.00			
								Total:	17,523.00	48,000.00	30,477.00

MemoLog / FeeMax / Invoices / Accruals / ExpRec / RptFeeVSAct / Xanadu_Bank

Invoices

ID Number	Programmer	Vendor	Charge	Invoice #	Date Paid	Begin Date	End Date	Rate	Total Hours	Total Invoice	Accrued	Memo	
Wilki0508	Wilkins, Peter	Donny Wicks Associates	9408	1001	12/21/07	12/01/07	12/15/07	59.00	64.0	3,776.00	12/07		
									Total:	3,776.00			Dec Exp
									Total for December:	3,776.00			13,020.00
Peckh0908	Peckham, Art	Donny Wicks Associates	9408	329	12/16/07	12/16/07	12/31/07	60.00	60.0	3,600.00	12/07		
Wilki0508	Wilkins, Peter	Donny Wicks Associates	9408	1002	01/11/08	12/16/07	12/31/07	59.00	66.0	3,894.00	12/07		
BrownD391	Brown, Lou	EDS Temps Inc	3072	509	01/11/08	12/17/07	12/31/07	25.00	70.0	1,750.00	12/07		
									Total:	9,244.00			
Wilki0508	Wilkins, Peter	Donny Wicks Associates	9408	1003	01/25/08	01/02/08	01/15/08	59.00	85.0	5,015.00			Jan Exp
BrownD391	Brown, Lou	EDS Temps Inc	3072	510	01/25/08	01/02/08	01/15/08	25.00	68.0	1,700.00			36,915.50
									Total:	6,715.00			
									Total for January:	15,959.00			
Lehre1208	Lehrer, Philip	Beltam Systems Inc	3117	101	02/08/08	01/02/08	01/31/08	52.00	165.0	8,580.00	01/08		
Peckh0908	Peckham, Art	Donny Wicks Associates	9408	330	02/08/08	01/02/08	01/31/08	60.00	177.0	10,620.00	01/08		
Wilki0508	Wilkins, Peter	Donny Wicks Associates	9408	1004	02/08/08	01/16/08	01/31/08	59.00	82.0	4,838.00	01/08		
BrownD391	Brown, Lou	EDS Temps Inc	3072	511	02/08/08	01/16/08	01/31/08	25.00	70.0	1,750.00	01/08		
fortl0608	Fortier, Brian	EDS Temps Inc	3072	3723	02/08/08	01/02/08	01/31/08	25.00	176.5	4,412.50	01/08		
									Total:	30,200.50			
BrownD391	Brown, Lou	EDS Temps Inc	3072	512	02/22/08	02/01/08	02/15/08	25.00	68.0	1,700.00			
(start)													
									Total:	1,700.00			
									Total for February:	31,900.50			
									Grand Total:	51,635.50			

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NUM

Accruals

Programmer	Vendor	Charge	Invoice #	Total Invoice	Accrued	Reversed
Brown, Lou	EDS Temps Inc	3072	509	1,750.00	12/07	01/10/08
		3072	Total:	1,750.00		
Peckham, Art	Donny Wicks Associates	9408	329	3,600.00	12/07	
Wilkins, Peter	Donny Wicks Associates	9408	1002	3,894.00	12/07	
		9408	Total:	7,494.00		01/10/08
		December 2007		9,244.00		
Brown, Lou	EDS Temps Inc	3072	511	1,750.00	01/08	
Fortier, Brian	EDS Temps Inc	3072	3723	4,412.50	01/08	
		3072	Total:	6,162.50		02/10/08
Lehrer, Philip	Beltam Systems Inc	3117	101	8,580.00	01/08	
		3117	Total:	8,580.00		02/10/08
Peckham, Art	Donny Wicks Associates	9408	330	10,620.00	01/08	
Wilkins, Peter	Donny Wicks Associates	9408	1004	4,838.00	01/08	
		9408	Total:	15,458.00		02/10/08
		January 2008		30,200.50		
		February 2008				
		Grand Total:		39,444.50		

MemoLog / FeeMax / Invoices / Accruals / ExpRec / RptFeeVSAct / Xanadu_Bank

Monday, January 31, 2011

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Preliminary Investigation Report

Contract Programmers Monthly Expense Recap Report
By Division and Unit
January 2008

Programmer	Vendor	Division	Charge	Invoice #	Begin Date	End Date	Total Hours	Total Invoice	Accrued
		AMB				Total for Division:		**8,580.00**	
Lehrer, Philip	Beltam Systems Inc	AMB	3117	101	01/02/08	01/31/08	165.0	8,580.00	01/08
			3117			Total for Charge Unit:		**8,580.00**	
		CCR				Total for Division:		**20,473.00**	
Peckham, Art	Donny Wicks Associates	CCR	9408	330	01/02/08	01/31/08	177.0	10,620.00	01/08
Wilkins, Peter	Donny Wicks Associates	CCR	9408	1003	01/02/08	01/15/08	85.0	5,015.00	
Wilkins, Peter	Donny Wicks Associates	CCR	9408	1004	01/16/08	01/31/08	82.0	4,838.00	01/08
			9408			Total for Charge Unit:		**20,473.00**	
		NAB				Total for Division:		**7,862.50**	
Brown, Lou	EDS Temps Inc	NAB	3072	510	01/02/08	01/15/08	68.0	1,700.00	
Brown, Lou	EDS Temps Inc	NAB	3072	511	01/16/08	01/31/08	70.0	1,750.00	01/08
Fortier, Brian	EDS Temps Inc	NAB	3072	3723	01/02/08	01/31/08	176.5	4,412.50	01/08
			3072			Total for Charge Unit:		**7,862.50**	
						Grand Total for January:		**36,915.50**	

Contract Programmers Monthly Expense Recap Report
By Division and Unit
February 2008

Sheet tabs: MemoLog / FeeMax / Invoices / Accruals / **ExpRec** / RptFeeVSAct / Xanadu_Bank

Monday, January 31, 2011

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Contract Programmer Report
Fee Maximum vs. Acutals
December 2007

Programmer	Begin Date	End Date	$/Hour	Contact Person	Phone	Appendix A Fee Max	Total Charged to Appendix A	Percent Appendix A Used	Date Unit Last Charged	Under/Over Appendix A Max
DIVISION: NAB										
Unit Number: 3072										
Brown, Lou	12/17/07	06/17/08	25.00	Clark, Rudy	622-2375	29,000.00	1,750.00	6%	01/11/08	27,250.00
DIVISION: CCR										
Unit Number: 9408										
Wilkins, Peter	12/01/07	05/30/08	59.00	Scott, Randy	622-6047	48,000.00	7,670.00	16%	01/11/08	40,330.00
Peckham, Art	12/16/07	09/30/08	60.00	Scott, Randy	622-6047	88,600.00	3,600.00	4%	01/11/08	85,000.00

MemoLog / FeeMax / Invoices / Accruals / ExpRec / **RptFeeVSAct** / Xanadu_Bank

Monday, January 31, 2011

Preliminary Investigation Report

Monthly Contract Recap
As of December 31, 2007

Project Manager: Clark, Rudy

Programmer: Brown, Lou   **Unit:** 3072   **Project:** Tax System Assistance

Start Date: 12/17/07   **End Date:** 12/17/07   **Company:** EDS Temps Inc   **Rate/Hour:** 25.00   **Fee Max:** 29,000.00   **Charge To:** 3072

Invoice Number	Date Paid	Periods Paid		Hours	Dollar Total
509	01/11/08	12/17/07 to 12/31/07		70	1,750.00

Total of Hours & Invoice Dollars: 70 $1,750.00

Total Charged to Contract:	$1,750.00
Percent Used:	6%
Remaining Contract Dollars:	$27,250.00

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APPENDIX B
Developer Documentation

A. Functional Decomposition Document (FDD)

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B. Data Flow Diagram (DFD)

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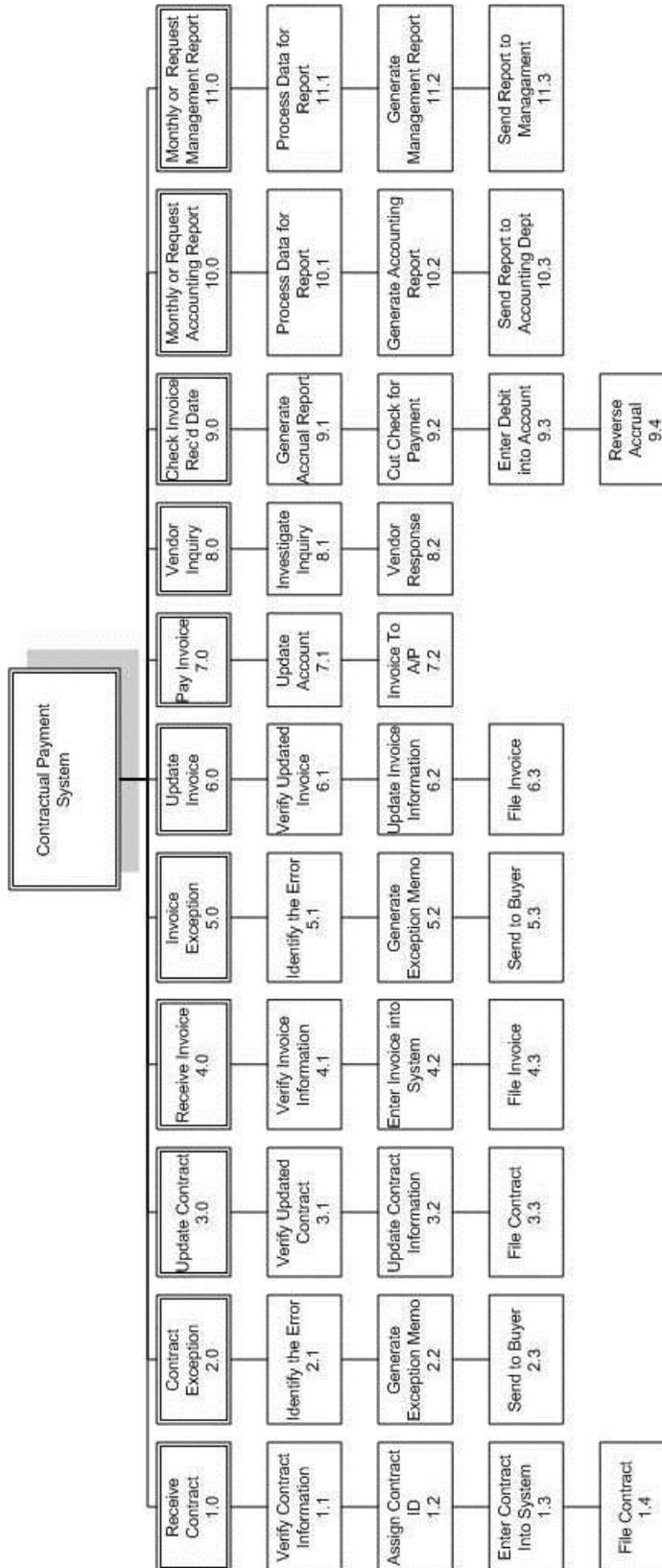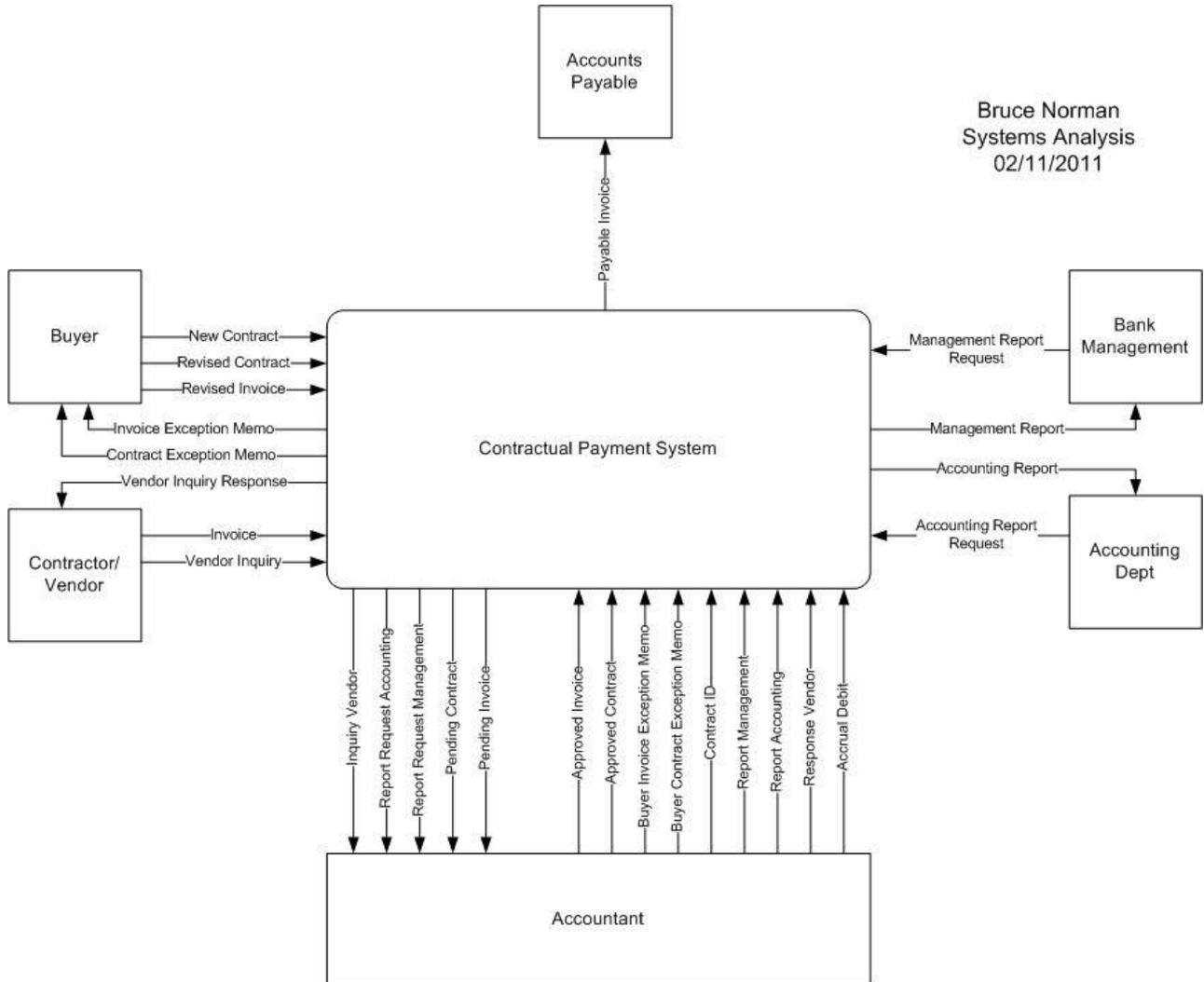
C. Use Case Diagram (Receive Invoice)

Contract Programmer Payment System

Xanadu Bank
Use Case Diagram
Context: "TO-BE"
Last Update: 4/24/08

Preliminary Investigation Report
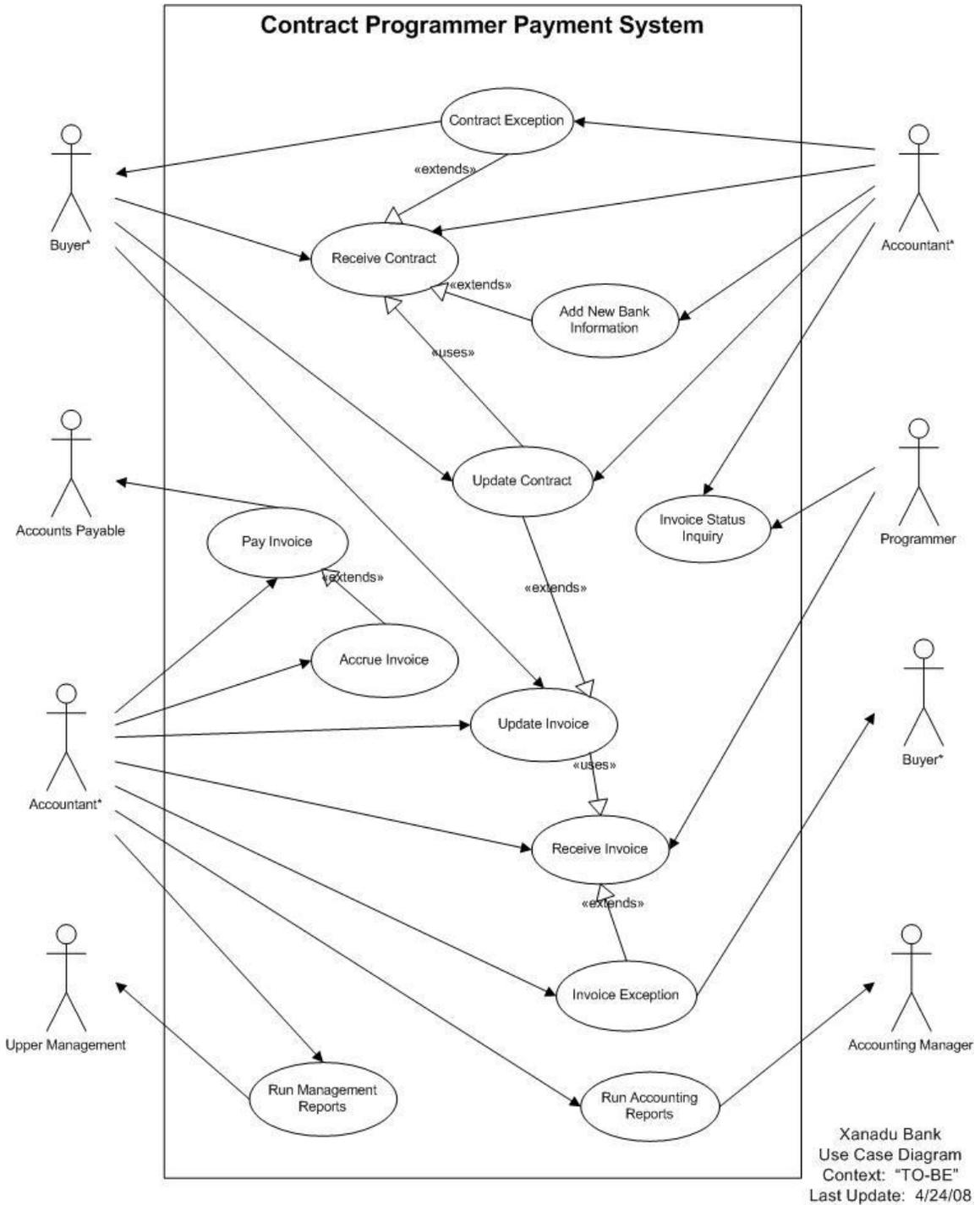
D. Use Case Scenarios

UC001: Receive Contract

Use Case Name:	**RECEIVE CONTRACT**	ID: UC001
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for processing a new contract, from the time that it is delivered by the buyer, until a new contract is verified and entered into the system.	
Trigger:	New contract is delivered to the accounting department	
Related Use Cases:	Contract Exception (extended by); Add New Contract Information (extended by); Update Contract (used by)	
Normal flow of events:	This use case begins when the Buyer delivers a new contract to the Accountant. 1) Manually review contract to ensure that all the information needed by the accounting department is on the contract. 2) Log onto the system and navigate to the "Enter Contract" screen. 3) Search for the correct Vendor (Contractor) Number and select it. 4) Enter all the required contract information (see Information Requirements below) into the system. Use appropriate " lookups" when applicable. 5) When finished entering all required information, SAVE the new contract record into the system. This use case ends when the new contract is entered into the system.	
Exception(s):	1) If any required information is missing or invalid, an exception memo is created and sent to the buyer for resolution. 3) If the vendor is not listed, navigate to the "Create Vendor" screen and create a new vendor record. 4) If the contact (project manager), charge unit, or bank division is not listed in the appropriate lookup fields, a new record for that information will need to be created.	
Pre-condition(s):	The existence of a new contract delivered from the contract group	
Post-conditions(s)	The verified contract has been entered into the system and is ready to have valid invoices processed against it.	
Information Requirements:	Contract ID Programmer Vendor Begin Date End Date Charge Unit	

	Bank Division Hourly Fee Fee Maximum Project Manager PM contact unit PM phone number Project Description
Assumptions:	The accountant must refer to the corporate directory to verify the correct contact unit for the project manager.
Business Rules:	1) A contract is not considered valid if any of the required information is missing, and must be returned to the buyer for correction. 2) A contract can be for more than one programmer working for the same vendor. 3) A programmer may be working on more that one contract at a time 4) If the PM is not listed in the corporate directory the signing authority needs to be contacted to obtain that information.

Preliminary Investigation Report

UC002: Add New Bank Information

Use Case Name:	**ADD NEW BANK INFORMATION**	ID: UC002
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for creating a new vendor, bank contact, bank unit, or bank division record, from the time a contract is received with any of these new pieces of information, until a new record(s) is entered into the system.	
Trigger:	A contract is delivered to the accounting department with new vendor, contact, unit, or division information.	
Related Use Cases:	Receive Contract (extends)	
Normal flow of events:	This use case begins when the Buyer delivers a contract with new vendor, contact, unit, or division information to the Accountant. 1) Search for the correct Vendor (Contractor) Number and cannot find one. 2) Navigate to the "Create Vendor" screen. 3) Enter the required vendor name into the system. 4) Search for the correct Contact Person and cannot find one. 5) Navigate the the "Create Contact" screen. 6) Enter the required bank contact name into the system. 7) Search for the correct Charge Unit and cannot find one. 8) Navigate to the "Create Unit" screen. 9) Enter the required bank unit number into the system 10) Search for the correct Bank Division and cannot find one. 11) Navigate to the "Create Division" screen. 12) Enter the required bank division name into the system. 13) When finished entering any of the required information above, SAVE the new record into the system. This use case ends when the new vendor, contact, unit, or division record is entered into the system.	
Exception(s):	None.	
Pre-condition(s):	The existence of a contract with new vendor, contact, unit, or division information.	
Post-conditions(s)	The new vendor, contact, unit, or division information has been entered into the system..	
Information Requirements:	Vendor Name Contact Person (Project Manager) Charge Unit Bank Division	
Assumptions:	The accountant must refer to the corporate directory to verify the correct contact unit for the project manager.	

Business Rules:	1) In order to create a new contract record, valid vendor, contact, unit, and division information must be obtained and exist in the new system.

UC003: Contract Exception

Use Case Name:	**CONTRACT EXCEPTION**	ID: UC003
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for processing a contract exception memo to return an incomplete/invalid contract to the Buyer, from the time the incomplete/invalid contract is received until it has been returned to the Buyer.	
Trigger:	An incomplete or invalid contract is received from the Buyer	
Related Use Cases:	Receive Contract (extends)	
Normal flow of events:	This use case begins when the Buyer delivers a contract to the Accountant that is either incomplete or contains invalid information. 1) A manual review of the contract determines that one of the required pieces of information required to enter a contract into the system is missing or invalid. 2) Enter the contract into the system with as much information as possible. 3) Enter "missing/invalid" or default to "zero" value in the field for the piece(s) of information that is missing or invalid 4) Enter the date and reason for the contract return in the "Contract Notes" field 5) SAVE the contract record into the system 6) Generate a return memo to the Buyer explaining the reason for the return 7) Attach the return memo to the contract and send it back to the Buyer This use case ends when the incomplete/invalid contract has been returned to the Buyer.	
Exception(s):	None	
Precondition(s):	A contract has been received that has missing or invalid information.	
Postconditions(s)	The incomplete or invalid contract has been returned to the Buyer	
Information Requirements:	(See "Receive Contract" use case UC001) Contract Notes	
Assumptions:	The Buyer will be able to supply the missing information or correct the invalid information	
Business Rules:	1) A contract is not considered valid if any of the required information is missing and must be returned to the Buyer for correction 2) It is the Buyer's responsibility to correct any errors in the contract and return it to the Accountant who sent it back.	

Preliminary Investigation Report

UC004: Update Contract

Use Case Name:	**UPDATE CONTRACT**	ID: UC004
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for updating a contract, from the time that it is delivered by the Buyer, until the updated contract information has been entered into the system.	
Trigger:	An updated or revised contract is received from the Buyer	
Related Use Cases:	Receive Contract (uses); Update Invoice (extends)	
Normal flow of events:	This use case begins when the Buyer delivers a corrected or updated contract to the Accountant. 1) Manually review the contract to ensure all the information needed by the accounting department is on the contract 2) Search for the contract in the system 3) Change the fields that have new or revised values OR missing or zero values by entering the correct information from the updated contract 4) Enter the date returned and any additional information in the "Contract Notes" field 4) SAVE the updated contract record into the system This use case ends when the contract has been correctly and completely updated in the system.	
Exception(s):	None	
Precondition(s):	An updated contract has been received from the Buyer	
Postconditions(s)	A complete and valid contract has been updated in the system	
Information Requirements:	(see Receive Contract - UC001)	
Assumptions:	The system will be able to accept the updated contract information	
Business Rules:	The accountant must enter the updated contract information into the system and make a note of the date that the updated contract was returned by the Buyer	

Preliminary Investigation Report

UC005: Receive Invoice

USE CASE NAME:	RECEIVE INVOICE	ID: UC005
Primary Actor:	ACCOUNTANT	
Brief Description:	This use case describes the steps for RECEIVE INVOICE, from the time the invoice is delivered to the accountant until the invoice has been validated and entered into the system and filed away.	
Trigger:	A new invoice is delivered by the vendor to the accountant.	
Related Use Cases:	Invoice Exception (extended by); Update Invoice (uses); Pay Invoice (uses); Accruals (uses); Accounting Report (uses); Management Report (uses)	
Normal Flow of Events:	This use case starts when the vendor delivers a new invoice to the accountant. 1) Accountant receives invoice. 2) Accountant creates an ID number for the invoice. 3) Accountant validates the invoice to ensure all information needed is provided. 4) Accountant enters the invoice into the system, including all the required information (see information requirements below). 5) Accountant saves the record. 6) Accountant files hard copy of invoice. This use case ends when an invoice has been entered and saved in the system and has been filed.	
Exceptions:	3) If any required information is missing or incomplete, the accountant will send the invoice to the buyer (see Invoice Exception use case).	
Pre-condition(s):	There must be an existing contract with the vendor who sends the invoice. There must be a new invoice that needs to be entered into the system. The vendor who submits the invoice must be in the system.	
Post-condition(s):	A new invoice record has been created in the system and the original copy has been filed. The invoice has been approved for payment.	
Information Requirements:	ID Number Programmer Vendor Charge Unit Invoice Number Date Paid Begin Date End Date Rate	

	Total Hours Total Invoice Accrued Memo Description of Charges
Assumptions:	1) The vendor will deliver a complete invoice with all the required information. 2) The information on the invoice is valid and accurate. 3) The system will be able to accept all the required information on the invoice. 4) The vendor is already in the system (entered with contract information).
Business Rules:	1) The vendor will deliver the invoice to the accountant. 2) All invoice hard copies are filed for future reference. 3) All invoices must be entered into the system. 4) All invoices are manually assigned a unique ID number. 5) Each invoice can have only one contractor name on it. 6) Each invoice must have all the required information needed (see Information Requirements above). 7) All invoices will be time stamped on their received dates. 8) Invoice Totals will be subtracted from the Fee Maximum. 9) Approval signature and Charge Unit will be included on Invoices approved for payment. 10) Invoice information will be matched to contract stipulations to validate negotiated terms, rates, and limitations.

Preliminary Investigation Report

UC006: Invoice Exception

Use Case Name:	**INVOICE EXCEPTION**	ID: UC006
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for processing an invoice exception memo to return an incomplete, invalid, or unpayable invoide to the Buyer, from the time the incomplete, invalid, or unpayable invoice is received until it has been returned to the Buyer.	
Trigger:	An incomplete, invalid, or unpayable invoice is received from the Vendor	
Related Use Cases:	Receive Invoice (extends)	
Normal flow of events:	This use case begins when the Vendor sends an invoice for programming services to the Accountant (should arrive via the Project Manager). 1) A manual review of the invoice determines that one of the required pieces of information required to enter the invoice into the system for payment is missing (see Information Requirements below), OR, in the process of running a system check, it is determined that the invoice dates of service exceed those on the contract, or the "Hourly Fee" does not match with that of the contract, or payment of the invoice would cause the "Fee Maximum" amount of the contract to be exceeded 2) Enter the invoice into the system with as much information as possible 3) Enter "missing/invalid" or default to "zero" value in the field for the piece(s) of information that is missing or invalid 3) Enter the "Payment Status" as "Do Not Pay" 4) Enter into the "Invoice Notes" field the reason the invoice cannot be paid 5) SAVE the invoice into the system 6) Generate a return memo to the Buyer explaining the reason for the return 7) Attach the return memo to the invoice and send it back to the Buyer This use case ends when the invomplete, invalid, or unpayable invoice has been returned to the Buyer.	
Exception(s):	None	
Precondition(s):	An invoice has been received that is either incomplete, invalid, or otherwise unpayable.	
Postconditions(s)	The incomplete, invalid, or otherwise unpayable invoice has been returned to the Buyer.	
Information	(See Receive Invoice UC005)	

Requirements:	Payment Status
	Invoice Notes
Assumptions:	1) The Buyer will be able to contact the Vendor and get a corrected invoice generated
	2) The Buyer will be able to contact the Program Manager to get proper approval and charge information
	3) The Buyer will be able to contact the appropriate parties and get a contract extension for either additional time period(s), and/or an adjustment to the "Hourly Fee", and/or an increase in the "Maximum Fee" amount
Business Rules:	1) An invoice is not considered payable if any of the required information is missing and must be returned to the Buyer for resolution
	2) It is the Buyer's responsibility to contact the Vendor to get a corrected invoice resent to the Bank that is able to be processed for payment
	3) It is the Buyer's responsibility to contact the Project Manager if the invoice does not have the proper approval for payment
	4) It is the Buyer's responsibility to contact the appropriate parties and generate a contract extension if the invoice service dates fall outside those of the original contact, OR the "Hourly Fee" does not match with that of the original contract, OR payment of the invoice would cause the "Fee Maximum" amount on the original contract to be exceeded

Preliminary Investigation Report

UC007: Update Invoice

Use Case Name:	**UPDATE INVOICE**	ID: UC007
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for updating an invoice, from the time that a revised or new invoice and/or contract extension is received from the Buyer, until the updated or new invoice and/or contract extension has been entered into the system.	
Trigger:	An updated or new invoice and/or a contract extension is received from the Buyer	
Related Use Cases:	Receive Invoice (uses); Update Contract (extended by)	
Normal flow of events:	This use case begins when the Buyer delivers an updated or new invoice and/or a contract extension to the Accountant. 1) Manually review the invoice to ensure all the information needed by the accounting department is on the invoice 2) If a contract extension is received, manually review it to ensure that all the information needed by the accounting department is on the contract extension 3) If a contract extension is received, search for the original contract in the system 4) Enter the new contract information in the system (see Information Requirements below and refer to UC004 for normal flow of events) (if applicable) 5) SAVE the updated contract record into the system (if applicable) 6) Search for the returned invoice in the system 7) Change the fields that have missing or zero values by entering the correct information from the updated or new invoice 8) Run a system check to ensure that the dates for programming services fall within the date range specified on the revised contract 6) Run a system check to ensure that the billed rate is the same as the "Hourly Fee" on the revised contract 7) Run a system check to ensure that the dollar amount of the revised or new invoice does not exceeded the "Fee Maximum" amount on the updated contract (must consider all previous invoices that have been paid against the contract fee maximum) 8) When finished entering all required information and validating that the revised or new invoice is able to be paid, change the "Payment Status" from "Do Not Pay" to "Approved for Payment" 9) Enter into the "Invoice Notes" field the date the invoice was returned 10) SAVE the invoice record into the system This use case ends when the revised or new invoice and/or contract extension has been correctly and completely updated in the system.	

Preliminary Investigation Report

Exception(s):	7) If the invoice number has been changed (Vendor issued a newly numbered invoice), the old number must first be noted in the "Invoice Notes" field BEFORE overwriting the "Invoice Number" field (actually, the vendor should issue a credit memo for the original invoice that would be entered into the system to offset the original invoice, necessitating a new record for the new numbered invoice) 8) If the invoice still fails any of the system checks, follow the procedures under use case UC006 (Invoice Exception) to return the invoice back to the Buyer
Precondition(s):	1) A revised invoice has been received from the Buyer 2) A contract extension has been received from the Buyer
Postconditions(s)	1) The updated or new invoice has been entered into the system with the "Approved to Pay" status 2) The contract extension information has been entered into the system and the contract has been updated
Information Requirements:	(UC001) Begin Date End Date Hourly Fee Fee Maximum (see UC005 "Receive Invoice" for applicable data) Payment Status Invoice Notes
Assumptions:	1) The Buyer will have taken the necessary steps to ensure the new information provided on the invoice and/or contract extension is sufficient to allow the invoice to be payable 2) If the vendor changes the invoice number, they will either issue a credit memo to cancel the previous unpayable invoice OR they will somehow notify the Accounting department (Accountant) with instructions to modify/change the previous invoice number and ignore the fact that it existed
Business Rules:	1) The Accountant must enter the updated invoice and/or contract information into the system and make a note of the date that the updated contract and/or invoice was returned by the Buyer. 2) If the invoice number needs to be changed, the Accountant must document fully the circumstances surrounding the change and/or document that a credit memo was received to offset the original invoice. 3) The Accountant must re-check the updated invoice against the contract limitations before approving it for payment

UC008: Invoice Status Inquiry

Use Case Name:	INVOICE STATUS INQUIRY	ID: UC008
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for responding to a Vendor inquiry for invoice payment status, from the time the inquiry is received by the Accountant until the Accountant has responded to the Vendor with the requested invoice payment status.	
Trigger:	The Accountant receives an inquiry from the Vendor for payment status on an invoice	
Related Use Cases:	None	
Normal flow of events:	This use case begins when the Accountant receives an invoice payment status inquiry from the Vendor. 1) Log onto the system and search for the invoice in question (run a report or query) 2) Check the "Payment Status" field to determine the current status 3) If the invoice has a "Do Not Pay" status, check the "Invoice Notes" field to determine the reason the invoice cannot be currently processed for payment 4) If the Vendor is on the telephone, convey the details of the invoice payment status to the Vendor 5) If the invoice is not currently payable, explain the reason(s) for non-payment 6) If the Vendor has communicated via email, send an email through the system to the Vendor providing the invoice payment status or reason(s) for non-payment 7) Enter into the "Invoice Notes" field the date of the Vendor inquiry and the response that was provided in reply 8) SAVE the updated invoice record into the system This use case ends when the Vendor has received the invoice payment status.	
Exception(s):	1) If the invoice has not been received and entered into the system, instruct the Vendor to resend or fax (preferred) a copy of the invoice in question directly to the Accounting department (Accountant), and then proceed with the steps to "Receive Invoice" (see UC005) and process an "Invoice Exception" (see UC006) (6 &7) If the vendor has sent either a payment request letter or a duplicate copy of the original invoice, check the status of the invoice in question and either call (preferred) the Vendor or send them a letter through the US Postal Service	
Precondition(s):	The Vendor has sent an invoice for programming services and has not received payment according to the terms of the invoice	
Postconditions(s)	1) The Vendor has been updated on the current payment status of the	

	invoice 2) If applicable, a copy of the invoice (see #1 under Precondition(s) has been sent with an exception memo to the Buyer for resolution
Information Requirements:	Vendor Invoice Number Contract ID Payment Status Invoice Notes
Assumptions:	1) The Vendor will not send an invoice for programming services before a valid contract has been created for those services 2) The invoice in question will have been received by the Accounting department (Accountant) and entered into the system prior to the actual due date of the invoice 3) The Accountant will be able to satisfy the Vendor's inquiry with the information contained in and available in the system
Business Rules:	1) An invoice is not payable unless a valid contract exists for the services billed on the invoice, and the invoice meets the constraints of that contract 2) Vendor inquiries must be resolved within a 24 hour timeframe 3) If a Vendor inquires about an invoice that is not currently in the Accounting system, the Accountant must request a copy of that invoice so it can be entered into the system and then sent to the Buyer for resolution

UC009: Pay Invoice

Use Case Name:	PAY INVOICE	ID: UC009
Primary Actor:	Accountant	
Brief Description:	This use describes the steps for sending an invoice that is approved for payment to the Accounts Payable (A/P) department, from the time the Accountant has approved the invoice for payment until the invoice has been sent to the A/P department.	
Trigger:	Invoice(s) are entered into the system with an "Approved to Pay" Payment Status	
Related Use Cases:	None	
Normal flow of events:	This use case begins when the Accountant has set the invoice Payment Status to "Approved to Pay". 1) If necessary, log onto the system and locate the invoice to be paid 2) Verify the Payment Status is "Approved to Pay" 3) Enter the current day's date in the "Date Paid" field 4) SAVE the invoice record 5) Generate and print out a Data Entry Sheet for the invoice 6) Attach the Data Entry Sheet to the Invoice and send both to the A/P department This use case ends when the invoice has been has been updated with the "Date Paid" and sent to the A/P department to have a check issued.	
Exception(s):	3) If the "Date Paid" is AFTER the cut-off for the last A/P check run for the CURRENT month AND before the 6th day of the FOLLOWING month, the invoice will need to be accrued	
Precondition(s):	An invoice is approved for payment and is ready to be sent to A/P to have a check cut.	
Postconditions(s)	The invoice has been sent to the A/P department with a Data Entry Sheet attached.	
Information Requirements:	Vendor Name Vendor Number Invoice Number Description (the programmer's 1st initial and full last name AND the dates of service covered by the invoice) Invoice Date Invoice Total G/L Account P.O. Number (the programmer's 1st initial and full last name) Charge Unit Accountant's Name Date Paid (date invoice is sent to the A/P group)	
Assumptions:	All invoices received for services in the current month can be	

Preliminary Investigation Report

	processed for payment and have a check cut by the A/P department before the end of the current month
Business Rules:	1) All invoices sent to the A/P department for payment must include a Data Entry Sheet with specific information (see Information Requirements above) 2) If an invoice cannot have a check cut for it BEFORE the end of the current time period (month), an accrual must be made so the expense dollars can be charged to the appropriate general ledger account to ensure the expense is realized in the appropriate period.

UC010: Accrue Invoice

Use Case Name:	ACCRUE INVOICE	ID: UC010
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for processing an invoice accrual, from the time the invoice is determined to need to be accrued, until the invoice has been designated as accrued in the system	
Trigger:	The invoice has been received and entered into the system after the cut-off for the last Accounts Payable (A/P) check run of the current month but before the 6th day of the following month.	
Related Use Cases:	Pay Invoice (extends)	
Normal flow of events:	This use case begins when an invoice has been entered into the system that either cannot be processed for payment OR is payable and cannot have a check cut in the current month. 1) If necessary, log onto the system and locate the invoice that needs to be accrued 2) Verify that the date in the "Date Paid" field is past the cut-off date for the last A/P check run for the current month and before the 6th day of the following month OR the "Payment Status" is "Do Not Pay" 3) Enter the current month and year in the "Date Accrued" field 4) SAVE the invoice record in the system 5) Repeat the above 4 steps for ALL invoices that meet the criteria for accrual This use case ends when an invoice has been designated as accrued in the system.	
Exception(s):	None	
Precondition(s):	1) An invoice has been received and entered into the system with either a "Do Not Pay" status OR 2) An invoice has been processed for payment after the cut-off date for the last A/P checkrun for the current month and before the 6th day of the following month	
Postconditions(s)	The unpaid (no check cut) invoice has been designated as accrued	
Information Requirements:	Programmer Vendor Charge Unit Invoice Number Invoice Total Date Accrued (month and year)	
Assumptions:	All invoices for services in the current time period will have been received by the 6th day of the following time period	
Business Rules:	Any invoice that cannot have a check issued for it in the current time period (month) must be accrued so that the expense can be realized in the current period.	

UC011: Run Accounting Reports

Use Case Name:	**RUN ACCOUNTING REPORTS**	ID: UC011
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps to generate the Accounting department's month-end reports, from the time they are due until they have been printed out and delivered to the Accounting Manager.	
Trigger:	The deadline for the month-end Accounting department reports.	
Related Use Cases:	None	
Normal flow of events:	This use case begins when the deadline due date for the "General Ledger Expense Report" and "Accrual Report" is reached. 1) Log onto the system and navigate to the Reports Menu 2) Select the "G/L Expense" option 3) Enter the date range for the current reporting period 4) Select the PRINT REPORT option 5) Return to the Reports menu 6) Select the "Accruals" option 7) Enter the date range for the current reporting period 8) Select the PRINT REPORT option 9) Return to the Reports Menu OR exit to the Main Menu 10) Deliver both reports to the Accounting Manager This use case ends when both the "General Ledger Expense Report" and "Accrual Report" have been delivered to the Accounting Manager.	
Exception(s):	None	
Precondition(s):	It is time to generate the monthly Accounting department reports	
Postconditions(s)	The monthly Accounting department reports have been delivered to the Accounting Manager	
Information Requirements:	(General Ledger Expense Report) Contract ID Programmer Vendor Charge Unit Invoice Number Date Paid Service Start Date Service End Date Hourly Fee Total Hours Worked Invoice Total Date Accrued Total G/L Expense (calculated) (Accrual Report)	

	Programmer Vendor Charge Unit Invoice Number Invoice Total Date Accrued Total Accrued (calculated)
Assumptions:	There will actually be at least one invoice to be accrued for the current reporting period
Business Rules:	The "General Ledger Expense Report" and "Accrual Report" are due to the Accounting Manager for auditing purposes on the 6th business day of the month.

UC012: Run Management Reports

Use Case Name:	**RUN MANAGEMENT REPORTS**	ID: UC012
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps to generate Bank Management's month-end reports, from the time they are due until they have been printed out and sent to the various requesting departments.	
Trigger:	The deadline for the month-end Bank Management reports.	
Related Use Cases:	None	
Normal flow of events:	This use case begins when the deadline due date for the "Contract Programmer's Monthly Expense Recap Report", "Contract Programmer Report - Fee Maximum vs. Actuals", and "Monthly Contract Recap" is reached. 1) Log onto the system and navigate to the Reports Menu 2) Select the "Programmer Expense" option 3) Enter the date range for the current reporting period 4) Select the PRINT REPORT option 5) Return to the Reports menu 6) Select the "Fee Maximum" option 7) Enter the date range for the current reporting period 8) Select the PRINT REPORT option 9) Return to the Reports Menu 10) Select the "Contract Recap" option 11) Enter the date range for the current reporting period 12) Select the PRINT REPORT option 13) Return to the Reports Menu OR exit to the Main Menu 14) Send a copy of each report to the appropriate bank requesting unit This use case ends when the "Contract Programmer's Monthly Expense Recap Report", "Contract Programmer Report - Fee Maximum vs. Actuals", and "Monthly Contract Recap" have been sent to the appropriate bank requesting unit(s).	
Exception(s):	None	
Precondition(s):	It is time to generate the monthly Bank Management reports.	
Postconditions(s)	The monthly Bank Management reports have been sent to the various bank units.	
Information Requirements:	(Contract Programmer's Monthly Expense Recap Report) Programmer Vendor Bank Division Charge Unit Invoice Number Service Start Date Service End Date	

	Total Hours Worked
	Invoice Total
	Date Accrued
	Total for Division (calculated)
	Total for Charge Unit (calculated)
	Grand Total (calculated)
	(Contract Programmer Report - fee Maximum vs. Actuals)
	Division
	Charge Unit
	Programmer
	Service Start Date
	Service End Date
	Hourly Rate
	Project Manager
	PM Phone Number
	Fee Maximum
	Total Charged to Contract (calculated)
	Percent Used (calculated)
	Date Last Charged (calculated)
	Under/Over Contract Fee Max (calculated)
	(Monthly Contract Recap)
	Project Manager
	PM Contact Unit
	Programmer
	Vendor
	Begin Date (contract)
	End Date (contract)
	Hourly Fee
	Project Description
	Fee Maximum
	Charge Unit
	Invoice Number
	Date Paid
	Service Start Date
	Service End Date
	Total Hours Worked
	Invoice Total
	Total Charged to Contract (calculated)
	Percent Used (calculated)
	Remaining Contract Dollars (calculated)
Assumptions:	There will actually be at least one invoice paid to the contract programmer G/L account 507613 in the current reporting period
Business Rules:	The "Contract Programmer's Monthly Expense Recap Report", "Contract Programmer Report - Fee Maximum vs. Actuals", and "Monthly Contract Recap" are due to be sent to the various bank requesting units by the 11th business day of the month.

E. Requirements Catalog
A. System Inputs

- Beginning Date
- Contract date
- Due Date
- End Date
- Invoice Date
- Received Date
- Buyer
- Contractor Name
- Vendor Name
- Vendor Number
- Project Manager
- Programmer
- Fee Maximum
- Contract ID
- ID Number
- Invoice Number
- Charge Unit
- Hourly rate
- Date Paid
- Total Hours
- Total Invoice
- Accrued
- Description of Charges
- Memo
- General Ledger Account
- P.O. Number
- Division
- Phone Number
- Contact Person

B. Functional Requirements

The functional requirements of the system are based on the identified Use Cases. They can generally be divided into two different categories – the information-oriented requirements and the process-oriented requirements. Information-oriented requirements refer to the information that must be contained or collected within the system. The process-oriented requirements are the tasks the system must perform.

I. Process-oriented Requirements

UC001 Receive Contract

UC001.1   The system must allow the user to enter a Contract ID.

UC001.2   The system must allow the user to enter a Programmer Name.

UC001.3   The system must allow the user to enter a Vendor Name.

UC001.4   The system must allow the user to enter a Contractor Name.

UC001.5   The system must allow the user to enter a Begin Date.

UC001.6   The system must allow the user to enter an End Date.

UC001.7   The system must allow the user to enter a Charge.

UC001.8   The system must allow the user to enter a Division.

UC001.9   The system must allow the user to enter an Hourly Rate.

UC001.10   The system must allow the user to enter a Fee Maximum.

UC001.11   The system must allow the user to enter a Contact Person.

UC001.12   The system must allow the user to enter a Unit.

UC001.13   The system must allow the user to enter a Phone Number.

UC001.14   The system must allow the user to enter a Project Description.

UC001.15   The system must allow the user to Save the Information in the record.

UC001.16   The system must allow the user to enter the Buyer Name.

UC001.17   The system must allow the user to enter the Project Manager Name.

UC001.18   The system must be able to calculate and maintain a Fee Maximum balance.

UC001.19   The system must provide a user-friendly interface.

UC001.20   The system must sort alphanumeric and numeric data.

UC001.21   The system must perform calculations to update account balances.

UC001.22   The system must utilize data integrity constraints to provide data entry standards.

UC001.23 The system must allow the user to enter an address.
UC001.24 The system must allow the user to enter a city.
UC001.25 The system must allow the user to enter a state.
UC001.26 The system must allow the user to enter a zip code.
UC001.27 The system must allow the user to enter an e-mail address.

UC002   Contract Exception

UC002.1 The system must allow the user to generate a Contract Exception Memo.

UC003   Update Contract

UC003.1 The system must allow the user to update information that has already been entered into the system.

UC004   Receive Invoice

UC004.1 The system must allow the user to enter an ID Number.
UC004.2 The system must allow the user to enter a Programmer.
UC004.3 The system must allow the user to enter a Vendor Name.
UC004.4 The system must allow the user to enter a Contractor Name.
UC004.5 The system must allow the user to enter a Charge.
UC004.6 The system must allow the user to enter an Invoice Number.
UC004.7 The system must allow the user to enter a Date Paid.
UC004.8 The system must allow the user to enter a Begin Date.
UC004.9 The system must allow the user to enter an End Date.
UC004.10 The system must allow the user to enter Total Hours.
UC004.11 The system must allow the user to enter a Total Invoice Amount.
UC004.12 The system must allow the user to enter an Accrued Date.
UC004.13 The system must allow the user to enter an ID Number.
UC004.14 The system must allow the user to enter an ID Number.
UC004.15 The system must allow the user to enter a Description of Work Performed.

UC004.16 The system must allow the user to enter an Invoice
Received Date.

UC004.17 The system must allow the user to enter a Due Date.

UC004.18 The system must allow the user to enter P.O.
number.

UC004.19 The system must allow the user to Save the
Information in the record.

UC004.20 The system must allow the user to enter the Buyer
Name.

UC004.21 The system must be able to calculate and maintain a
Fee Maximum balance.

UC004.22 The system must provide a user-friendly interface.

UC004.23 The system must sort alphanumeric and numeric
data.

UC004.24 The system must perform calculations to update
account balances.

UC004.25 The system must utilize data integrity constraints to
provide data entry standards.

UC004.26 The system must allow for scanning of invoices.

UC004.27 The system must allow the user to enter an address.

UC004.28 The system must allow the user to enter a city.

UC004.29 The system must allow the user to enter a state.

UC004.30 The system must allow the user to enter a zip code.

UC004.31 The system must allow the user to enter an e-mail
address.

UC005   Invoice Exception

UC005.1 The system must allow the user to generate
exception memos.

UC005.2 The system must allow the user to enter a Memo
Date.

UC005.3 The system must allow the user to enter an ID
Number.

UC005.4 The system must allow the user to enter a
Programmer.

UC005.5 The system must allow the user to enter a Company
Name.

UC005.6 The system must allow the user to enter a Start Date.

UC005.7 The system must allow the user to enter an End Date.

UC005.8 The system must allow the user to enter an Invoice
Number.

UC005.9 The system must allow the user to enter an Invoice
Amount.

UC005.10 The system must allow the user to enter a Reason.

UC005.11 The system must allow the user to enter a
              Response.
UC005.12 The system must allow the user to enter Remarks.

UC006   Update Invoice

UC006.1 The system must allow the user to update information
             in the system.

UC007   Pay Invoice

UC007.1 The system must keep a record of checks issued by
             accounts payable.
UC007.2 The system must allow the user to Approve Invoices
             for payment.

UC008   Vendor Inquiry

UC008.1 The system must keep a record of vendor inquiries.
UC008.2 The system must be capable of generating a vendor
             response.

UC009   Accruals

UC009.1 The system must allow the user to enter a
             Programmer.
UC009.2 The system must allow the user to enter a Vendor
             Name.
UC009.3 The system must allow the user to enter a Charge.
UC009.4 The system must allow the user to enter an Invoice
             Number.
UC009.5 The system must allow the user to enter an Invoice
             Total.
UC009.6 The system must allow the user to enter an Accrued
             Date.
UC009.7 The system must allow the user to enter a Reversal
             Date.

UC010   Accounting Reports

UC010.1 The system must generate and store General Ledger
             Reports.
UC010.2 The system must generate and store Accrual
             Reports.
UC010.3 The system must allow the generation and printing of
             reports.

Preliminary Investigation Report

UC011   Management Reports

UC011.1 The system must generate and store Expense Recap Reports.

UC011.2 The system must generate and store Fee Maximum vs. Actual Reports.

UC011.3 The system must generate and store Monthly Contract Recap Reports.

UC011.4 The system must allow the generation and printing of reports.

II. Information-oriented Requirements

Accruals (Programmer, Vendor, Charge, Invoice #, Total Invoice, Accrued Date, Reversed Date)

Contract (ContractID, Programmer, Vendor, Begin Date, End Date, Charge, Division, $/Hour, Fee Max, Contact Person, Unit, Phone, Project Description, Project Manager, Memo)

Contractor (Name, Project #, Charge Unit, Project Manager, Project Manager Phone, Generic Job Level, Hourly rate, Start Date, End Date, Title, Date)

Contract Fee Maximum (ID Number, Programmer, Invoice #, Date Paid, Begin Date, End Date, Rate, Total Hours, Total Invoice, Total to Date, Fee Max, Available $)

Contract Programmer Report (Programmer, Begin Date, End Date, $/Hour, contact Person, Phone, Appendix A Fee Max, Total Charged to Appendix A, Percent Used, Date Unit Last Charged, Under/Over Appendix A Max)

Exception Memo – Problem Contracts (Memo Date, ID Number, Programmer, Company, Start Date, End Date, Contract #, Fee Max, $/Hour, Reason, Response, Remarks)

Exception Memo – Problem Invoices (Memo Date, ID Number, Programmer, Company, Start Date, End Date, Invoice #, Invoice $, Reason, Response, Remarks)

Invoices (ID Number, Programmer, Vendor, Charge, Invoice #, Date Paid, Begin Date, End Date, Rate, Description, Total Hours, Total Invoice, Accrued, Memo)

Manager (Name, Department, Title, Location, Phone, Unit, Division)

Monthly Contract Recap (Project Manager, Unit, Programmer, Company, Project, Start Date, End Date, Rate/Hour, Fee max, Charge To, Invoice #, Date Paid, Periods Paid, Hours, Dollar Total, Total Hours, Invoice Dollars, Total Charge to Contract, Percent Use, Remaining Contract Dollars)

Monthly Expense Recap Report (Programmer, Vendor, Division, Charge, Invoice#, Begin Date, End Date, Total Hours, Total Invoice, Accrued)

Programmer (Name, Phone, Unit, Division, Charge Unit)

Project Manager (Name, Contact Unit, Phone, Division, Charge Unit, Contract #)

Vendor (Company Name, Vendor Number, Address, City, State, Zip, Phone, Contract #, Contact Person, Inquiry #, Project Manager)

Vice President (Name, Contact Unit, Phone, Division, Charge Unit)

APPENDIX C
Additional Documentation

Gantt Chart