

CIS 233: Grading Criteria – System Requirements Document

DRAFT

Team Name/Members: Jon Raymond Melchizedek Day, Hieu-Minh Pham Ken Onzere, Frank Malimban, Andrew Reid

The following are the sections required for the System Requirements Document. Please attach a copy of this grading sheet to front of your deliverables. The shaded sections are not required for the DRAFT, but you should include a “placeholder” in your document for them.

Points Earned	Points Possible	Criteria	Grading Notes
	5	Organization Document is organized as specified in the assignment. It is well structured and has appropriate spacing.	
	5	Spelling, Grammar, Etc. Document is free of spelling and grammatical errors.	
	5	Cover Pages, Table of Contents, and Introduction Follows the guidelines specified in CIS Writing Criteria.	
		Section 1 Management Summary Covers content specified in assignment. <i>(***not necessary for DRAFT***)</i>	
	5	Section 2 Current Situation Analysis (AS-IS) Covers all content specified in assignment.	

Evaluation Criteria Form

	5	Section 3: Overview of the proposed system (TO-BE) Covers all content specified in assignment.	
	5	Section 4: Functional Requirements Covers all content specified in assignment.	
		Section 5: Summary of Systems Analysis Phase Covers all content specified in assignment. <i>(***not necessary for DRAFT***)</i>	
	5	Section 6: Alternatives Covers all content specified in assignment.	
	5	Section 7: Recommendations Covers all content specified in assignment.	
	5	Section 8: Time estimates Covers all content specified in assignment.	
		Section 9: Conclusion Covers all content specified in assignment. <i>(***not necessary for DRAFT***)</i>	
	5	Section 10: Appendices Covers all content specified in assignment. All appendices referenced.	
	50	TOTAL Comments:	

Assignment Cover Page

College Name: Edmonds Community College

Department: Computer Information Systems

Assignment Name: Research Project #2

Assignment Title: System Requirements Document

Date Prepared: November 7, 2012

Team Name: CISTems Experts

Team Members: Jon Raymond Melchizedek Day, Hieu-Minh Pham Ken Onzere, Frank Malimban, Andrew Reid

Cover Memo

To: Jay Patrick – Vice President & Manager

From: CISTems Experts - Jon Raymond Melchizedek Day, Hieu-Minh Pham
Ken Onzere, Frank Malimban, Andrew Reid

Date: November 7, 2012

Subject: System Requirements Document - Management Review Meeting

A System Requirements Document is attached for the new Automated Contractual Payment System created by CISTems Experts. CISTems Experts would like to meet with you at Bank of Xanadu – Bellevue in Room 124 on Friday, November 30, 2012. At this meeting we would like to discuss the Systems Requirements Document with you.

CISTems Experts will be looking forward to meeting with you on Friday, November 30, 2012. If you have any questions please feel free to contact CISTems Experts before then.

Report Cover Page

Company: Bank of Xanadu - Bellevue

Department: Accounting

Report Title: System Requirements Document

Date Prepared: November 7, 2012

Team Name: CISTems Experts

Team Members: Jon Raymond Melchizedek Day, Hieu-Minh Pham Ken Onzere, Frank Malimban, Andrew Reid

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Management Summary

Management Summary

CISStems Experts created the following Systems Requirement Document. This reviews everything that the CISStems Experts team found in thorough research of a Systems Analysis phase. The Vice President & Manager of the accountant team initiated the systems request for a new automated system to take place of the current system.

We started by researching how the current system works. This involved determining what the current system handles, the problem with the current system, the people affected by the current system, what the current processes are, what inputs and outputs are needed and how they are controlled, what the current technology is, and what the strengths and weaknesses are for the current system. Managers and other employees were interviewed to find out all of the above. Analysis was done using an FDD and a DFD to show the flow of processes through the current system as well as how different people are affected those processes. The weaknesses for the current system were found to be greater than the strengths and it was determined that the current technology would be capable of handling a new automated system. CISStems Experts found that the current system wastes valuable time and consists of many errors that affect many people in many departments including management. We strongly suggest using a new automated system to improve upon the flaws of the current system.

After researching the current system, CISStems Experts researched what was needed for a new automated system. First we found that the scope would involve vendors, contacts, charge units, contracts, exception memos, fee maximums, invoices, accruals, monthly expense reports, monthly fee vs. actual reports, and monthly contractor reports. The objectives of the new system would be to reduce time wasted, to handle everything in the current

Management Summary

Excel workbook, to reduce errors, and to control payments in accordance to contractual time, hourly rate, and fee max limitations. Benefits would include less time wasted, easier matching of invoices and contracts, concurrent accessibility of multiple users, more secure data, less redundant data, and a favorable TCO. Next we researched the functional requirements for the new automated system. A Use Case Diagram was created and multiple Use Case Scenarios were made to find the interaction of the users of the system and to find the processes that the different users go through. The inputs, outputs and controls of the new system were matched to that of the current to make sure all necessary requirements were met.

CISStems Experts then researched what available alternatives including Access, FileMaker, Centerbase, Oracle, TrackVia, in-house, outsource, and manual. After evaluating pros and cons for each we recommend going with Access. Xanadu already has Access and it is easy to use, allows importing from Excel, synchronizes online data with offline data, keeps data secure. We have determined that a fully functional new automated system can be designed and implemented by June 10, 2013.

We have more details in the Systems Requirement Document Below. All supplemental information can be found in the appendix. CISStems Experts strongly believe a new automated system is required for Xanadu to maintain its success in the banking industry. Xanadu should not settle for a system that wastes an extreme amount of time and results in a great amount of errors. A new automated system will help Xanadu to be an efficient and accurate leader who can focus more on their customers and profitability. CISStems Experts are requesting approval to proceed to the Systems Design Phase.

As-Is-Model

Current Information System

Introduction

The new automated system to be developed will take place of the current Excel workbook used by accounting. Therefore it is important to understand many factors about the current system. This includes:

- What the current system handles to get an idea of what the new system should handle
- What the problem with the current system is so it can be fixed
- Who relies on it to know who will be affected and should be interviewed
- What the processes are to know what processes will be needed or altered or terminated
- What data it uses for inputs and outputs and its constraints so the new system can use the same
- What technology is being used to know if changes will need to be made to the current technology or not
- What the strengths are so those strengths remain in the new system
- What the weaknesses are so those weakness are fixed for the new system

More information pertaining to the evaluated problem can be found in Preliminary Investigation Report that has been attached in Appendix A.

Analysis Approach

1. An FDD was used to help visually show the processes that the current system handles as a top-down representation. The contract, invoice, and report processes are broken down to show the sub processes and the

As-Is-Model

order in which they are done without specifying the exact details of what each process consists of.

A DFD was used to help visually show how the system stores, processes, and transforms data into useful information for the contract, accounting, account payable groups, as well as the programmer/vendor, and the accounting and bank management. The FDD assisted with creating the DFD by showing what the contract, invoice, and report processes are which have a data flow linkage between the above stakeholders and the current system.

2. The DFD and FDD were used to document the current system visually without going into much depth using a higher-level design. The higher-level design shows more of the scope and boundaries with the data flows of the above stakeholder entities connecting them with the current system. The FDD and DFD for the current system can be found in Appendix B & C.

Problem

The accounting department currently wastes a great deal of time using an Excel workbook to keep track of everything needed. This Excel workbook keeps track of the contractual information, receiving and processing the incoming programming invoices, preparing accurate accruals, determining whether the invoice falls within the time limitations, determining whether the invoice matches the hourly rate contract, and calculating whether there is funding left on the contracts to pay the invoices. The lead accountant is currently working overtime to take care of the Excel workbook and is not getting paid extra to do so. An excess of time is taken processing contracts, processing invoices and processing reports. This leads to delays in:

- Receiving contracts and invoices
- Updating contracts and invoices

As-Is-Model

- Processing contract and invoice exceptions
- Processing invoice inquiries
- Processing payments
- Processing accruals
- Accounting and management reports

There is also more chance of human error and high redundancy within the data.

People

Many people are currently affected by the current system. This includes:

- Lead accountant currently works overtime using the current system for processing contracts, invoices, and reports
- Accounting manager needs management reports and is whom the lead accountant works for so delays in his job reflect poorly on him as well
- Contract group is impacted by the processing of contracts and invoices
- Payables group is impacted by the processing of invoices
- Programmers are impacted by the processing of contracts and invoices
- Bank management is impacted by the processing reports

Processes

1. Accounting receives a copy of Contract Appendix A from the contract group. This contract stipulates the services that are to be performed and the constraints for the programmer.
 - a. Accounting makes sure the vendor info from the contract is in the vendor tab of the Excel workbook. If not then the vendor info is entered. The accountant then enters the vendor info on the con/prog tab of the Excel workbook.
 - b. Accounting makes sure the contact info from the contract is in the contact tab of the Excel workbook. If not then the contact info is

As-Is-Model

- entered. The accountant then enters the contact info on the con/prog tab of the Excel workbook.
 - c. Accounting makes sure the charge info from the contract is in the charge tab of the Excel workbook. If not then the charge info is entered. The accountant then enters the charge info on the con/prog tab of the Excel workbook.
 - d. Accounting enters the contract info into the con/prog tab of the Excel workbook and assigns an id based on the programmer last name and end date.
 - e. Accounting files the contract.
2. Accounting gets a contract exception.
- a. Accounting determines what the exception is.
 - b. Accounting enters the exception info into memo log tab of the Excel workbook. This is to keep track of the exception.
 - c. Accounting creates an exception memo.
 - d. Accounting returns contract exception to the buyer.
3. Accountant gets an updated contract.
- a. Accountant verifies the updated contract.
 - b. Accountant updates the contract.
 - c. Accountant files the contract.
4. Accountant receives an invoice.
- a. Accounting verifies the contract that matches the invoice. This is to make sure that there is no exception within the terms of the contract for the invoice for time or hourly rate.
 - b. Accounting updates and checks the feemax tab of the Excel workbook. This is to make sure the invoice doesn't exceed the fee maximum.
 - c. Accounting assigns an invoice # to the invoice.

As-Is-Model

- d. Accounting enters all the invoice info into the invoice tab of the Excel workbook.
 - e. Accounting files the invoice to be paid.
5. Accounting gets an invoice exception
 - a. Accounting determines what the exception is.
 - b. Accounting enters the exception info into the memo log tab of the Excel workbook. This is to keep track of all invoice exceptions.
 - c. Accounting creates an exception memo.
 - d. Accounting returns invoice exception to the buyer.
6. Accountant gets an updated invoice.
 - a. Accountant verifies the updated invoice.
 - b. Accountant updates the invoice.
 - c. Accountant files the invoice.
7. Accountant gets notice it is time to pay invoice.
 - a. Accountant creates cover sheet.
 - b. Accountant sends invoice to payables group.
8. Accountant gets an invoice inquiry.
 - a. Accountant researches the inquiry.
 - b. Accountant handles the inquiry.
 - c. Accountant returns invoice inquiry to the buyer.
9. Accountant gets notice it is time to accrue invoices.
 - a. Accountant determines if accrual is needed
 - b. Accountant processes accrual in accrual tab of Excel workbook.
 - c. Accountant reverses accrual in accrual tab of Excel workbook.
10. Accountant gets notice it is time to do accounting reports.
 - a. Accountant enters the accounting reports into the Excel workbook.
 - b. Accountant audits the accounting reports.
 - c. Accountant submits the accounting reports to accounting management.

As-Is-Model

11. Accounting gets notice it is time to do management reports.
 - a. Accountant enters the management reports into the Excel workbook.
 - b. Accountant audits the management reports.
 - c. Accounting submits the management reports to the bank management.

Currently things are done as they are since the lead accountant knows how to use Excel and there is no automated system in place yet.

Data/Information

Inputs:

- Contracts (a contract to be entered into the system)
- Time Sheets (a time sheet stating what was worked and signatures)
- Invoices (an invoice to be entered into the system)
- Extensions/Updates (contract/invoice needs to be updated)
- Inquiries/Exceptions (contract/invoice have an inquiry or exception)
- Accruals (an accrual is needed)

Outputs:

- Contract Programmers Monthly Expense Recap Report (a report that shows the expenses paid to the programmers grouped by the vendor for each month)
- Contract Programmer Fee Maximum vs. Actuals Report (a report that shows the fee maximum vs. the actual amount paid out for the programmers grouped by the vendor for each month)
- Monthly Contract Recap Report (a report that shows what was paid to a programmer in a division for each month)
- Exception Memo (a memo sent to buyer stating the exception)
- Data Entry Sheet (a cover sheet sent to payables to make a payment)

More information can be found in the Requirements Catalog in Appendix F.

As-Is-Model

Technology

The computer software currently being used for the Contractual Payment System is Excel using Windows Vista. The computer hardware currently being used is local and not connected to other branches yet.

Strengths of the current system

The only strength for the current system is that the lead accountant is familiar with Excel with no official training. This means Excel is easy to use and that most people would be able to pick up on it fast.

Problems with the current system

There are multiple problems with the current system including:

- The lead accountant currently works overtime to handle the current system and is not paid for it.
- Higher chance of human error.
- Too much time spent on processing contracts.
- Too much time spent on processing invoices.
- Too much time spent on processing reports.
- There is a lot of redundant data.
- The contract id is not standardized.
- Monthly reports are copied and pasted below each other, which can lead to errors if someone forgets to update the data.
- Only one person can use the current Excel workbook at a time.
- Contracts and invoices cannot be found and matched quickly.

To-Be-Model

Proposed System Description

The purpose of this system is to develop an automated system that will allow accounting to efficiently receive contracts and invoices, handle contract and invoice exceptions, update contracts and invoices, handle paying invoices, handle invoice inquiries, accrue invoices, and handle accounting and bank management reports. The scope of this system involves vendors, contacts, charge units, contracts, exception memos, fee maximums, invoices, accruals, monthly expense reports, monthly fee vs. actual reports, and monthly contractor reports. Programming for internal functions, customer support, and everything to do with the buyer are out of scope. The actual payment of invoices done in the payables group is out of scope.

Objectives and Benefits of Proposed System

The objectives of the new system are:

- Reduce the amount of time the lead accountant spends using the Contractual Payment System.
- Control payments in accordance to contractual time, hourly rate, and fee maximum limitations throughout the company.
- Must be able to handle all the data within the Excel workbook.
- Reduction of manual errors

The benefits of the new system are:

- Bank management and accounting management will get reports more quickly.
- Payables will be able to pay invoices more quickly.
- Contract and invoice receiving will be handled more quickly.
- Contract and invoice exceptions will be handled more quickly.
- Contract and invoice updates will be handled more quickly.

To-Be-Model

- Invoice inquiries and accruals will be handled more quickly.
- Matching up contracts and invoices will be easier.
- Lead accountant will spend less time using the Contractual Payment System.
- Multiple users will be able to access the Contractual Payment System concurrently.
- Data will be more secure and appropriate people will be able to do whatever is necessary for their appropriate tasks.
- The data will be less redundant.
- The TCO would be favorable.

Functional Requirements

Introduction

Functional requirements are important due to the fact they show what will be needed but not how it will be implemented. This gives a faster more generalized approach to getting requirements as opposed to figuring out the details of how everything is to be done. The purpose of this section is to utilize the Use Case Scenarios to help lead us to Functional Requirements, which will be included within the Requirements Catalog.

Analysis Approach

1. A higher-level Use Case Diagram was used to visually show the interaction between the contract, accounting, account payable groups, as well as the programmer/vendor, and the accounting and bank management with the current system. The Use Case Scenarios show these interactions with a little more detail.
2. The Use Cases are used to show the point of view of each of the above stakeholders with a specific process step by step. By going through the process step by step the logical system requirements needed for each step were discovered.
3. The Proposed System Use Case Diagram and Scenarios can be found in Appendix D & E.
4. The Requirements Catalog is a catalog of all the Functional Requirements, which are found from the Use Case Scenarios.

Summary of Systems Analysis Phase

Summary of Systems Analysis Phase

CIStems Experts found that the current system wastes valuable time and consists of many errors that affect many people in many departments including management. The scope of for the new automated system would involve vendors, contacts, charge units, contracts, exception memos, fee maximums, invoices, accruals, monthly expense reports, monthly fee vs. actual reports, and monthly contractor reports. The objectives of the new system would be to reduce time wasted, to handle everything in the current Excel workbook, to reduce errors, and to control payments in accordance to contractual time, hourly rate, and fee max limitations. Benefits would include less time wasted, easier matching of invoices and contracts, concurrent accessibility of multiple users, more secure data, less redundant data, and a favorable TCO. A Use Case Diagram was created and multiple Use Case Scenarios were made to find the interaction of the users of the system and to find the processes that the different users go through. The inputs, outputs and controls of the new system were matched to that of the current to make sure all necessary requirements were met.

Alternatives Analysis

Software Alternatives

Buy software packages

1. Access

Features

- Allows linking to the web with the database.
- Allows importing of data from Excel spreadsheets.
- Data caching helps to make sure that changes made to applications and data while offline are automatically synchronized when a connection is restored.
- Data is kept secure and compliant with easy data backup and auditing.
- Backstage view allows you to check your database for web compatibility, define table relationships, set a password to open the database, and more.
- Macro Designer makes it simpler to quickly create macros from scratch.

System Requirements

- 256MB RAM, 2GB Hard Drive Space, 500MHz processor, Windows 8, Windows 7, Vista with SP1, XP (must have SP3) (32bit), Server 2008, Server 2003 R2 with MSXML 6.0 (32bit Access only), or later

Costs

- \$139.99 Single User

2. FileMaker

Features

- Allows importing of data from Excel worksheets from dragging and dropping.
- Automatically links related data.
- Creates reports in Excel and PDF.

Alternatives Analysis

- Fully customizable interface.
- Allows publishing databases securely to the web in a few clicks.
- Can view, edit, and search the databases on the iPad and the iPhone.
- Can be used on PC or Mac.

System Requirements

- 256MB – 2GB RAM, 700MHz or faster for PC, Intel-based Mac or faster for Mac, Windows XP Professional, Home Edition (Service Pack 3) – Windows 8 Standard and Pro editions for PC, Mac OS 10.6 – Mac OS 10.8 for Mac

Costs

- \$299.00 Two Users

3. Centerdatabase

Features

- Can use pre-defined items such as contacts and companies
- Item manager allows you to easily tailor your system.
- Allows importing data from almost any existing system.
- Easily find needed information with automatic linking.
- Can control access and modifications of your database to be secure.
- Has built in flexible report generator.
- Uses cloud technology.

System Requirements

- Windows 7, Vista, XP, 2003, 2008, and 2008 R2

Costs

- One time fee option with 5 users \$3995.00 and \$495.00
- Monthly fee option for \$39.00 a month

Buy customized package

1. Oracle

Features

Alternatives Analysis

- Can be bought in different service packages for customizing to the customer's needs.

System Requirements

- 256MB RAM,

Costs

- High

2. TrackVia

Features

- Allows creation of custom applications unique to industry, business or department.
- Multi layered pervasive security.
- 99.999% reliable
- Enterprise API can be used to synchronize with any 3rd party application.
- Have help on call
- Uses cloud technology

System Requirements

- Works with web browsers so multiple systems

Costs

- \$249 a month for 10 users and \$25 a month for each extra.
- \$1999 a month for 100 users and \$20 a month for each extra.

Build in-house package

CIStems Experts could create an automated system. We would program a customized package specifically made for Xanadu. Complete documentation would be made for the system. Accountants would need training on how to use a more advanced system.

Alternatives Analysis

Outsourcing

Ignite Spot Outsourced Accounting has an accurate monthly report pack. They will take care of the data entry and invoice customers for you. Ignite Spot Outsourced Accounting has month-to-month contracts. Also they can take care of Quick Book files.

Manual Alternative

A manual alternative would be for the accountants to train in advanced usage of Excel. Knowledge of advanced Excel usage would enable accountants to make use of Macros to help with the creation of reports, faster updating and receiving of contracts and invoices, faster research for handling of exceptions for contracts and invoices, faster research for invoice inquiries, faster creation of cover sheets for payments, and faster research and handling of accruals.

Recommendations

Recommendations

Pros/Cons for Alternatives

1. FileMaker

Pros

- Can be used on Macs and PCs
- Allows importing of Excel worksheets through dragging and dropping
- Automatically links tables
- Creates reports in Excel and PDF

Cons

- Need relatively new computer hardware

2. Centerbase

Pros

- Can use pre-defined items such as contracts and companies.
- Item manager allows you to easily tailor your system.
- Allow importing data from almost any existing system.
- Easily find needed information with automatic linking.
- Can control access and modifications of your database to be secure.
- Has built in flexible report generator
- Uses cloud technology

Cons

- Cloud technology poses higher security threats

3. Oracle

Pros

- Can be bought in different service packages to suit the customer's needs.

Cons

- Is extremely expensive

4. TrackVia

Recommendations

Pros

- Allows creation of custom applications unique to industry, business or department.
- Multi layered pervasive security.
- 99.999% reliable
- Enterprise API can be used to synchronize with any 3rd party application.
- Have help on call.
- Uses cloud technology.
- Scalable for larger companies.
- Can be used on multiple systems.
- Easier, more versatile, and powerful alternative to excel and access.
- More affordable than SaaS alternatives

Cons

- Cloud technology poses higher security threat.

5. Build in-house package

Pros

- Would be custom made to the exact needs of Xanadu

Cons

- Would be high cost
- Would take a great deal of time to create
- Accountants would need advanced training

6. Outsourcing

Pros

- Ignite Spot Outsourced Accounting has an accurate monthly report pack.
- They will take care of the data entry and invoice customers for you.
- Ignite Spot Outsourced Accounting has month to month contracts.

Cons

Recommendations

- They take care of Quick Book files not Excel
- Issues of security

7. Manual alternative

Pros

- Would be pretty much the system as it is now
- Would be lower cost

Cons

- Would involve making Macros which would take time
- Accountants would need to be trained

Recommendations

Final Recommendation

CIStems Experts recommends buying the Access software package. This package is easy to backup, audit, and creates macros if necessary in the future. It allows importing of data from Excel spreadsheets like the one currently being used and allows linking the database to the web to communicate with different branches for when the system is applied to all of Xanadu. Data caching helps make sure changes made offline are automatically synchronized when a connection is restored. Data is kept secure and allows you to check your database for web compatibility, define table relationships, set a password to open the database and more. The system requirements aren't too high and the neither is the price making Access a reasonable alternative to the current system.

Time Estimates

Time Estimates

Here is the estimated timeline for the remaining phases of the SDLC:

- Systems Design Phase – CISTems Experts estimates to be completed by April 15, 2013 with a completed System Design Specification.
- Systems Implementation Phase – CISTems Experts estimates to be completed by May 13, 2013 with a completed Systems Evaluation.
- Systems Support And Security Phase – CISTems Experts estimates to be completed by June 10, 2013.

The timeline estimation can be found in the Gantt chart within Appendix G.

Conclusion

Conclusion

CIStems Experts would like to conclude by recommending Access to implement the new automated system for Xanadu. An intensive research of the current system was done to come to this conclusion. Access fits the needs of Xanadu best and is part of the software package already used. This will eliminate the time wasted and the errors produced. Xanadu can then be an efficient and accurate leader in the banking industry and focus more on their customers and profitability. We request approval of our recommendation and permission to move forward to the Systems Design Phase, which would be completed by April 15, 2013. A fully functional new automated system is to be completed by June 10, 2013.

Appendix

Appendix

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Appendix A

Background Documentation

A. Preliminary Investigation Report

Assignment Cover Page

College Name: Edmonds Community College

Department: Computer Information Systems

Assignment Name: Research Project

Assignment Title: Preliminary Investigation Report

Date Prepared: October 15, 2012

Team Name: CISTems Experts

Team Members: Jon Raymond Melchizedek Day, Hieu-Minh Pham Ken Onzere, Frank Malimban, Andrew Reid

Cover Memo

To: Jay Patrick – Vice President & Manager

Subject: Management Review Meeting

Time: Friday October 26, 2012 at 2:50 pm

Place: Bank of Xanadu – Bellevue – Room 124

Attached: Preliminary Investigation Report

Report Cover Page

Company: Bank of Xanadu - Bellevue

Department: Accounting

Report Title: Preliminary Investigation Report

Date Prepared: October 15, 2012

Team Name: CISTems Experts

Team Members: Jon Raymond Melchizedek Day, Hieu-Minh Pham Ken Onzere, Frank Malimban, Andrew Reid

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Body of Report

Body of Report

Introduction

The new automated system to be developed will take place of the Excel workbook that currently keeps track of the contractual information, receiving and processing the incoming programming invoices, preparing accurate accruals, determining whether the invoice falls within the time limitations, and calculating whether there is funding left on contracts to pay the invoices. CISystems Experts have performed this Preliminary Investigation Report. The CISystems Experts team consists of Jon Raymond Melchizedek Day, Hieu-Minh Pham, Ken Onzere, Frank Malimban, and Andrew Reid. Jay Patrick – Vice President & Manager, initiated the investigation.

Systems Request Summary

Bank of Xanadu has redeployed all in house programming positions, resulting in the use of outside contractors to provide all necessary programming services. Bank of Xanadu now needs to find a suitable way to track the new programming expenses against what is stated in the official contracts in accordance to time and fee limitations. The accounting department currently wastes a great deal of time using an Excel workbook to keep track of everything needed. This Excel workbook keeps track of the contractual information, receiving and processing the incoming programming invoices, preparing accurate accruals, determining whether the invoice falls within the time limitations, and calculating whether there is funding left on contracts to pay the invoices.

Background

Bank of Xanadu is a large global enterprise, with over 100,000 employees worldwide, which offers a variety of products and services to over 10 million

Body of Report

people worldwide. The company was originally founded in Bellevue WA in 1978 by three successful and experienced entrepreneurs. The company has a policy of putting the customer first no matter what and has a slogan of “No Boundaries”. By early 2000, the corporate headquarters was moved to George Town Cayman Islands to enjoy all the tax benefits of offshore operations. Smaller local branches report directly to its designated banking center, which in turn reports directly to the corporate office. Every banking center has its own administrative, accounting, and human resources functions. The banking centers hire a multitude of job descriptions, including contract, accounting, loan, retail branch personnel, programmers, analysts, network support staff, and help-desk personnel. All banking centers process its own expenses except for some of the larger enterprise technology expenses, which are handled by the corporate office.

Recently, with the economic downturn and uncertain economic future, Bank of Xanadu has decided to outsource all programming to work under very specific contractual terms. The bank currently has no automated system to handle these contractual payments. Bank of Xanadu – Bellevue has been chosen to develop and accurate and dependable way to manage this problem.

Preliminary Investigation Findings

Problem Description

The accounting department currently wastes a great deal of time using an Excel workbook to keep track of everything needed. This Excel workbook keeps track of the contractual information, receiving and processing the incoming programming invoices, preparing accurate accruals, determining whether the invoice falls within the time limitations, and calculating whether there is funding left on contracts to pay the invoices. Dave Spencer

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currently is working overtime to take care of the Excel workbook and is not getting paid extra to do so. There is also more chance of human error.

Project Stakeholders

Dave Spencer is currently working overtime using the current system. Bank of Xanadu – Bellevue is where Dave Spencer works. Jay Patrick – Vice President & Manager is whom Dave Spencer works for so delays in his job reflect poorly on him as well. The accounting, contract, and payables groups are all impacted by the length of time it takes Jay Patrick – Vice President & Manager to get response due to the current system. There would also be a delay for the programmers who are being contracted to get a response.

Project Scope

All information relating to the processing of payments to outsource in accordance to contractual time and fee limitations is in scope. Programming for internal functions, customer support, and everything to do with the buyer are out of scope.

Current Procedures

The contract group issues a payment for the contractor's services. Accounting then receives a copy of Contract Appendix A from Rob Watt. The contract says the services that are to be performed and the constraints for the outsourced programmer. Once it is initiated the programmer starts work. Usually, 1-2 times a month the programmer sends an invoice in. The accounting department then finds the contract from the contract group and the invoice and determines whether or not the invoice can be paid. If it can be paid then it is processed and approved for payment. The approved invoice is then sent to the payables group to make the payment. The programmer then gets the payment from the payables group. If the invoice

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cannot be paid then a memo is filled out with the reason it cannot be paid and is returned to the buyer. The buyer fixes the problem and sends the invoice and paperwork back to accounting. If it still is not settled then the buyer notifies the programmer.

Current System Weaknesses & Strengths

Some weaknesses for the current system are that it takes a great deal of time, allows more chances for human error, and not everything is standardized. A strength of the current system is that Dave Spencer is familiar with Excel with no official training.

New System Requested Features

Dave Spencer would like the new system to drastically increase the amount of free time he has to do his other work. Multiple people should be able to use the system concurrently. Must handle all the data in the current Excel workbook.

Project Constraints

The new system will eventually be put into place at all Bank of Xanadu locations. Multiple people should be able to use the system concurrently. June is the deadline for the new system. Money is not an issue.

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Project Feasibility

- Operational Feasibility - Current system takes too much time so Dave Spencer would be in support of the new system. It doesn't matter what the new architecture will be.
- Technical Feasibility – Bank of Xanadu should have all the hardware, software, and network recourses needed. If more is needed then they have the money to cover it.
- Economic Feasibility – The TCO would be favorable.

Cumulative Costs and Benefits

Year	Costs	Cumulative Costs	Benefits	Cumulative Benefits
0	\$2,000,000.00	\$2,000,000.00	\$1,500,000.00	\$1,500,000.00
1	\$400,000.00	\$2,400,000.00	\$1,425,000.00	\$2,925,000.00
2	\$420,000.00	\$2,820,000.00	\$1,353,750.00	\$4,278,750.00
3	\$441,000.00	\$3,261,000.00	\$1,286,062.50	\$5,564,812.50
4	\$463,050.00	\$3,724,050.00	\$1,221,759.38	\$6,786,571.88
5	\$486,202.50	\$4,210,252.50	\$1,160,671.41	\$7,947,243.28
6	\$510,512.63	\$4,720,765.13	\$1,102,637.84	\$9,049,881.12
7	\$536,038.26	\$5,256,803.38	\$1,047,505.94	\$10,097,387.06

Return on Investment: 92.08%

Net Present Value

	Benefits	Factor	PV of Benefits	Costs	Factor	PV of Costs
Year 0	\$1,500,000.00	1	\$1,500,000.00	\$2,000,000.00	1	\$2,000,000.00
Year 1	\$1,425,000.00	0.926	\$1,319,550.00	\$400,000.00	0.926	\$370,400.00
Year 2	\$1,353,750.00	0.857	\$1,160,163.75	\$420,000.00	0.857	\$359,940.00
Year 3	\$1,286,062.50	0.794	\$1,021,133.63	\$441,000.00	0.794	\$350,154.00
Year 4	\$1,221,759.38	0.735	\$897,993.14	\$463,050.00	0.735	\$340,341.75
Year 5	\$1,160,671.41	0.681	\$790,417.23	\$486,202.50	0.681	\$331,103.90
Year 6	\$1,102,637.84	0.630	\$694,661.84	\$510,512.63	0.630	\$321,622.95
Year 7	\$1,047,505.94	0.583	\$610,695.97	\$536,038.26	0.583	\$312,510.30
Total			\$7,994,615.55			\$4,386,072.91
Net Present Value						\$3,608,542.64

Expected Benefits

The new system should cut Dave Spencer’s time spent taking care of all tasks related to the current Excel workbook system. It should make it easier to find and match all relevant information. This will also have an ROI of 92.08% and an NPV of \$3,608,542.64.

Time and Cost Estimates

A rough draft of the Systems Requirements Document will be ready Friday, November 16, 2012. A finalized Systems Requirements Document will be ready Friday, December 7, 2012. This is expected to cost \$500,000.00

Recommendation for Action

My recommendation is to create a new automated database system to solve your problem. It will save a great deal of Dave Spencer's time as well as the time of whoever would need a response from him. Multiple users would be able to concurrently enter data at the same time with fewer manual errors. There shouldn't be a need for any additional hardware, software or network resources and if there is it would be a minor cost. The new system also has an ROI of 92.08% and an NPV of \$3,608,542.64. That would be a very strong TCO for Bank of Xanadu - Bellevue. I believe all this together would be a great opportunity to maximize the productivity of Bank of Xanadu.

Appendix

Notes, correspondence, source documents –

Notes –

- Is there anything good or bad about the current system we should know about?
 - Dave is familiar with excel never had official training
- What hardware, software, and network resources will be needed?
 - Thinks so make sure they have what is needed
- Could you identify business core competency?
 - Consumer banking – credit, americard
 - Commercial banking
 - Doesn't include programming for internal functions, customer support
- What are the current financial loses and gains?
 - Save million annually by cutting programmers
 - What are the processes overview for the project?
 - Contract issues payment for services
 - Receive copy of contract appendix a from rob watt
 - The contract says services to be performed and constraints for the programmer
 - Once it is initiated programmer starts work
 - Usually 1-2 times a month programmer sends invoice in
 - find contract from contract group and the invoice and determine if the invoice can be paid
 - if it can be paid then it will be processed and approved for payment
 - sent to payables to pay

Appendix

- sent from payable group to programmer to pay

Workbook what is needed?

Only for accounting group – dave spencer

Pages are not linked

contract

- start date no hours
- end date
- vendor name payable has - remit address, 1 contact name, contact number, (not needed for accounting is) unique fed tax number
 - can have more than 1 programmer
 - invoice sent in by vendor
- programmer name – first, last
 - can have 1 vendor
 - name on contract can't change
 - a programmer can be a vendor
- hourly rate – what programmer is paid 25 an hour
 - invoice and contract hourly rate must match
- fee maximum accountant can't change only buyer can – how do you determine if it is reached – added up manually using workbook
- project manager
 - cannot be vendor
- project manager contact info - contact bank unit, email phone number
- bank charge unit (department account number)
- project description
 - 1 sentence works

Appendix

- list of vendor numbers from accounts payable dept
- keep track of bank unit – dept/division
- contract and invoice and reports in excel
- only used by Dave Spencer a backup employee can take care of it
- invoices
- monthly reports for bank manager

What if the invoice can't be paid

Fill out the memo

Put the reason why it can't be paid

Return it to the buyer

Contract dept/acquisition dept

Fixes the problem sends the invoice and paperwork back to accounting

The buyer notifies the programmer

Scope

-Information relating to the Processing of payments to outsource in accordance to contractual time and fee limitations

-Buyer is out of scope

General ledger accounting and accounts payable

-accounts payable 2 times a week do paychecks

-pay quickly as possible according to terms

What does redeployed means

No longer working for the bank

Some of the programmers are contracted instead of perm now

Test system to work at Bellevue and if it works do it for others too

Don't care about the architecture

What obstacles are anticipated or being encountered in processing the payments

Appendix

-time is greatest

Finding everything

Making sure everything matches up

Process if okay into workbook

Create coversheet and send to payables

Small part of job and no overtime paid to do extra

System can do everything dave would do by hand

What is the timeline for the project

Analysis by December 7th

Cover sheet and monthly report

Constraint

Need to eventually go to other banks

Usable by multiple people at the same time

Done by june

Money is not a constraint

Programmers can work on multiple contracts at a time

One vendor and one programmer per contract

Vendor can have multiple programmers on project

Hardcopies maybe online someday

Invoice

Vendor info

Programmer info

Service start date contract date can be longer

Service end date

Hourly rate

Invoice total amount

Hours worked

Time sheet

Appendix

Project manager name and unit

Project manager signature

Required to make sure info is correct

Can't be missing or not matching up info

Contract invoice memo

Or max increased or date increased there is a contract extension

Contractor synonymous with vendor on contract2pdf

Project/service number means nothing

Charge unit

Project manager

Fee schedule is fee maximum

Name individual is programmer

Hourly rate

Start date

End date

3 sign the contract

Don't worry where the invoices go

Contract number for accounting only to identify contract ritz0408 last name end date

Extensionpdf

1 contractor/programmer per contract

Exceptionmemopdf – what goes back to the buyer

Invoice

Vendor info

Invoice num

Appendix

Invoice date

Contract info only charge num matters

Invoice date, start and end dates

terms

Hours

Total

Approval

Timesheet matching with invoice hours, signature

Dataentrysheet

Goes to payables people original is at payable and copy to accounting

Vendor name

Vendor number

Invoice number

Description

Invoice date

Due date pay cut date

Invoice total

g/l account general ledger account number where the expense goes

for contractors only account that will be used for this

p.o. number purchase order is just programmer name

charge unit and account are different

6 day lag time from due date

Purpose of invoice worksheet is to balance the invoice sheet for

accounting dept dec exp and jan exp

3 reports for accounting

Correspondence –

Appendix

Date: Saturday, October 13, 2012
To: Jay Patrick – Vice President & Manager
From: Jon Raymond Melchizedek Day
Subject: First Project Meeting for Bank of Xanadu

Thank you for giving me the opportunity to attend the meeting at Bank of Xanadu – Bellevue Friday, October 13, 2012 at 3 pm.

The background of Bank of Xanadu is pretty impressive. “No Boundaries” fits your company well. Growing from 3 branches in 1978 to over 2000 branches now is proof of that. The structure of Bank of Xanadu is solid with the local centers reporting to the designated banking centers, which report to the corporate office. My understanding is that the accounting groups of Bank of Xanadu currently need an automated system to handle contractual terms for the outsourced programming.

My approach is to use the standard Systems Development Life Cycle.

- Systems Planning – I will go over your systems request and perform a preliminary investigation to evaluate the problem. This will lead to a feasibility study to get a clear understanding of the costs and benefits.
- Systems Analysis – I will build a logical model for the system. This will involve requirements modeling research from the current system and for the new system. I will then create a systems requirements document, which would list the requirements, costs, benefits, and alternative strategies.
- Systems Design – I will create a physical model that will lead to the system design specification for your approval.
- Systems Implementation – I will create the system and have a systems evaluation to determine if the system works correctly and costs and benefits are as expected.
- Systems Support & Security – I will ensure the system is maintained, enhanced and protected to maximize your ROI.

You can expect a presentation for your new automated system at Bank of Xanadu – Bellevue Friday, December 7, 2012 at 3 pm.

I would now like to request a follow up meeting for Bank of Xanadu – Bellevue Friday, October 19, 2012 at 3 pm. I have questions regarding current system processes, what will be needed, costs, benefits, and company image. Thanks for your time.

Appendix

Source Documents –

Background_and_Problem_Bank_2008.pdf

Bank_Org_Chart_2008.pdf

Company_Memo_25Jan2008.pdf

contract_2.pdf

DATA ENTRY SHEET.pdf

Exception_Memo.pdf

extension.pdf

Invoice.PDF

Project Request_Bank_2008.pdf

Xanadu_Bank.xls

Assumptions

None at this time

Issues

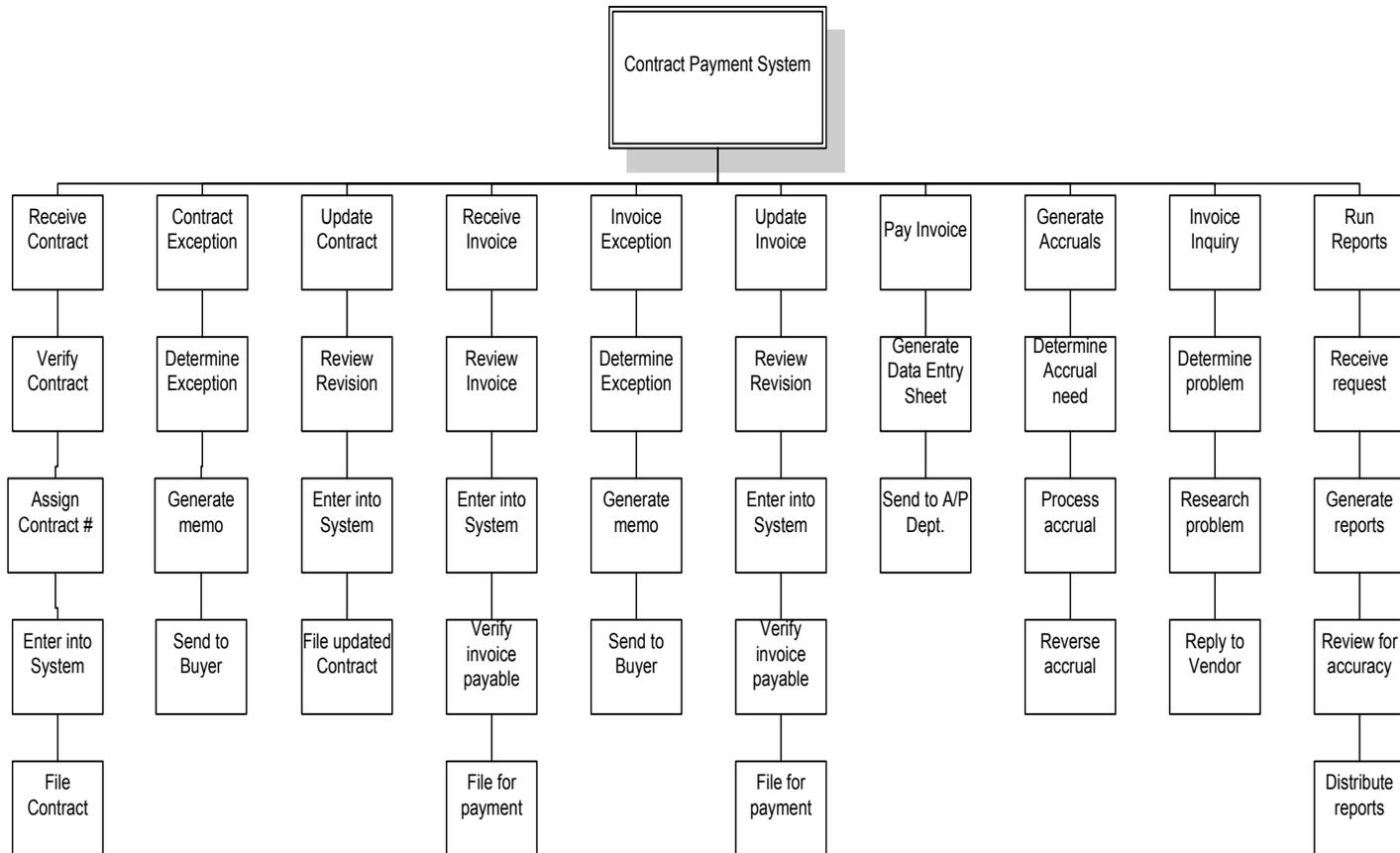
Who would benefit from use of the new system and what parts should they be allowed to manipulate and/or see?

How do accruals work?

Appendix B

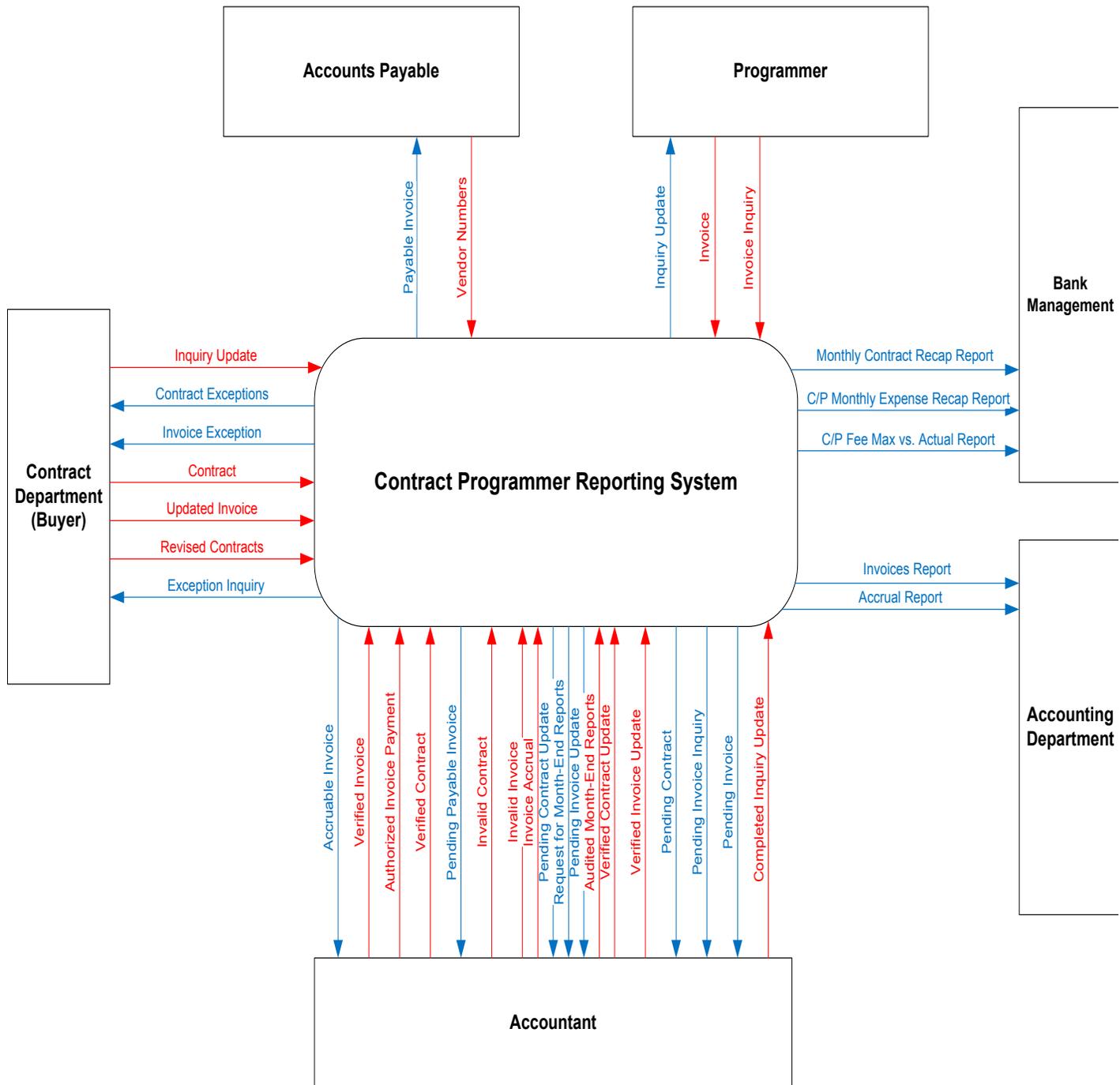
Developer Documentation

B. FDD

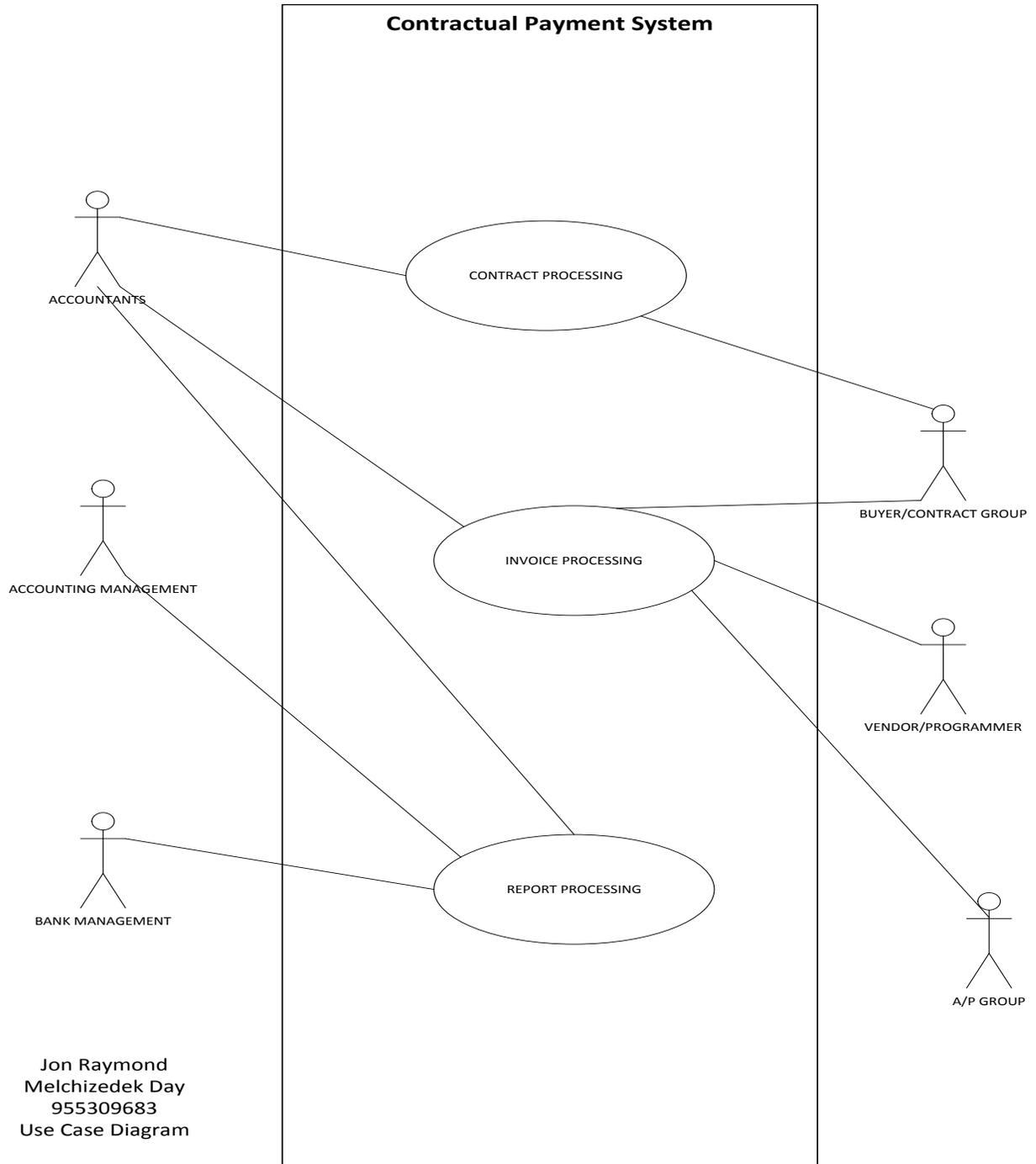


Appendix C

C. DFD



D. Use Case Diagram



Appendix E

E. Use Case Scenarios

USE CASE NAME:	RECEIVE CONTRACT	ID: UC001
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Receive Contract, from the time the Buyer delivers a new contract to the Accountant until a validated contract has been entered into the Contractual Payment system.	
Trigger:	The Buyer Delivers a new contract to the accountant.	
Related Use Cases:	Contract Exception (extends); Update Contract (uses)	
Normal Flow of Events:	<p>This use case begins when the Buyer delivers a new contract to the Accountant.</p> <ol style="list-style-type: none"> 1. The accountant logs onto the Contractual Payment System. 2. The accountant navigates to the contract entry screen. 3. The accountant verifies that all the information required is on the contract. This includes fee maximum, start and end date, contractor name, project manager, charge unit, project description, and hourly rate. 4. The accountant then enters all contract information into the system. 5. The system assigns the contract id. 6. The accountant saves the new contract record into the system with a "valid" status. 7. The accountant then files original contract for future reference. 	
Exceptions:	#4: If any information is missing, after entry the contract is returned to the Buyer (see Contract Exception use case) with an "invalid" status.	
Pre-condition(s):	A new contract exists and is ready to be entered into the system.	
Post-condition(s):	A contract has been processed and entered into the system.	
Information Requirements:	Fee maximum Start date End date Contractor name	

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	<p>Project manager (contact name) Charge unit Project description Hourly rate Contract id Bank division Contract status Contract entry date Employee id</p>
Assumptions:	<ol style="list-style-type: none"> 1. Accountant may not be the only employee who will be entering future contracts. 2. The system, instead of the accountant, will determine and assign the contract id 3. Even though the bank division doesn't appear on the contract itself, it is tied to the charge unit and must be accounted for in the new system. 4. Contract status field is necessary to classify the contract at the various stages of its life cycle.
Business Rules:	<ol style="list-style-type: none"> 1. The contract must be entered into the system regardless of its status. 2. A contract is only valid when all the required information is present on the contract. 3. All original contract copies must be filed for future reference.

USE CASE NAME:	Contract Exception	ID: UC002
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Contract Exception, from the time the accountant gets a Contract Exception until the Contract Exception is sent to the buyer.	
Trigger:	The accountant gets a Contract Exception.	
Related Use Cases:	Receive Contract (extended by)	
Normal Flow of Events:	<p>This use case begins when the accountant gets a Contract Exception.</p> <ol style="list-style-type: none"> 1. The accountant determines the contract exception. 2. The accountant logs onto the Contractual Payment System. 	

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	<ol style="list-style-type: none"> 3. The accountant logs onto the contract exception screen. 4. The accountant selects the matching contract. 5. The accountant records the date it was created, the reason, the date response was received, and remarks. 6. The accountant saves the contract as invalid. 7. The accountant generates the Exception Memo. 8. The accountant sends the exception to the buyer.
Exceptions:	<ol style="list-style-type: none"> 1. If any information is fixed when the buyer responds then the accountant updates the contract (see Update Contract).
Pre-condition(s):	The accountant gets a Contract Exception.
Post-condition(s):	The Contract Exception is entered into the system and sent to the buyer.
Information Requirements:	<p>Contract ID Programmer Name Vendor Name Start Date End Date Charge Unit Bank Division Hourly Rate Fee Max Contact Name Project Description Memo Date Reason Response Date Remarks Contract Entry Date Contract Status Employee ID</p>
Assumptions:	<ol style="list-style-type: none"> 1. Contract status is needed to classify contracts at various stages. 2. A matching contract is in the system.
Business Rules:	<ol style="list-style-type: none"> 1. Contract Exceptions must be entered into the system.

USE CASE NAME:	Update Contract	ID: UC003
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Update Contract, from the time the accountant gets an updated contract from the buyer until the updated contract is entered into the system.	
Trigger:	The accountant gets an Update Contract	
Related Use Cases:	Receive Contract (used by)	
Normal Flow of Events:	<p>This use case begins when the accountant gets an Update Contract.</p> <ol style="list-style-type: none"> 1. The accountant reviews the updated contract. 2. The accountant logs onto the Contractual Payment System. 3. The accountant logs onto the update contract entry screen. 4. The accountant selects the matching contract. 5. The accountant records the updated information. 6. The accountant saves the contract as valid. 7. The accountant files the updated contract. 	
Exceptions:	<ol style="list-style-type: none"> 1. If any information is missing then the contract is returned to the buyer (see Contract Exception). 	
Pre-condition(s):	The accountant gets an Update Contract.	
Post-condition(s):	The Update Contract is entered into the system and filed.	
Information Requirements:	Contract ID Programmer Name Vendor Name Start Date End Date Charge Unit Bank Division Hourly Rate Fee Max Contact Name Project Description Contract Status Contract Entry Date Employee ID	

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Assumptions:	1. Contract status is needed to classify contract at various stages.
Business Rules:	1. Update Contract must be entered into the system.

USE CASE NAME:	RECEIVE INVOICE	ID: UC004
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Receive Invoice, from the time the Buyer delivers a new invoice to the Accountant until a validated invoice has been entered into the Contractual Payment System.	
Trigger:	The Buyer Delivers a new Invoice to the accountant.	
Related Use Cases:	Invoice Exception (extends); Update Invoice (uses); Pay Invoice (uses); Generate Accruals (uses)	
Normal Flow of Events:	<p>This use case begins when the Buyer delivers a new invoice to the Accountant.</p> <ol style="list-style-type: none"> 1. The accountant reviews the invoice. 2. The accountant logs onto the Contractual Payment System. 3. The accountant navigates to the invoice entry screen. 4. The accountant verifies that all the information required is on the invoice. This includes start and end date, programmer name, vendor name, charge unit, total hours, and hourly rate. 5. The accountant checks and updates the fee max screen. 6. The accountant then enters all invoice information into the system. 7. The system assigns the invoice #. 8. The accountant saves the new invoice record into the system with a "valid" status. 9. The accountant then files original invoice for future reference. 	
Exceptions:	#4: If any information is missing after entry or the invoice doesn't match the contract time, rate, or fee max limitations, the invoice is returned to the Buyer (see Invoice Exception use case) with an "invalid" status.	

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Pre-condition(s):	A new invoice exists and is ready to be entered into the system.
Post-condition(s):	An invoice has been processed and entered into the system.
Information Requirements:	<p>Fee maximum Contract id Programmer name Vendor name Charge unit Invoice # Invoice paid date Start date End date Hourly rate Total hours Accrued Memo Bank division Invoice status Employee id</p>
Assumptions:	<ol style="list-style-type: none"> 1. Accountant may not be the only employee who will be entering future contracts. 2. The system, instead of the accountant, will determine and assign the contract id 3. Even though the bank division doesn't appear on the invoice itself, it is tied to the charge unit and must be accounted for in the new system. 4. Invoice status field is necessary to classify the contract at the various stages of its life cycle.
Business Rules:	<ol style="list-style-type: none"> 1. The invoice must be entered into the system regardless of its status. 2. An invoice is only valid when all the required information is present on the invoice and matches with the contract time, rate, and fee max limitations. 3. All original invoice copies must be filed for future reference.

USE CASE NAME:	Invoice Exception	ID: UC005
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Invoice Exception, from the time the accountant gets an invoice exception from the buyer until the invoice exception is sent back to the buyer.	
Trigger:	The accountant gets an Invoice Exception.	
Related Use Cases:	Receive Invoice (extended by)	
Normal Flow of Events:	<p>This use case begins when the accountant gets an Update Contract.</p> <ol style="list-style-type: none"> 1. The accountant determines the invoice exception. 2. The accountant logs onto the Contractual Payment System. 3. The accountant logs onto the invoice exception screen. 4. The accountant selects the matching invoice. 5. The accountant records the date it was created, the reason, the date the response was received and the remarks. 6. The accountant saves the invoice as invalid. 7. The accountant generates the Exception Memo. 8. The accountant sends the exception to the buyer. 	
Exceptions:	<ol style="list-style-type: none"> 1. If any information is fixed when the buyer responds then the accountant updates the invoice (see Update Invoice). 	
Pre-condition(s):	The accountant gets an Invoice Exception.	
Post-condition(s):	The Invoice Exception is entered into the system and sent to the buyer.	
Information Requirements:	<p>Invoice ID Invoice Paid Date Contract ID Programmer Name Vendor Name Start Date End Date Charge Unit Bank Division Hourly Rate Total Hours</p>	

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	Accrued Memo Fee Max Memo Date Reason Response Date Remarks Invoice Entry Date Invoice Status Employee ID
Assumptions:	<ol style="list-style-type: none"> 1. Invoice status is needed to classify invoices at various stages. 2. A matching contract is in the system.
Business Rules:	<ol style="list-style-type: none"> 1. Invoice Exceptions must be entered into the system.

USE CASE NAME:	Update Invoice	ID: UC006
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Update Invoice, from the time the accountant gets an updated invoice from the buyer until the updated invoice is sent back to the buyer.	
Trigger:	The accountant gets an Update Invoice.	
Related Use Cases:	Receive Invoice (used by); Invoice Inquiry (uses)	
Normal Flow of Events:	<p>This use case begins when the accountant gets an Update Invoice.</p> <ol style="list-style-type: none"> 1. The accountant reviews the updated invoice. 2. The accountant logs onto the Contractual Payment System. 3. The accountant logs onto the update invoice screen. 4. The accountant selects the matching invoice. 5. The accountant records the updated information. 6. The accountant saves the invoice as valid. 7. The accountant files the updated invoice. 	

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Exceptions:	1. If any information is missing then the invoice is returned to the buyer (see Invoice Exception).
Pre-condition(s):	The accountant gets an Update Invoice.
Post-condition(s):	The Update Invoice is entered into the system and filed.
Information Requirements:	Invoice ID Invoice Paid Date Contract ID Programmer Name Vendor Name Start Date End Date Charge Unit Bank Division Hourly Rate Total Hours Accrued Memo Fee Max Invoice Entry Date Invoice Status Employee ID
Assumptions:	1. Invoice status is needed to classify invoices at various stages.
Business Rules:	1. Update Invoice must be entered into the system.

USE CASE NAME:	Pay Invoice	ID: UC007
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Pay Invoice, from the time the accountant has an invoice ready to be paid until it is sent to accounts payable.	
Trigger:	The accountant gets a Pay Invoice.	
Related Use Cases:	Create Invoice (used by)	
Normal Flow of Events:	This use case begins when the accountant gets a Pay Invoice. 1. The accountant logs onto the Contractual Payment	

Appendix E

	<p>System.</p> <ol style="list-style-type: none"> 2. The accountant logs onto the pay invoice screen. 3. The accountant selects the matching invoice. 4. The accountant verifies the invoice is valid. 5. The accountant update that the invoice was paid. 6. The accountant generates a data entry sheet. 7. The accountant sends pay invoice to accounts payable.
Exceptions:	<ol style="list-style-type: none"> 1. If the invoice is invalid then the invoice is returned to the buyer (see Invoice Exception).
Pre-condition(s):	The accountant gets a Pay Invoice.
Post-condition(s):	The data entry sheet is created and is sent to accounts payable.
Information Requirements:	<p>Invoice ID Invoice Paid Date Contract ID Programmer Name Vendor Name Start Date End Date Charge Unit Bank Division Hourly Rate Total Hours Accrued Memo Fee Max Invoice Status Invoice Entry Date Employee ID</p>
Assumptions:	<ol style="list-style-type: none"> 1. Invoice status is needed to classify invoices at various stages.
Business Rules:	<ol style="list-style-type: none"> 1. Pay Invoice must be entered into the system.

USE CASE NAME:	Generate Accruals	ID: UC008
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Generate Accruals, from the time the accountant gets a generate accrual request till the accrual is generated.	
Trigger:	The accountant gets a Generate Accruals request.	
Related Use Cases:	Receive Invoice (used by)	
Normal Flow of Events:	<p>This use case begins when the accountant gets a Generate Accruals request.</p> <ol style="list-style-type: none"> 1. The accountant logs onto the Contractual Payment System. 2. The accountant logs onto the generate accrual screen. 3. The accountant determines if an accrual is needed 4. The accountant processes the accrual. 5. The accountant reverses the accrual. 	
Exceptions:	1. If an accrual is not needed then nothing happens.	
Pre-condition(s):	The accountant gets a Generate Accruals request.	
Post-condition(s):	An accrual is generated.	
Information Requirements:	Contract ID Programmer Name Vendor Name Charge Unit Division Invoice # Date Paid Begin Date End Date Pay Rate Total Hours Accrued Memo Reversed Employee ID	

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Assumptions:	1. Accrual status is kept track at various stages.
Business Rules:	1. Generate Accruals must be entered into the system.

USE CASE NAME:	Invoice Inquiry	ID: UC009
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Invoice Inquiry, from the time the accountant gets an Invoice Inquiry until a response is sent to the vendor.	
Trigger:	The accountant gets an Invoice Inquiry.	
Related Use Cases:	Update Invoice (used by)	
Normal Flow of Events:	<p>This use case begins when the accountant gets an Invoice Inquiry.</p> <ol style="list-style-type: none"> 1. The accountant determines the problem. 2. The accountant logs onto the Contractual Payment System. 3. The accountant researches the problem. 4. The accountant replies to the vendor. 	
Exceptions:	1. If an invoice has a problem then the accountant updates the invoice. (see Update Invoice)	
Pre-condition(s):	The accountant gets an Invoice Inquiry.	
Post-condition(s):	A response is sent to the vendor.	
Information Requirements:	Contract ID Invoice # Employee ID	
Assumptions:	1. Invoices don't always have problems when there is an inquiry.	
Business Rules:	1. Invoice Inquiry must be researched.	

USE CASE NAME:	Run Reports	ID: UC010
Primary Actor:	Accountant	
Brief Description:	This use case describes the steps for Run Reports, from the time the accountant gets run report request until the reports are distributed.	
Trigger:	The accountant gets a Run Reports request.	
Related Use Cases:		
Normal Flow of Events:	<p>This use case begins when the accountant gets a Run Reports request.</p> <ol style="list-style-type: none"> 1. The accountant receives a request to run reports. 2. The accountant logs onto the Contractual Payment System. 3. The accountant generates the reports. 4. The accountant reviews the reports. 5. The accountant distributes the reports. 	
Exceptions:	<ol style="list-style-type: none"> 1. If a report has a problem then the problem is fixed and the report is run again. 	
Pre-condition(s):	The accountant gets a Run Reports request.	
Post-condition(s):	The reports are distributed.	
Information Requirements:	Report Month Report Type Employee ID	
Assumptions:	<ol style="list-style-type: none"> 1. None at this time. 	
Business Rules:	<ol style="list-style-type: none"> 1. Reports are run monthly for accounting management and bank management. 	

Appendix F

F. Requirements Catalog

Functional Requirements

UC001 The system must be able to receive contracts.

- UC001.1 The system must be able to input contract data.
- UC001.2 The system must be able to store contract data.
- UC001.3 The system must be able to create contract id.
- UC001.4 The system must be able to update contract status.

UC002 The system must be able to handle contract exceptions.

- UC002.1 The system must be able to input contract exceptions.
- UC002.2 The system must be able to store contract exceptions.
- UC002.3 The system must be able to match the exception to a current contract.
- UC002.4 The system must be able to update contract status.
- UC002.5 The system must be able to generate an exception memo.

UC003 The system must be able to update contracts.

- UC003.1 The system must be able to match existing contracts.
- UC003.2 The system must be able to update existing contracts.
- UC003.3 The system must be able to update contract status.

UC004 The system must be able to receive invoices.

- UC004.1 The system must be able to input invoice data.
- UC004.2 The system must be able to store invoice data.
- UC004.3 The system must be able to create invoice id.
- UC004.4 The system must be able to find existing contracts.
- UC004.5 The system must be able to verify limitations of hourly rate, start and date and fee maximums are not exceeded.
- UC004.6 The system must be able to update invoice status.

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UC005 The system must be able to handle invoice exceptions.

- UC005.1 The system must be able to input invoice exceptions.
- UC005.2 The system must be able to store invoice exceptions.
- UC005.3 The system must be able to match the exception to a current invoice.
- UC005.4 The system must be able to update invoice status.
- UC005.5 The system must be able to generate an exception memo.

UC006 The system must be able to update invoices.

- UC006.1 The system must be able to match existing invoices.
- UC006.2 The system must be able to update existing invoices.
- UC006.3 The system must be able to update invoice status.

UC007 The system must be able to handle invoice payments.

- UC007.1 The system must be able to match an existing invoice.
- UC007.2 The system must be able to verify the invoice is valid.
- UC007.3 The system must be able to generate data entry sheets.
- UC007.4 The system must be able to update the invoice was paid.

UC008 The system must be able to generate accruals.

- UC008.1 The system must be able to determine if accrual is needed.
- UC008.2 The system must be able to process accruals.
- UC008.3 The system must be able to reverse accruals.

UC009 The system must be able to handle invoice inquiries.

- UC009.1 The system must be able to research an invoice.

UC010 The system must be able to run reports.

- UC0010.1 The system must be able to generate reports.

Appendix F

Data Requirements

- Vendor Company Name
- Vendor Number
- Contact Project Manager
- Contact Unit
- Contact Phone
- Contact Division
- Charge Unit
- Contract ID
- Contract Programmer
- Contract Entry Date
- Contract Begin Date
- Contract End Date
- Contract Hourly Rate
- Contract Fee Max
- Contract Project Description
- Contract Status
- Memo Date
- Memo Invoice \$
- Memo Reason
- Memo Response
- Memo Remarks
- Invoice #
- Invoice Entry Date
- Invoice Date Paid
- Invoice Begin Date
- Invoice End Date
- Invoice Hourly Rate
- Invoice Total hours

Appendix F

- Invoice Fee Max
- Invoice Memo
- Invoice Status
- Accruals Accrued
- Accruals Reversed
- Report Month
- Report Type
- Employee ID

Other Charts

G. Gantt Chart

