# CIS 233: Grading Criteria – System Requirements Document

**Team Name/Members:** Brett Anderson, CJ Reece, Bill Seling

The following are the sections required for the System Requirements Document. Please attach a copy of this grading sheet to front of your deliverables.

| Points Earned | Points Possible | Criteria | Grading Notes |
|---|---|---|---|
| 5 | 5 | **Organization**<br>Document is organized as specified in the assignment. It is well structured and has appropriate spacing. | |
| 5 | 5 | **Spelling, Grammar, Etc.**<br>Document is free of spelling and grammatical errors. | |
| 10 | 10 | **Cover Pages, Table of Contents, and Introduction**<br>Follows the guidelines specified in CIS Writing Criteria. | |
| 10 | 10 | **Section 1 Management Summary**<br>Covers content specified in assignment. | |
| 20 | 20 | **Section 2 Current Situation Analysis (AS-IS)**<br>Covers all content specified in assignment. | |
| 19 | 20 | **Section 3: Overview of the proposed system (TO-BE)**<br>Covers all content specified in assignment. | Scope issue – data elements. |
| 20 | 20 | **Section 4: Functional Requirements**<br>Covers all content specified in assignment. | |
| 5 | 5 | **Section 5: Summary of Systems Analysis Phase**<br>Covers all content specified in assignment. | |
| 15 | 15 | **Section 6: Alternatives**<br>Covers all content specified in assignment. | |
| 13 | 15 | **Section 7: Recommendations**<br>Covers all content specified in assignment. | Recommendation is unclear. |
| 10 | 10 | **Section 8: Time estimates**<br>Covers all content specified in assignment. | |
| 5 | 5 | **Section 9: Conclusion**<br>Covers all content specified in assignment. | |
| 10 | 10 | **Section 10: Appendices**<br>Covers all content specified in assignment. All appendices referenced. | |
| 147 | **150** | **TOTAL**<br>**Great job team!** | |

# Edmonds Community College


## CIS 233 – Fall 2013

## System Requirements Document

**December 6, 2013**

**The Fighting Mongooses**
Brett Anderson
CJ Reece
Bill Seling

# MEMO

The Fighting Mongooses

**To: Patrick Jay – Vice President & Manager**
**From: TFM (Brett Anderson, CJ Reece, Bill Seling)**
**Date: November 14, 2013**
**Subject: System Requirements Walkthrough RE Contractual Payment System**

Thank you for meeting with The Fighting Mongooses' analysis team, Friday, November 1, 2013, and reviewing our team's *Preliminary Investigation Report* (*PIR*) regarding your current Information Technology vendor contract tracking solution. We appreciated the comments you offered about our *PIR* document as well as the additional information you supplied us regarding your system requirements with at the meeting. We have included the items you noted as missing from the *PIR* "Appendices" and they have been included in the attached *Systems Requirements* document.

The *System Requirements* document outlines our team's thoughts and recommendations regarding replacement of your current Excel-based solution. We hope you will take some time to review the document and look forward to our meeting to walkthrough the document, scheduled for Friday, December 6, 2013, at 3:00 p.m. at Xanadu Bank's Bellevue branch office. Please contact us at your convenience with any comments, questions, or concerns prior to our meeting.

**The Fighting Mongooses**

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Brett Anderson
CJ Reece
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# Bank of Xanadu


# System Requirements Document
# Contract Payables System

**December 6, 2013**

**The Fighting Mongooses**
Brett Anderson
CJ Reece
Bill Seling

# Table of Contents

# Section 1: Management Summary

The Fighting Mongooses (TFM) began our requirements analysis for replacing the Bank of Xanadu's current system used for tracking invoices from IT vendors billing the Bank for their services. We reviewed the current system, the processes, and the people involved. We conducted several interviews with Patrick Jay, Vice President and Manager for the Accounting group and interviewed employees from the Bank's Accounting and Accounts Payable groups. We also performed cost studies and analyzed core system functions as well as the main system data elements.

We found the as-in system to be inefficient, manually intensive, and expensive. While the bank is undoubtedly saving money through consolidating and outsourcing IT services for its branches, the Bank is now paying unseen dollars to pay the Bank's contractors. Morale is suffering because of the time spent processing invoices rather than paying attention to more important banking functions. The Bank's own documents told us that the impact of the current system is being noted at higher levels of management. Our team studied various ways to resolve this situation, including making use of the current system, buying a COTS product to handle the functions, and building a new system that would automate many of the processes.

The single solution that makes financial sense is to build a browser-based system using a relational database on the backend. Our findings showed that by replacing the current system, the Bank will realize a 92.08% ROI and a $3.6 million dollar NPV over the next seven year. It is our opinion, that in terms of development, maintenance, and enhancements, a browser-based/database solution is the cheapest, fastest, and best solution that will allow the Bank of Xanadu to have a custom solution that fits the way they do business now and in the future.

Under our proposal, the current system would remain available as read-only for look-up and historical purposes. Because the data for the current system has been entered with almost no rules, nearly any solution will be unable to reuse it. The Fighting Mongooses will be able to write reports that will allow the Bank to compare data points between the old system and the new system. The proposed web/database solution will allow the Bank to display reports in a web browser, in addition to printing the reports for distribution. They could also easily run reports at any time during the month to determine progress towards business goals.

The web/database solution will easily scale from a single branch office to a worldwide solution simply by upgrading the hardware and network infrastructure that runs the web application and database. Backing up, restoring, and recovering from system issues is easily accomplished using tools and processes already familiar to IT support staff. Security rules at the database and browser levels will allow the Bank a high level of

control for who manages and views the data at the local level and the global level when the application is rolled out across the enterprise.

The Fighting Mongooses web development expertise will help the Bank of Xanadu transition from their current Excel-based solution to a modern, technologically advanced, and expandable system by late Spring 2014.

# Section 2: As-Is Model - Current Situation Analysis
# A. Current Information System

## 1. Introduction

This System Requirements document describes The Fighting Mongooses' understanding of the Bank of Xanadu's business needs for managing vendor contract payments as described to in meetings, interviews, and bank documents. The first phase of the project included the *Preliminary Investigation Report* (*PIR*) as the deliverable (see Appendix A). This phase of the process attempts to identify and define discrete business processes and break them down into discrete requirements. All requirements in this document will be reviewed and agreed upon with the Bank's decision-makers and stakeholders. The document will provide the foundation for future design and development efforts.

The document describes the current system, describes alternatives to the current system, and includes our recommended solution, along with accompanying data and process models. This document will evolve throughout this phase of the SDLC as business requirements are captured, and as process and data models are created and refined. This will ensure that the eventual solution provides the Bank with the functionality they need to meet their stated business objectives.

## 2. Analysis Approach

During the System Analysis phase, TFM developed models to increase our understanding of the current processes and to feed our recommendations for any possible solutions. Our team created a Functional Data Diagram (FDD) to map the processes to the various business units connected to the current contract programmer payables solution and then developed a Data Flow Diagram (DFD) to help us identify discrete processes (see Appendix B). These diagram show, for example, that while the Accountants have the greatest system involvement, Buyers, Accounts Payable, Bank and Accounting management, and even vendors will interact with any solution. This information assists our team in recommending a range of solutions tailored to your processes and requirements. This information also feeds a great deal of this document, which will become something that will be useful if you decide to move forward with creating a more robust solution.

## 3. Problem

The Bank of Xanadu requires a new automated system for managing contract payables in accordance to contractual time and fee limitations throughout the corporation. The current methodology the Bank is using to solve this problem is a Microsoft Excel document which is too time consuming due to having to manually enter all the contractual information, receive and process the incoming programming invoices, prepare accurate accruals, respond to vendor inquiries, and generate accurate monthly financial reports. Not only is it time consuming, but it also costing the company money due to employees having to stay way beyond their work hours and be paid overtime or compensatory time (comp time). The Bank of Xanadu would also desire a more accountable system in which necessary deliverables have no potential for being lost or misplaced due to the necessity of using paper hard copies to factually check accounting processes, and easily track the information using a new computer system.

## 4. People

The following Bank stakeholders were identified in the *Preliminary Investigation Report*.

- Accounting Manager -- Project Sponsor who manages accounting, accrual, and invoice reports.
- Accounting Group – The Accounting Group's processes and procedures will be affect current processes for paying vendors/programmers under contract. They will also generate reports, and analyze invoices to ensure the Bank follows accounting principles.
- Accounts Payable – Accounts Payable processes and pays vendor invoices.
- Buyers (Contract Group) -- The Buyers initiate the process and input contract and invoice information.
- Vendors/Contractors – The vendor/contractors group (which includes programmers hired as independent contractors) will have an interest in receiving pay for services, inquiring about invoices, etc.
- Bank Management – Bank management consumes reports from the current system including Fee Max, Conprog, Expense Reports, and requests solutions while giving the Bank decisive direction.

## 5. Processes

The current processes, mostly manual, were put in place as a temporary stopgap solution until a more robust solution could be found.

1. Buyer delivers *Appendix A – Agreement to Provide Personnel Between Bank of Xanadu and Vendor/Contractor* to an accountant.
2. Accountant reviews *Appendix A* to make sure all information that the accounting department needs to process the invoice is presented.
3. If any information is missing the accountant returns *Appendix A* to the buyer after filling out an Exception Memo.
4. After the accountant receives a valid *Appendix A*, The accountant will then assign a special contact number based on the end date of the contract and last name of the vendor.
5. The accountant then enters all contract information into the Excel document, making sure to match the contract with the correct vendor, project manager, charge unit, and bank division.
6. Once *Appendix A* has been processed, the accountant will then file a hard copy of the contract to be used further in the system.
7. After the contract has been filed, the accountant will then receive an invoice for the appendix and match the invoice and appendix together.
8. The accountant then verifies if all information that is required on the invoice is there.
9. If any information is missing or the invoice violates contractual terms the accountant then sends invoice to buyer for resolution after filling out an *Exception Memo*.
10. If the invoice is payable, the accountant processes it in Excel by making sure the invoice has all the correct contract information, including programmer name, invoice number, project start and end dates for invoice, hourly pay rate and hours worked.
11. After the accountant has verified that the Invoice is payable he sends it attached with a data entry sheet to accounts payable to have a check cut.

12. If the invoice payment is late and the vendor inquires about unpaid invoices the accountant researches the reason for missing payment and replies back to vendor with an answer.

13. Towards the end of the month, if for any reason a payment cannot be made before the end of the month the accountant needs to process an accruals for any invoice for expense within current period for which actual payment isn't made.

14. Also at the end of the month, the Accountant will run a *Month End Report*, verify its accuracy, and distribute it appropriately to Bank Management and Accounting Management.

## 6. Data/Information

The TFM team identified the following information and data from interviews with Bank personnel and from the current Excel workbook solution. Refer to the Appendix D Requirements Catalog for information about specific requirements using this data.

### 6.1 Current System, Input Data Required

The following table lists the known inputs to the current solution.

| Input Name | Description |
|---|---|
| **Contract (Appendix A)** | A verified "Appendix A" (*Agreement to Provide Personnel between Bank of Xanadu and Vendor/Contractor*) is attached to all valid contracts. It lists several important details:<br>o Vendor's name<br>o Project/Services Number<br>o Charge Unit<br>o Bank Project Manager (and contact info)<br>o Fee Schedule (contract max)<br>o Generic Job Level<br>o Hourly Rate<br>o Start Date<br>o End Date<br>o Contract agreements<br>o Instructions of submitting invoices<br>o Scope of Services |
| **Invoice/Time Sheet** | Vendors submit invoice/time sheets to the Accounting department. They contain information that is entered onto a Data Entry Sheet, attached to the Invoice/Time Sheet, and forwarded to Accounts Payable:<br>o Vendor name<br>o Vendor Invoice Date<br>o Vendor Invoice Number<br>o Vendor Time Period<br>o Vendor Total Hours Worked<br>o Vendor Pay Rate<br>o Bank Rep Acceptance Signature |
| **Contract Extension** | The extension memo contains a couple of pieces of key info:<br>o Change to End Date<br>o Change to Fee Schedule (contract max) |

## 6.2 Current System, Outputs (Reports)

The following table lists the known Excel reports and paper-based documents that are outputs from the current solution.

| Report Name | Description | Excel Tab |
|---|---|---|
| ***Contractor Invoice Problems Exception Memo*** | Paper-based memo. Used when Accounting cannot process invoice for some reason Accountant completes, attaches to invoice and returns to Buyer. Enters info into Excel workbook. | MemoLog |
| ***Data Entry Sheet*** | System generated. It contains the information that Accounts Payable needs to process the invoice for payment. | N/A |
| ***Invoices* report** | Lists invoices paid against the Contract Programmer Expense Account. Used by the Accounting department to balance listed accounts at month-end. | Invoices |
| ***Accruals* report** | Report used by Accounting Department. Lists accrued invoices so that accruals can be processed and then reversed the following month. | Accruals |
| ***Contract Programmers Monthly Expense Recap Report*** | Report sent to Bank Management at each division. Lists contract programmers' invoice expenses paid each month, by Charge Unit. | ExpRec |
| ***Contract Programmer Fee Maximum vs. Actuals Report*** | Report sent to Bank Management at each division. Lists the contract fee maximum, paid invoices against each contract, and the remaining fee max available, sorted by Charge Unit. | RptFeeVSAct |
| ***Monthly Contract Recap* report** | The report is sent to Bank Management. Lists contract and invoice information for each Bank project manager to track vendor contractors and programmers working for them. | ConRecap |

# 7. Technology

The Bank's current desktop computers/software, along with their servers/system software (for email, file sharing, and firewalls) meet their current needs.

## 7.1 Current Computer Hardware

**Desktops: Dell OptiPlex 3010**

- Processor: Intel® Core™ i3-3220 Dual Core, 3.30GHz 3MB w/HD2500 graphics
- RAM: 8GB Non-ECC 1600MHZ DDR3, 2DIMM RAM
- Optical Drives: 16x DVD-ROM
- Hard Drives: 500GB, 3GB/s Sata, 16MB Cache, 7500rpm
- Graphics: Intel® Integrated Graphics

**Servers: PowerEdge R720xd (4 rack servers)**

- Processors: Intel® Xeon® E5-2665 2.40GHz, 20M Cache, 8.0GT/s QPI, Turbo, 8C, 115W, Max Mem 1600MHz (2)
- Form Factor: 2U
- Memory: 768GB @ 1866MHz
- Internal Storage: 50TB
- Communications:
    - Broadcom® 5720 quad-port 1GbE Base-T (no TOE or iSCSI offload)
    - Intel I350 quad-port 1GbE Base-T (no TOE or iSCSI offload)
    - Intel X540 dual-port 10GbE Base-T with 2 x 1GbE (FCoE capability enabled on the 10GbE ports)
    - Broadcom 57800S dual-port 10GbE Base-T with 2 x 1GbE (TOE and iSCSI offload available on 10GbE ports)
    - Broadcom 57800S dual-port 10GbE SFP+ with 2 x 1GbE (TOE and iSCSI offload available on 10GbE ports)
    - Broadcom 57840S quad-port 10GbE SFP+ Rack NDC (NPAR1.0, SRIOV, DCB, iSCSI and FCoE offloads and CEM)
- Internal RAID Controller: PERC H710P

## 7.2 Current Computer Software

**Desktop**

Windows 7 Professional Service pack 2 64bit

Microsoft Office 365 Enterprise E3

- Business-class email
- Active Directory integration
- File sharing
- Web Conferencing
- Word, Excel, Power point, Outlook, One Note, Access, Publisher, Lync, Info Path
- Adobe Acrobat Professional

**Server**

- OS: Microsoft Windows Server 2012
- Virtualization: VMware® vSphere ESXi
- Citrix Server
- Miscellaneous system server software

According to the specifications for hardware and software it has been determined that they can create a virtual server on a little-used server that will easily support any of the current versions of Microsoft SQL Server. The desktops are all using the most current version of Microsoft Explorer. Software for the desktops and server are all up to date with the latest patches and service packs.

## B. Current System Strengths

The current Excel system is very problematic but has a few good features about it.

- The current system is very simple to work with to keep running invoices.
- The learning curve needed to use the Excel document is very low.
- New kinds of tools are not needed to complete work.
- The system is very centralized with most of the procedures needed in processing invoices and contracts available in one document.
- Also as employees get used the Excel document they are able to process more invoices faster and easier.

## C. Problems with the Current System

There are however many weaknesses for the system.

- In particular, it takes an incredibly long time to process invoices even when understanding fully how to use the old Excel document.
- Employees are forced to work overtime, many times until 9 p.m., to complete processing invoices.
- They have to look at each contract and take a tally of invoices paid against the contract so they do not pay more than the maximum amount allowed to be spent for a contract
- Employees have to also spend valuable time visually making sure that information on an invoice or contract is not missing or mistyped, especially with redundant tasks such as matching a charge unit, or contract number.
- Also, the system seems disorganized. Many of the requested documents could potentially get lost due to the necessity of using paper to enter data.

# Section 3: To-Be Model - Proposed System Overview

# A. Proposed Solution

## Proposed Solution Features

The proposed web/relational database system will be able to meet all of the Bank's requirements, including checking that the contracted hourly rate and work dates match the consultant's information on an invoice, and that the balance of the contract will allow payment of an invoice. We agree with Patrick Jay's comment made during the October 11, 2013 meeting, that the current data not be imported into the new system because of data entry issues. (The old system will be available read-only for viewing and reporting.) Scrubbing the old data would be time and resource intensive; we believe it would be wiser to use that time preparing working prototypes to ensure the Bank's stakeholders are satisfied with the final solution. Thanks to the proliferation of web-based applications, the new system will be easy to learn, will not require special tools, and will easily become familiar as usage increases.

We propose attempting to normalize the data as far as Third Normal Form to ensure data integrity. Indexes and stored procedures will be designed to improve database performance and data security. System profiling will be conducted frequently during development to ensure the system remains responsive. System security will be designed so that only authorized users have permission to use the system. Users may be granted a range of privileges (read-only, create, update, delete, etc.) to be determined later. An authorized system user will be able to manage all working phases for vendors, contact info, charge information, contract and programmer information, exceptions, and run all reports directly from their Web browser. Reports will be viewable from the Web browser and may be printed by the person viewing the report providing they have the correct authorization.

## Proposed System Scope

The scope of this project is limited to designing, coding, testing, and implementing (includes training) a database solution that verifies contractor hourly rates, work dates, and contract balances. The Fighting Mongooses will populate the database with required initial data and provide system training for the Accounting group. The proposed system will be strictly an accounting system and will not be responsible for issuing contracts. With respect to paper-based attachments (Exception Memos and Data Entry documents), the new system will automatically fill-in the necessary fields. The Accountant would then print the document and attach it to the matching document, and forward it to the appropriate workgroup.

## B. Proposed System Benefits and Objectives

The proposed system will verify contractor hourly rates, work dates, and contract balances, and meet all other requirements. Additionally, it will increase staff efficiency through automation, eliminating human error and redundant activities over the current manual processes. The Web browser user interface will be intuitive and provide timely and informative feedback on data entry for errors, omission, and errors. Users authorized to view reports will be able to view them via a Web browser, print the report to a local printer, save it as a PDF, and export the data to Excel or other options.

The new Web-based/database solution will make data entry, updates, inquiries, and reporting faster, simpler, and accurate for the Accountants and will eliminate the overtime required for the current Excel-based solution. Because of added security with respect to system access and protecting the data, the Accountants may be able to offload some processes to less senior staff who have requisite business process knowledge. The proposed solution's interface will include all the information from the Excel-based solution in easy-to-access screens. Additionally, because of the relational database and security rules, staff familiar with Access and Excel will be able to attach directly to the database to access anything not provided for in the proposed solution; enhancements judged as valuable for the Bank can then be developed for the web application.

# Section 4: Functional Requirements

## 1. Introduction

The section outlines the functional requirements for the new system. These are specifically what the new system will do once implemented, addressing the needs of the company. Included are system design parameters and guidelines, as well as data processing and calculating. This information is used to help understand why the requirement is needed, and to track the requirement through the development of the system in terms of functionality and technology implementation. See Section 4-B for information about the Requirement Catalog, and Appendix D for a detailed requirements list mapped to use case scenarios.

## A. Analysis Approach

We used industry standard modeling tools and techniques to gain a better understanding of the Bank's current system design, to determine whether additional fact-finding may be needed, and to form a basis for our recommendations. We next created a use case diagram (Section 10-C Appendix) to visually represent actions between the system and its users to describe how your users interact with the system. Finally, we created use case scenarios for each of the major processes we identified from the use case diagram (Section 10-C Appendix). The use case scenarios will assist our project to create a design document for a system to replace your current system.

## B. Requirements Catalog

### Summary of Requirements Catalog

The requirements are divided into sections related to contract, invoices, reports, or general processing requirements. Use case scenarios are mapped to each requirement (see Appendix D for more on requirements.)

**UC001** – Receive Contract (CP1, CP2, CP3, CP4, CP5, CP6, CP7, GP1, GP2, GP3, GP4, GP5, GP6)

**UC002** – Contract Exception (CP1, CP3, CP4, CP5, CP6, GP1, GP2, GP3, GP4, GP5, GP6)

**UC003** – Update Contract (CP1, CP3, CP4, CP5, CP6, GP1, GP2, GP3, GP4, GP5, GP6)

**UC004** – Receive Invoice (IP1, IP2, IP3, IP4, IP5, IP6, IP7, IP8, IP9, GP1, GP2, GP3, GP4, GP5, GP6)

**UC005** – Invoice Exception (IP1, IP2, IP3, IP4, IP5, IP6, IP7, IP8, IP9, GP1, GP2, GP3, GP4, GP5, GP6)

**UC006** – Update Invoice (IP1, IP2, IP3, IP4, IP5, IP6, IP7, IP8, IP9, GP1, GP2, GP3, GP4, GP5, GP6)

**UC007** – Pay Invoice (IP1, IP2, IP3, IP4, IP5, IP6, IP7, IP8, IP9, GP1, GP2, GP3, GP4, GP5, GP6)

**UC008** – Process Accrual (IP1, IP2, IP3, IP4, IP5, IP6, IP7, IP8, IP9, IP10, GP1, GP2, GP3, GP4, GP5, GP6)

**UC009** – Vendor Inquiry (IP2, IP5, GP4, GP6, GP7)

**UC010** – Run Month End Reports (RP1, RP2, RP3, RP4, RP5, RP6, RP7, GP3, GP4, GP7)

# Section 5: Summary of Systems Analysis Phase

In summary, TFM found that replacing the current Excel-based with a more automated RDBMS system makes good financial sense and will improve morale for Bank of Xanadu staff, thus positively affecting the decision to outsource IT functions. The current system is inefficient and it takes too long to process invoices. The processes for calculating the amount of money remaining on the contract, matching the invoices against the terms of the contact, and correctly entering data all combine to make for a tedious, error prone, and expensive system that will not scale globally.

A proposed web/database system will allow automating labor-intensive processes and reduce or eliminate data entry errors. The proposed system will easily allow multiple users on a local or global level, and provide levels of security so staff is allowed to access only the data required to perform their job functions. The proposed system will allow the Bank to track monthly expenses against vendor payments on an ad hoc basis rather than waiting for a month end report. All of these benefits combine to improve service, productivity, and data integrity and management, allowing the Bank of Xanadu to accomplish their business goals.

# Section 6: Alternatives Analysis

The Fighting Mongooses (TFM) investigated a number of alternative solutions before reaching our current recommended solution. These range from commercial-off-the-shelf (COTS) products, outsourcing, automating your current Microsoft Excel-based solution, and custom in-house solutions.

## A. Software Alternatives

COTS products are frequently a good alternative to developing a custom solution. The vendor frequently provides support for the product as part of the licensing or arranges for extra-cost support options. Many have active user groups with local chapters and even meet annually with the vendors as a way to keep an open dialog between customer and vendor. This category includes SaaS (software-as-a-service) products that run in the Cloud; SaaS products are installed on vendor servers. Because the Bank's intent is to eventually use this product across the enterprise, we have focused on products whose market range runs mid-market to high-end.

| Product | Comments |
|---|---|
| **QuickBooks Pro (Proprietary)** | QuickBooks is COTS product developed and marketed by Intuit, Inc. The product is capable of handling invoicing, bookkeeping, and billing, tracking sales and expenses, accepting payments, and scanning receipts. |
| **Cougar Mountain Software (Proprietary)** | Cougar Mountain Software is a privately held company based in Boise, Idaho that manufactures and markets accounting software, retail software and business software to small-to-midsized companies. They are a Microsoft Certified Partner. |
| **Microsoft Dynamics GP (Proprietary)** | Microsoft Dynamics GP is a mid-market business accounting software. It uses either Microsoft SQL Server 2005, 2008, or 2012 to store data. It is one of four accounting packages acquired by Microsoft that now share the Microsoft Dynamics Business Solutions brand. |
| **Passport Software (Customized, proprietary)** | Passport Software, Inc. is a privately held company located in Northfield, Illinois that manufactures and markets accounting software, manufacturing software, and business software to small to mid-sized companies under the brand name Passport Business Solutions. Because each install site has unique requirements, Passport analysts would work with the Bank's business analysts to develop customized screens. |

| Customized In-House Packages | |
|---|---|
| **Microsoft Access-based custom solution** | Microsoft Access is a popular RDMS database product included with many versions of Microsoft Office suite and is currently available on most Bank of Xanadu computers. It is a popular choice for personal and small workgroup applications. The package allows the application creator to develop the user interface and database within a single product. |
| **Windows form-based custom solution** | Similar to a browser-based solution, but instead of using a browser, a form-based application is installed on each desktop computer wanting to access the features of the application. Requires a database server, but not a web server. Database products include Oracle, Microsoft, MySQL, and others |
| **Web browser-based custom solution** | A browser-based solution would utilize the Bank's desktop computer web browsers to connect to a database via a web server. Custom code is written and runs on the web server and would automate most of the processes in the current Excel-based solution. The database and web servers would be co-located on Bank premises. No other software is installed on the desktop computer. Database products include Oracle, Microsoft, MySQL, and others. |

## B. Outsourcing Alternatives

The Contractual Payment function could be outsourced to a vendor specializing in accounts payables. Companies in the this market segment offer solutions to company staff with a wide variety of expertise.

| Product | Comments |
|---|---|
| **Corcentric (http://www.corcentric.com/ap-automation/invoice-automation-solutions.aspx)** | From the Corcentric site: "By implementing a comprehensive invoice automation software solution, companies can increase control over the entire payables process from invoice receipt and approver responsiveness through invoice processing productivity and payment. COR360 automated billing software delivers the benefits of configurable invoice approval routing and automated three-way invoice matching, eliminating the hassle of managing paper-based invoices." |

## C. Manual Alternatives

Manual alternatives include updating your current Excel-based solution or developing new processes and procedures to use with your current system.

| Product | Comments |
|---|---|
| **Excel** | The current Excel solution could be extended through macros and other custom VBA programming to duplicate many of the processes performed manually today. |
| **Process & Procedure Changes** | The Fighting Mongooses' business analysts would study your current processes and procedures and determine if any improvements could be made to make your current solution more suitable. |

# Section 7: Recommendations

The Fighting Mongooses considered the pros and cons for each solution, and finally reached a decision we believe is most efficient, most secure, and most cost effective short-term and long-term. Part of performing due diligence in researching alternatives includes looking at solutions that may have several benefits but also have issues that make them unlikely candidates. Such is the case for most of the alternatives we examined.

## Manual Alternatives

**Excel Pros:** The software (Excel) is already in-place and the Bank knows how to run the current system. The deficiencies are known and workarounds are in place. Some automation can be gained by creating macros and using VBA to extend functionality of the current system.

**Excel Cons:** Any Excel-based solution is not recommended because it will not scale to support the Bank's intention to take their solution to the enterprise. While the current manual processes may be replaced by macros and custom VBA programming, these are skills the Bank staff currently do not possess and the amount of achievable automation is probably not worth the effort. Due to added automation, time for training and adjustment will be required, further adding to an already stressful environment for relatively little relief. An Excel solution may not improve staff morale because it may appear to be a Band-Aid solution. Finding expertise to program Excel and Access to meet enterprise needs is difficult and may cost more than hiring programmers for other programmatic solutions.

**Process & Procedure Changes – Pros:** (This solution includes using the current Excel solution as-is or adding some sort of automation.) Many organizations evolve processes and procedures organically and typically, things work okay for the short term. Over time, as needs evolve and more transactions occur, businesses stay with their old (and often undocumented) processes and procedures and never take time to consider how analyzing and implementing some changes can improve their ability to function more effectively.

**Process & Procedure Changes – Cons:** This is an expensive and disruptive process for even the most trouble-free organizations. It is our team's belief that the current Excel solution is unsuitable and changing processes and procedures while remaining with the same system will only further disrupt morale.

## Outsourcing Alternatives

**Pros:** Corcentric specializes in invoice automation for companies. Outsourcing frees up your staff to concentrate on other issues once the rules and the contract are established. The Bank is not responsible for servers and other infrastructure apart from the network to access the vendor, so IT support costs may be further reduced. The expenses from outsourcing may be viewed differently with respect to taxes (as opposed to capital costs for equipment, etc.).

**Cons:** Even if the Bank of Xanadu goes global with a solution, the COR360 soltuion is cost-prohibitive, with each invoice costing about $3.32 to process for high volume customers. It's unlikely the Bank will receive a favorable price break, even using this solution globally. (2012 prices --http://blog.corcentric.com/time-is-money-reduce-your-invoice-timeline/). Security concerns with respect to bank data and services being provided are a concern. Generally, the Bank will not have any control over staff at the outsourcing firm; the firm could be sold, go out of business, consolidate, etc. affecting your processing. Once established on COR360, you're at the mercy of the vendor with respect to billing. TFM cannot recommend outsourcing as a solution to your current system.

## Software Alternatives

**QuickBooks Pros:** This is a well-known software in accounting circles and it has an attractive price (less than $600 for a standalone version). The software has already been constructed; it is vendor supported (with respect to bugs); potential job seekers may already have experience with the product; customer support groups can frequently force a vendor to add features or make changes; vendors offer training or third-party training may be available.

**QuickBooks Cons:** As noted in the QuickBooks summary, this is full-fledged accounting package. It is intended for use in small businesses, not something the size of even the Bank's Bellevue branch, let alone going globally. Allowing multiple people to have concurrent access to the product will raise the cost significantly.

**Cougar Mountain Software Pros:** Another well-known software in accounting circles and priced attractively for a single user at $1,500 plus a 20% annual licensing fee. Once again, the software has already been constructed; it is vendor supported; potential job seekers may already have experience with the product; customer support groups can frequently force a vendor to add features or make changes; vendors offer training or third-party training may be available.

**Cougar Mountain Software Cons:** As noted in the summary, this is another full-fledged accounting package—it's more than the Bank needs, in terms of software. Intended for small-to-medium businesses, it will not easily support going global. The cost of additional licenses to access the product, plus the annual licensing fees make this product too expensive for processing vendor invoices.

**Microsoft Dynamics GP Pros:** Available "in the cloud." Once again, the software has already been constructed; it is vendor supported; potential job seekers may already have experience with the product; customer support groups can frequently force a vendor to add features or make changes; vendors offer training or third-party training may be available. Large enough to go global and at around $22,000 for a cloud-based solution, it's fairly priced. Annual licensing fees are unknown at this time, but typically, those fees run about 15-20% of the purchase price.

**Microsoft Dynamics GP Cons:** Yet another full-fledged accounting package and more than the Bank needs to process vendor invoices. While this solution will no doubt scale as a global solution, the cost of implementation and annual licensing will make this solution too expensive. In general, TFM cannot recommend any COTS (or SaaS) products as viable solutions to replace your Excel system.

**Microsoft Access-based custom solution Pros:** Access is available on most Bank computers as a part of the Microsoft Office Suite. Some Bank staff may be familiar with developing simple applications in Access. The cost of licensing is included in the Office licensing program.

**Microsoft Access-based custom solution Cons:** Microsoft Access solutions are useful for simple personal to small workgroup applications. Access runs as a local application across share drives or on a single computer. Having multiple concurrent users in an Access database is problematic from several technical perspectives; taking an Access solution global is out of the questions. The cost for developing a solution using Access or a more robust database solution is about the same and because Access lacks many database management features we cannot support Access as a viable solution.

**Windows form-based custom solution Pros:** A windows form-based custom solution gives the Bank full control over the development of the application and the database. Application like this are generally coded using Visual Basic, a variation of C, or a combination of programming languages. The Bank is able to implement all its business rules rather than fit its business rules to a COTS product and build-in only the functionality required to complete their mission. The Bank would have complete control over the look-and-feel of the application. Most importantly, the bank retains control over the source code and scripts for the application and the database. As business rules

change or evolve, the Bank will be able to react to and implement those changes in its application. Security is enabled for both the application and the database and additionally, the user requires the correct Windows forms to access the application. These forms are the actual software that gets installed to each computer user's computer.

**Windows form-based custom solution Cons:** Custom applications typically require months to design, code, test, and implement correctly, and this can create stress within an organization. After the application is implemented, the users may ask for (or demand) adds or changes. Changing a form-based application can mean changes to the underlying forms, or even the creation of new forms. Forms design can be tricky and may take longer to complete than say a web-based form.

**Web browser-based custom solution Pros:** A web-based custom solution gives the Bank the same control over the application's design as the Windows form-based solution. Web-based solutions are constructed using HTML, scripting, and may even include object level programming languages for some components. The bank retains control over the source code and scripts for the application and the database. As business rules change or evolve, the Bank will be able to react to and implement those changes in its application. Changes to a web-based application are generally faster and easier to accomplish.

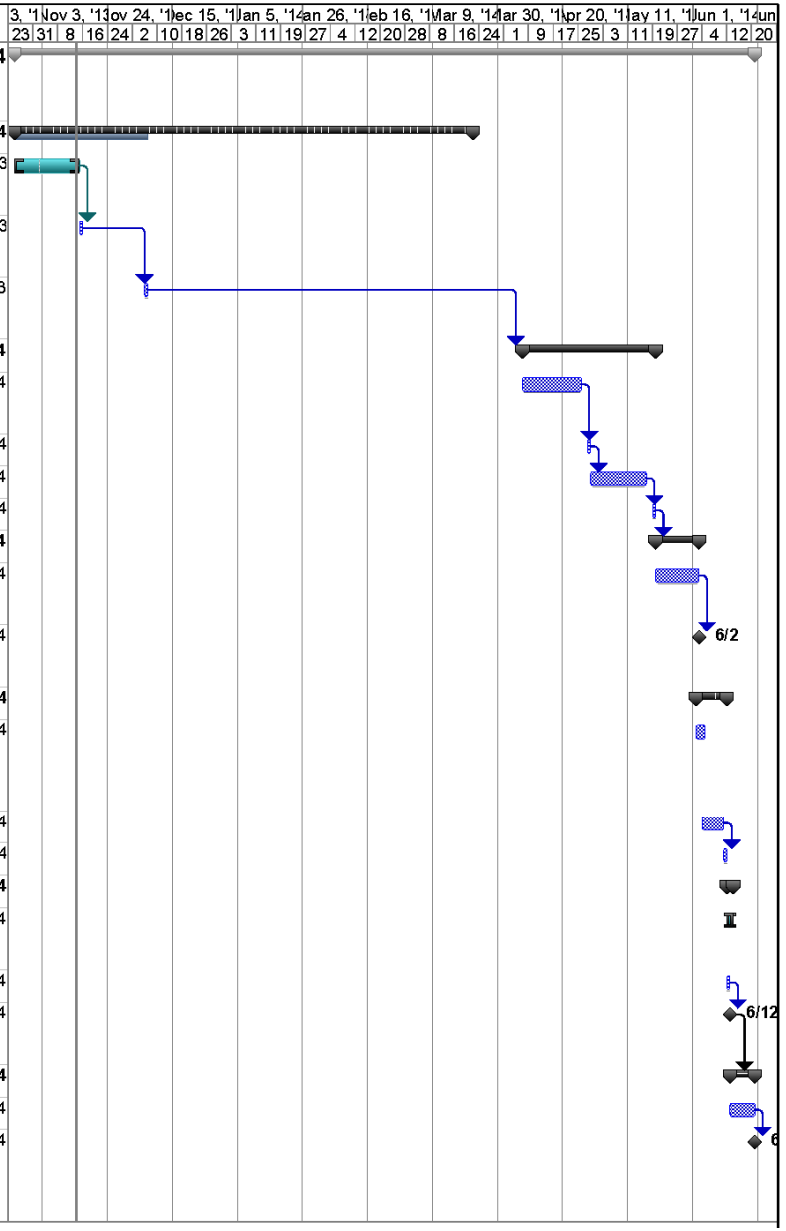
**Web browser-based custom solution Cons:** Custom applications require months to design, code, test, and implement correctly, and this can create stress within an organization. Even though browser-based applications are easier and faster to change, those changes can still take time to accomplish and web users may think that these changes should be done fast. Firms that have not standardized on one browser version may run into problems executing the application. Some people view web browsers as weak links with regards to security.

# Section 8: Time estimates

The Bank of Xanadu's acceptance of this System Requirements document will end the Analysis phase and begin the Design phase of the Software Development Lifecycle in use for this project. Design is scheduled to start April 7, 2014.

| WBS | Name | Duration | Scheduled Start | Scheduled Finish |
|---|---|---|---|---|
| **0** | **Contractual Payment System** | **171 days?** | **Fri 10/25/13** | **Fri 6/20/14** |
| 1 | Requirements | 106 days? | Fri 10/25/13 | Fri 12/6/13 |
| 1.1 | Draft Requirements Document | 15 days | Mon 10/28/13 | Fri 11/15/13 |
| 1.2 | Finalize Requirements | 1 day | Fri 11/15/13 | Fri 11/15/13 |
| 1.3 | Requirements Complete | 1 day | Fri 12/6/13 | Fri 12/6/13 |
| 2 | Design | 31 days | Mon 4/7/14 | Mon 5/19/14 |
| 2.1 | Draft Design Document | 15 days | Mon 4/7/14 | Fri 4/25/14 |
| 2.2 | Design Walkthru | 8 hrs | Mon 4/28/14 | Mon 4/28/14 |
| 2.3 | Finalize Design | 112 hrs | Tue 4/29/14 | Fri 5/16/14 |
| 2.4 | Design Complete | 1 day | Mon 5/19/14 | Mon 5/19/14 |
| 3 | Construction | 10 days | Tue 5/20/14 | Mon 6/2/14 |
| 3.1 | Construction / Unit Test | 10 days | Tue 5/20/14 | Mon 6/2/14 |
| 3.2 | Development Complete | 0 days | Mon 6/2/14 | Mon 6/2/14 |
| 4 | Test | 8 days? | Mon 6/2/14 | Wed 6/11/14 |
| 4.1 | Develop Test Cases / User Scenarios | 3 days | Mon 6/2/14 | Wed 6/4/14 |
| 4.2 | Testing | 5 days? | Wed 6/4/14 | Tue 6/10/14 |
| 4.3 | Testing Complete | 1 day | Wed 6/11/14 | Wed 6/11/14 |
| 5 | Implement | 2 days | Thu 6/12/14 | Fri 6/13/14 |
| 5.1 | Create Implementation Plan | 2 days | Thu 6/12/14 | Fri 6/13/14 |
| 5.2 | Implementation | 1 day | Thu 6/12/14 | Thu 6/12/14 |
| 5.3 | Implementation Complete | 0 days | Thu 6/12/14 | Thu 6/12/14 |
| 6 | Close-Out | 6 days | Fri 6/13/14 | Fri 6/20/14 |
| 6.1 | Lessons Learned | 6 days | Fri 6/13/14 | Fri 6/20/14 |
| 6.2 | **CPS Complete** | **0 days** | **Fri 6/20/14** | **Fri 6/20/14** |

| ID | WBS | Task Name | Predecessors | Duration | Start | Finish |
|---|---|---|---|---|---|---|
| 0 | 0 | **Contractual Payment System** | | **171 days?** | **Fri 10/25/13** | **Fri 6/20/14** |
| 1 | **1** | **Requirements** | | **106 days?** | **Fri 10/25/13** | **Fri 3/21/14** |
| 2 | 1.1 | Draft Requirements Document | | 15 days | Fri 10/25/13 | Thu 11/14/13 |
| 3 | 1.2 | Finalize Requirements | 2 | 1 day | Fri 11/15/13 | Fri 11/15/13 |
| 4 | 1.3 | Requirements Complete | 3 | 1 day | Fri 12/6/13 | Fri 12/6/13 |
| 5 | **2** | **Design** | **4** | **31 days** | **Mon 4/7/14** | **Mon 5/19/14** |
| 6 | 2.1 | Draft Design Document | | 15 days | Mon 4/7/14 | Fri 4/25/14 |
| 7 | 2.2 | Design Walkthru | 6 | 8 hrs | Mon 4/28/14 | Mon 4/28/14 |
| 8 | 2.3 | Finalize Design | 7 | 112 hrs | Tue 4/29/14 | Fri 5/16/14 |
| 9 | 2.4 | Design Complete | 8 | 1 day | Mon 5/19/14 | Mon 5/19/14 |
| 10 | **3** | **Construction** | **9** | **10 days** | **Tue 5/20/14** | **Mon 6/2/14** |
| 11 | 3.1 | Construction / Unit Test | | 10 days | Tue 5/20/14 | Mon 6/2/14 |
| 12 | 3.2 | Development Complete | 11 | 0 days | Mon 6/2/14 | Mon 6/2/14 |
| 13 | **4** | **Test** | | **8 days?** | **Mon 6/2/14** | **Wed 6/11/14** |
| 14 | 4.1 | Develop Test Cases / User Scenarios | | 3 days | Mon 6/2/14 | Wed 6/4/14 |
| 15 | 4.2 | Testing | | 5 days? | Wed 6/4/14 | Tue 6/10/14 |
| 16 | 4.3 | Testing Complete | 15 | 1 day | Wed 6/11/14 | Wed 6/11/14 |
| 17 | **5** | **Implement** | | **2 days** | **Thu 6/12/14** | **Fri 6/13/14** |
| 18 | 5.1 | Create Implementation Plan | | 2 days | Thu 6/12/14 | Fri 6/13/14 |
| 19 | 5.2 | Implementation | | 1 day | Thu 6/12/14 | Thu 6/12/14 |
| 20 | 5.3 | Implementation Complete | 19 | 0 days | Thu 6/12/14 | Thu 6/12/14 |
| 21 | **6** | **Close-Out** | **20** | **6 days** | **Fri 6/13/14** | **Fri 6/20/14** |
| 22 | 6.1 | Lessons Learned | | 6 days | Fri 6/13/14 | Fri 6/20/14 |
| 23 | 6.2 | Contractual Payment System Complete | 22 | 0 days | Fri 6/20/14 | Fri 6/20/14 |



# Section 9: Conclusion

We, the Fighting Mongooses at the Bellevue Branch of Xanadu, have concluded and strongly urge the development of a new system for managing contract payables. Our team has spent considerable time researching and developing the foundations of a new system that will relieve the Bank of Xanadu of its terribly inefficient and burdensome Excel-based processing system. We have also discovered several software alternative solutions for creating this new system. However, against these possibilities, we have determined that developing a new 3-tier web application would best serve the banks needs and profitability.

A 3-tier web application, using a browser as the user interface, Microsoft SQL Server as the (RDBMS) relational database, and building the business logic for the app in an object-oriented language like C# or VB.NET, will allow the bank to implement an application that based on their business rules, as opposed to adapting their rules to someone else's application. The presentation layer (the UI) is 1st tier, the database is the 2nd tier, and the business logic is the 3rd tier. The database would make heavy use of stored procedures for speed and security. The business logic and stored procedures are available for reuse for reporting or other applications or application interfaces.

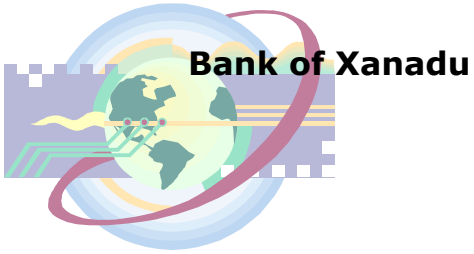
The app will accommodate ALL their business rules and scale from the local branch level using the Bank's current infrastructure to a global solution by building out the infrastructure to support their entire enterprise. The Bank's current processes and procedures would fit into this model nicely, streamlining those areas where automation takes over. In fact, looking towards the future, the Bank could take automation to the extreme and take most of the paper out of the system by going to electronic invoicing, exception handling, and reporting. TFM can help them determine their desired level of automation in the System Design phase and we'd would like to help them decide on how far they want to take their system.

With this in mind, we need to make clear of why continuing with the current Excel-based system and not developing our new system would be disastrous for the Bank of Xanadu. The current contract payables system is devastating the integrity of the bank by destroying manager and employee morale with the burdensome, inefficient, and uninspiring amount of time it takes to process reports and tabulate invoices. Even more importantly, the delay in processing is affecting profits and goodwill as customers are disgruntled by the amount of time it takes to complete projects. Thus, we request your approval for continuing our project, and entering the Systems Design Phase. If you approve of our request, we will have the new system completed by no later than June 7th of 2014.

# Section 10: Appendix Table of Contents

## A. Preliminary Investigation Report

# Bank of Xanadu




# Preliminary Investigation Report (Feasibility Study) for Project to Track Contract Payables

**October 25, 2013**

**The Fighting Mongooses**
Brett Anderson
CJ Reece
Bill Seling

# Table of Contents

## 1) Introduction

The Bank of Xanadu invited **The Fighting Mongooses** (TFM) to provide the Bank with this *Preliminary Investigation Report* at an initial interview with Patrick Jay, Vice President, and Accounting Group Manager, held on October 11, 2013 at 3:00 p.m.

The Bank recently reorganized and outsourced in-house IT functions and services allowing the Bank to focus on core business functions. Contracting with outside vendors and independent contractors to perform required IT services resulted in increased workloads for the Accounting Group. The Bank's senior management authorized a project to replace a stopgap, manually intensive Microsoft Excel solution with a more automated and accurate system and processes. Patrick Jay has been named Project Sponsor. See *Section 8.2 Bank of Xanadu Memo Announcing Acquisition and Reorganization* in Appendix C – Source Documents for more information.

This report is an initial investigation identifying the nature and scope of the business opportunity to determine if the project for investigating and recommending a solution for tracking systems programming expenses meets the criteria to become a feasible and successful project for the Bank. (The Bank also commissioned several other firms to present their findings at this same meeting.)

## 2) Systems Request Summary

The Bank of Xanadu's senior management recently approved a project to investigate and recommend a solution to control payments to IT contractors and vendors in accordance with their associated contracts. The work was approved on a Bank "Information Service Request," prepared by Patrick Jay, Vice President, and Accounting Manager, and dated January 25, 2013. See *Section 8.3 Bank of Xanadu Information Systems Work Request* in Appendix C – Source Documents for more information.

A successful solution will replace a labor intensive, manual entry Microsoft Excel workbook implemented by the Accounting department as a stopgap measure. Initially, the solution will be implemented only at the Bellevue, Washington branch, but the Bank's intent is to use the selected solution globally for their entire enterprise.

The "Information Service Request" identified three functions that any solution must perform:

- Determine whether each work performed and billed falls within the contract start and end dates
- Verify the hourly rate bill on the invoice matches the hourly rate stipulated in the contract
- Calculate whether the contract's remaining balance of funds can cover the invoice

## 3) Background

The Bank of Xanadu recently acquired Utopia National Bank, increasing the Bank of Xanadu's presence in European, African, and Asian markets while adding over 400 domestic branches to its existing operations. Following the acquisition, senior management held strategic planning meetings examining external opportunities and internal constraints on their business. See *Section 8.2 Bank of Xanadu Memo Announcing Acquisition and Reorganization* in Appendix C – Source Documents for more information.

Senior management determined the new Bank of Xanadu must focus on core banking and service-related business functions and ordered management to consolidate operating and network systems and outsource all in-house system programming and consulting duties. Outsourcing dramatically amplified hiring of outside vendors and independent contractors for services previously performed by in-house staff, placing an increased workload on the Contract, Accounting, and Payables departments to track the new programming expenses.

The Accounting department developed a temporary solution using a Microsoft Excel workbook to track contracts, invoices, vendors, and produce monthly reports, and more. However, maintaining the workbook is labor intensive, prone to inaccuracies, and affecting staff morale. (See screen shot of Excel workbook in Section 8.9 of Appendix C. Recognizing the problem, senior management approved a project to investigate and recommend a solution to manage outsourced programming and services contracts and payments for the Bellevue, Washington branch. It is the Bank's intent to deploy the successful solution to all the Bank's Accounting departments.

## 4) Preliminary Investigation Findings

The initial findings are in agreement with Bank of Xanadu's management assessment; the project to replace their current Excel workbook solution should move forward.

### a) Problem Description

The Bank of Xanadu requires a new automated system for managing contract payables in accordance to contractual time and fee limitations throughout the corporation. The current methodology the Bank is using to solve this problem is a Microsoft Excel document which is too time consuming due to having to manually enter all the contractual information, receive and process the incoming programming invoices, prepare accurate accruals, respond to vendor inquiries, and generate accurate monthly financial reports. Not only is it time consuming, but it also costing the company money due to employees having to stay way beyond their work hours and be paid overtime or compensatory time (comp time).

## b) Project Stakeholders

The following Bank of Xanadu, Bellevue branch staff are project stakeholders.

Accounting Manager -- Project Sponsor

Accounting Group – The Accounting Group's processes and procedures will be affect current processes for paying vendors/programmers under contract.

Accounts Payable – Accounts Payable processes vendor invoices.

Buyers (Contract Group) -- The Buyers initiate the process and input the contract information.

Vendors/Contractors – The vendor/contractors group (which include programmers hired as independent contractors) will have an interest in receiving pay for services, inquiring about invoices, etc.

Bank Management – Bank management consumes reports from the current system and any future solution.

## c) Project Scope

The purpose of this project is to automate the current manual process for handling contract payments to vendors and programmers. The Fighting Mongooses (TFM) will deliver a *System Requirements* document that describes management and user requirements, costs and benefits, and alternative development strategies by December 6, 2013.

### i) In-Scope

The following items are in-scope for the Analysis phase of this project.

- Tasks associated with investigating and recommending a solution to manage contract payables, including research of available COTS (commercial-off-the-shelf) products and custom solutions; additional interviews with Bank of Xanadu staff, its' vendors and contractors; and consulting with internal and external resources for the purposes of completing this project on time.
- The recommended solution should be able to check that vendor or contractor hourly rates match invoices, work dates, and that payment is allowed for a contract.
- The recommended solution will be capable of reducing the amount of time required to produce invoices over the current Excel solution.
- Determine a solution that will allow controlling contract payments in accordance with related contracts time and fee limitations to the benefit of the Bank of Xanadu.
- Recommended solutions will feature a browser or form-based user interface with an enterprise-capable relational database on the back end.

- The recommended solution will be used internally by Bank of Xanadu's Bellevue, Washington staff.
- The recommended solution must be scalable to operate as a global enterprise system even though the solution will be implemented at the Bellevue, Washington branch for a trial and training phase.
- The recommended solution will allow concurrent users.
- The recommended solution will provide a level of automation over the current Excel solution.
- The recommended solution will be capable of providing control for levels of access.
- The recommended solution will be capable of delivering the same reports produced by the current Excel solution.
- The recommended solution will include or make available a suitable user guide to accompany the solution.

### ii) Out-of-Scope

The following items are Out-of-Scope for the Analysis phase of this project.

- Tasks not associated with investigating and recommending a solution to manage contract payables, including work on other Bank or client systems, issues, or system requests.
- The recommended solution will not have the capability for issuing contracts.
- Data from the current system will not be loaded into a new system.
- User interface development to other Bank of Xanadu, vendor, or contractor systems.
- The recommended solution will not specifically include features that would make the solution accessible externally from the Bank of Xanadu's Bellevue, Washington branch office beyond what is available within the Bank's own infrastructure.
- System hardware and network sufficient to run at enterprise level will not be supplied, configured, operated, or maintained by TFM.
- Investigating a system's capabilities for running on anything except specified desktop or laptop systems (excludes mobile devices like phones, tablets, etc.).
- Changes to network or operational topologies and infrastructure.
- Any upgrades required to other systems to enable them to function with the new solution.
- Any advertising, marketing, or social media postings required for launch and beyond will not be delivered or paid for by this phase of the project.
- TFM will not author a user guide or training material for this phase of the project.

## d) Current Procedures

The current procedures used in processing invoices are as follows (see Appendix C for examples of the documents used in these procedures):

15. Buyer delivers Appendix A – Agreement to Provide Personnel Between Bank of Xanadu and Vendor/Contractor to an accountant.
16. Accountant reviews *Appendix A* to make sure all information that the accounting department needs to process the invoice is presented.
17. If any information is missing the accountant returns *Appendix A* to the buyer.
18. After the accountant receives a valid *Appendix A*, he then enters it into an Excel document.
19. After the appendix A has been processed, the account will then receive an invoice for the appendix and match the invoice and appendix together.
20. The accountant then verifies if all information that is required on the invoice is there.
21. If any information is missing or the invoice violates contractual terms the accountant then sends invoice to buyer for resolution.
22. If the invoice is payable, the accountant processes it in Excel and sends it attached with a data entry sheet to accounts payable to have a check cut.
23. If the invoice payment is late and the vendor inquires about unpaid invoices the acct researches reason for missing payment and replies back to vendor with an answer.
24. Towards the end of the month, if for any reason a payment cannot be made before the end of the month the accountant needs to process an accruals for any invoice for expense within current period for which actual payment isn't made.
25. Also at the end of the month the Accountant will run a Month End Report, verify its accuracy, and distribute it appropriately.

## e) Current System Weaknesses & Strengths

The current Excel system is very problematic but has a few good features about it.

- The current system is very simple to work with to keep running invoices.
- The learning curve needed to use the Excel document is very low.
- New kinds of tools are not needed to complete work.
- Also as employees get used the Excel document they are able to process more invoices faster and easier.

There are however many weaknesses for the system.

- In particular, it takes an incredibly long time to process invoices even when understanding fully how to use the old Excel document.
- Employees are forced to work overtime, many times until 9 p.m., to complete processing invoices.

- They have to look at each contract, visually match them up, and take a tally of invoices paid against the contract so they do not pay more than the maximum amount allowed to be spent for a contract.
- Also, the system seems disorganized. Many of the requested documents could potentially get lost due to the necessity of using paper to enter data.

### f) New System Requested Features

The Bank of Xanadu wants a new automated accounting system that can determine whether the work performed and billed by programming contractors on the invoice falls within the valid contract date range; verify the hourly rate billed on the invoice matches the hourly rate stipulated on the contract; and calculate whether there is enough funding left on the contract to pay the invoice. The system also needs to be able to process Appendix A, Accruals, Data Entry Sheets and Month End Reports. The data needs to be able to be entered manually to be processed.

### g) Project Constraints

The major constraint for this project is schedule driven: The Bank has required that all *System Requirements* documents arrive at their Bellevue, Washington branch December 6, 2013 by 3:00 p.m. to allow the Bank sufficient time to seek bids on the design and implementation of a selected solution during Spring 2014.

Other constraints:

- Product Constraints:
  - The *Bank of Xanadu Information Systems Work Request* listed three specific requirements that any solution must meet. (See *Section 8.3 Bank of Xanadu Information Systems Work Request* in Appendix C – Source Documents for more information.)
  - At the second interview on October 18, 2013, Patrick Jay stated that the solution should be browser or Access-based.
- Resource Constraints:
  - Patrick Jay and the Project Manager for this phase of the Bank's project (Pete Farrar) have had limited availability because of health issues and busy schedules.
  - The Fighting Mongooses (TFM) team has other concurrent projects limiting their availability.
  - TFM has recently gone through a dramatic staff turnover and the key team members are still learning how to work together.

### h) Project Feasibility

This section considers the feasibility of the project from operational, technical, and financial perspectives.

## i) Operational Feasibility

Staff involved in the current system is eager for a solution that will save them time and effort and are likely to embrace this product. They have successfully utilized Excel and we expect them to easily navigate a well-designed user interface and associated processes. This project should have huge savings in terms of time needed to perform all the operations necessary to process invoices. There is very little potential damage in terms of risk because the scope of this project is limited to the accounting department and the Bellevue branch.

## ii) Technical Feasibility

Technically this project is very feasible. The Bank of Xanadu should have the resources necessary to develop this project. The scope is limited and the system is internal. There is no need for enormous infrastructure as this project is limited to the accounting department.

## iii)Financial Feasibility

In terms of finance, this project seems to be potentially a huge success. There is a 92.08% Return on Investment (ROI) and a Net Present Value (NPV) of over $3.6 million dollars over the next seven years.

| **Cumulative** | **Costs** | **and** | **Benefits** | |
|---|---|---|---|---|
| Year | Costs | Cumulative Costs | Benifets | 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 |
| | | | **ROI:** | **92.08%** |

**Figure 1. Return on Investment calculations.**

| **Net Present Value** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| (Years this row) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Total |
| Benefits | $1,500,000.00 | $1,425,000.00 | $1,353,750.00 | $1,286,062.50 | $1,221,759.38 | $1,160,671.41 | $1,102,637.84 | $1,047,505.94 | $11,636,520.02 |
| Factor | 1 | 0.926 | 0.857 | 0.794 | 0.735 | 0.681 | 0.63 | 0.584 | |
| PV of Benefits | $1,500,000.00 | $1,319,550.00 | $1,160,163.75 | $1,021,133.63 | $897,993.14 | $790,417.23 | $694,661.84 | $611,743.47 | $7,995,663.05 |
| Costs | $2,000,000.00 | $400,000.00 | $420,000.00 | $441,000.00 | $463,050.00 | $486,202.50 | $510,512.63 | $536,038.26 | $5,256,803.38 |
| Factor | 1 | 0.926 | 0.857 | 0.794 | 0.735 | 0.681 | 0.63 | 0.584 | |
| PV of Costs | $2,000,000.00 | $370,400.00 | $359,940.00 | $350,154.00 | $340,341.75 | $331,103.90 | $321,622.95 | $313,046.34 | $4,386,608.95 |
| | **NPV:** | $3,609,054.10 | | | | | | | |

**Figure 2. Net Present Value calculations.**

## i) Expected Benefits

Tangible and intangible benefits may be realized with by replacing the current Excel workbook solution with an automated browser-based database solution.

### i) Tangible Benefits

There are huge financial benefits to this project. The project has a NPV of over $3.6 million and a 92.08% ROI over the next 7 years. The automation of many of the repetitive features of processing invoices such as filling out documentation and reviewing rates and dates stands to save the company enormous amounts of time resulting in a large rate of return. In addition, there's the additional benefit of not having to pay overtime or compensatory (comp) time for employees.

### ii) Intangible Benefits

There are also several intangible benefits present such as employee morale and productivity. The boring repetitive tasks that we are automating allow employees to have time to focus on other accounting projects that might be more enjoyable to complete. Employee's morale will also be significantly improved, as they will not need to stay until 9pm at night working on projects and perhaps giving the employees the morale boost they need to achieve higher productivity.

## j) Time and Cost Estimates

The Fighting Mongooses Systems Analysts bill at a rate of $75.00 per hour. Other project staff is billed according to their suggested rates.

**Table 1. Time and Cost Estimates, Systems Planning and Analysis Phases**

| Project Phase | Start | Stop | Workdays | Hours | $/Hr | Cost |
|---|---|---|---|---|---|---|
| **Systems Planning** | **10/11/13** | **10/25/13** | **6** | **18** | | **$4,190.00** |
| **Research (x3)** | 10/11/13 | 10/18/13 | 3 | 9 | $225.00 | $675.00 |
| **Xanadu Meeting #1 (x3)** | 10/11/13 | 10/11/13 | .33 | 2 | $225.00 | $450.00 |
| **Xanadu Meeting #2 (x3)** | 10/18/13 | 10/18/13 | .33 | 2 | $225.00 | $450.00 |
| **TFM Meeting #1 (x3)** | 10/11/13 | 10/11/13 | .25 | 1 | $225.00 | $225.00 |
| **TFM Meeting #2 (x3)** | 10/18/13 | 10/18/13 | .25 | 1 | $225.00 | $225.00 |
| **TFM Meetings Misc (x3)** | 10/18/13 | 10/24/13 | 1 | 3 | $225.00 | $675.00 |
| **Feasibility Study (x3)** | 10/22/13 | 10/24/13 | 3 | 6 | $225.00 | $1,350.00 |
| **Tech Writing & Editing Svcs** | 10/22/13 | 10/25/13 | 4 | 4 | $35.00 | $140.00 |
| **Systems Analysis** | **10/28/13** | **12/06/13** | **25** | **50** | | **$7,550.00** |
| **Xanadu Meeting #1 (x3)** | 11/01/13 | 11/01/13 | .33 | 2 | $225.00 | $450.00 |
| **Xanadu Meeting #2 (x3)** | 11/08/13 | 11/08/13 | .33 | 2 | $225.00 | $450.00 |
| **Xanadu Meeting #3 (x3)** | 11/15/13 | 11/15/13 | .33 | 2 | $225.00 | $450.00 |
| **Xanadu Meeting #4 (x3)** | 11/22/13 | 11/22/13 | .33 | 2 | $225.00 | $450.00 |
| **TFM Meeting #1 (x3)** | 11/01/13 | 11/01/13 | .25 | 1 | $225.00 | $225.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **TFM Meeting #2 (x3)** | 11/08/13 | 11/08/13 | .25 | 1 | $225.00 | $225.00 |
| **TFM Meeting #3 (x3)** | 11/15/13 | 11/15/13 | .25 | 1 | $225.00 | $225.00 |
| **TFM Meeting #4 (x3)** | 11/22/13 | 11/22/13 | .25 | 1 | $225.00 | $225.00 |
| **TFM Meeting Misc (x3)** | 10/28/13 | 12/05/13 | 2 | 6 | $225.00 | $1,350.00 |
| **Tech Writing & Editing Svcs** | 12/01/13 | 12/06/13 | 5 | 10 | $35.00 | $350.00 |
| **System Requirements Doc** | 11/25/13 | 12/05/13 | 6 | 12 | $225.00 | $2,700.00 |
| **Management Presentation (x3)** | 12/06/13 | 12/06/13 | .33 | 2 | $225.00 | $450.00 |

**Grand Total: $11,740.00**

## 5) Recommendation for Action

The Fighting Mongooses (TFM) recommend moving forward with the System Requirements phase for investigating and recommending a system for managing and reporting on their IT contract payables. This recommendation is based upon the findings in this feasibility study, interviews with Bank of Xanadu staff, and reviews of Bank-supplied documentation.

Because of the Bank's desire to design and implement a solution during Spring 2014, it is further recommended that the bank immediately authorize initiation of the System Requirements phase. This phase will provide the Bank with a System Requirements document (also known as a Software Requirements Specification) that contains the requirements for a new system, describes any alternatives that may have been considered, and makes specific recommendations to the Bank's management.

The System Requirements document will allow the Bank to investigate the viability of available COTS products and/or seek bids on the design and implementation of a custom system that will meet their needs.

## 6) Appendix A – Meeting Notes

This section outlines meetings between The Fighting Mongooses (TFM) and the Bank of Xanadu, as well as TFM meetings. Please contact any TFM consultant for any official meeting notes containing further details.

### a) Bank of Xanadu & TFM Meetings

Meetings between the Bank of Xanadu and TFM are normally conducted at the Bank's Bellevue, Washington branch.

#### i) October 11, 2013

The Bank of Xanadu held its initial interview at its Bellevue, WA branch with TFM and several other consulting firms. The purpose was to announce and describe the upcoming project. Patrick Jay and Pete Farrar led the meeting. A follow-up meeting was tentatively scheduled for the following week to meet with Patrick Jay and several internal primary stakeholders.

#### ii) October 18, 2013

In response to our memo (Subject: First Project Meeting to Discuss Contract Payables System; dated October 11, 2013), Patrick Jay met with TFM once again, bringing along internal stakeholders Dave Spencer (Accountant, Accounting Group) and Rob Watt (Buyer, Contract Group). Lyle Newhart (Manager, Payables Group) was not able to attend, but later confirmed he would be serving as a stakeholder on the project via a brief phone conversation on October 14, 2013. Patrick, Rob, and Dave answered questions about current processes and procedures, and shared several documents with the group. It was determined that all groups would submit a Preliminary Investigation Report (Feasibility Study) by Friday, October 25 at 3:00 p.m.

### b) TFM Team Meetings

TFM meetings are conducted at the Bank's Bellevue, Washington branch, as well as offsite, virtually, and asynchronously by Canvas, email, social media and other methods.

#### i) October 11, 2013

The TFM team discussed and drafted a set of questions for the Bank of Xanadu staff at the following week's meeting. The team agreed to read the handouts and complete individual assignments presented by Patrick Jay. Brett Anderson worked up a first cut at NPV and ROI based on numbers from Patrick Jay. Bill volunteered to create a PIR template and submit it to the file share.

### ii) October 18, 2013

The TFM team met briefly to discuss the knowledge dump from the Bank of Xanadu team. The Bank needed our meeting room, so we adjourned and agreed to follow-up by email and using Canvas.

### iii)October 18 – 24, 2013

Various asynchronous meets via email and Canvas to strategize, establish folder structures, and assignments required to create the PIR by the deadline.

## 7) Appendix B – Correspondence

Other than the memo at the front of this Preliminary Investigation Report (Subject: First Project Meeting to Discuss Contract Payables System; dated October 11, 2013), there has been no formal correspondence between Bank of Xanadu staff and TFM.

### a) Memo of Understanding

A *Memo of Understanding* (see following attachment) was drafted and sent to Patrick Jay, Vice President & Manager, who is also serving at the Project Sponsor.

The Fighting Mongooses

# MEMO

**To: Patrick Jay – Vice President & Manager**
**From: TFM (Brett Anderson, CJ Reece, Bill Seling)**
**Date: October 11, 2013**
**Subject: First Project Meeting to Discuss Contract Payables System**

Thank you for meeting with our TFM project team at your Bellevue office on October 11, 2013 at 2:30 p.m. to discuss a project for investigating and recommending a system to manage the Bank of Xanadu's contract payables for computer programming services and expenses.

It is our understanding that an emphasis on Xanadu's core competencies led the bank to outsource certain IT functions, processes, and services that lie outside core banking business practices. This move requires your staff to manually enter all contract information, prepare accurate accruals, and generate related monthly reports. Currently your staff uses an Excel workbook to perform these functions as a temporary solution.

Because the current practices are labor intensive and prone to error, your senior management's approval of a project to investigate and recommend an automated system and related processes to manage those contract payables presents TFM with an exciting opportunity to help you identify a system to improve the bank's productivity. You stated that a new system must include at least the following functions:

- Verify each invoice falls within the valid contract date range
- Verify the hourly rate billed matches the contract rate
- Determine if enough funds remain on the contract to cover the invoice

TFM staff has over 30 years' combined experience performing exactly this kind of investigation. Our firm utilizes industry standard Information Systems project management techniques that will ensure the project's success. This approach involves a structured phased approach to solving your request. Over the next several weeks, we propose planning and analyzing your requirements for an automated system, and deliver a *Preliminary Investigation Report* (also known as a *Feasibility Study*) on October 25, 2013 and a *System Requirements* document on December 6, 2013.

We sincerely thank you for your interest in our services and look forward to helping you find a solution. So that we can get a more complete picture of your requirements, we would like to meet with you on October 18, 2013 at 3:00 p.m. to ask you and some of your key staff some additional questions. In addition to meeting with you, we would like to speak with Dave Spencer (Accounting Group), Rob Watt (Contract Group), and any other staff you feel could help us understand your requirements.

**The Fighting Mongooses**,
Brett Anderson
CJ Reece
Bill Seling

## 8) Appendix C – Source Documents

The following source documents from Bank of Xanadu helped feed the results this feasibility study.

**Table 2. Source documents from Bank of Xanadu**

| | Bank of Xanadu Source Document | Comments |
|---|---|---|
| 8.1 | Background and Problem Information | |
| 8.2 | Bank of Xanadu Organization Chart | This is the most current org chart available. If TFM are selected to move forward with the project, the consultants should verify its accuracy. |
| 8.3 | Bank of Xanadu Memo Announcing Acquisition and Reorganization | This memo announced the Bank of Xanadu's merger with Utopia National Bank and outlined their strategy to focus on core banking practices and services. |
| 8.4 | Bank of Xanadu Information Systems Work Request | This is a copy of the work request where the Bank's senior management authorized a project to replace the current Excel workbook solution. |
| 8.5 | Appendix A – Agreement to Provide Personnel Between Bank of Xanadu and Vendor/Contractor | This is a copy of the document programmer employment contract. |
| 8.6 | Contract Extension for Programmer Services | Example of an contract extension to a contract programmer employment contract |
| 8.7 | Sample Vendor/Contractor Invoice and Time Sheet | Example of vendor/contractor invoice and time sheet sent to the accounting department for contract programming services |
| 8.8 | Contractor Invoice Problems Exception Memo | Example of cover memo used to return problem contracts or invoice to the contract team (Rob Watt in this example). |
| 8.9 | Data Entry Sheet Example | The Data Entry Sheet is attached to an invoice before it is sent to the A/P group. |
| 8.10 | Bank of Xanadu Excel Workbook | Screenshot of Invoices tab. |

## a) Background and Problem Information

### 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 2007, they had morphed into the gigantic worldwide banking behemoth they continue to be 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 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. 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.

## b) Bank of Xanadu Organization Chart

**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**

**CORPORATE HEADQUARTERS:** ***George Town, Grand Cayman***

**Chief Executive Officer (CEO)**
Patrick Dollarene
**Chief Financial Officer (CFO)**
Sanjay Rupeedaal
**Chief Information Officer (CIO)**
Isabella Realney
**Chief Operations Officer (COO)**
Hyacinth Randall

**Executive Vice President (EVP)**
Carmelita Pesolera
**Senior Vice President (SVP)**
Richard Poundstone
**Vice President (VP)**
Dieter Markstein
**Assistant Vice President (AVP)**
Keiko Yennokai

**(Sample)**
**BRANCH OFFICES**

***Bellevue, WA***
**Sr. Vice President**
Anne Casey
Executive Secretary:
Beth Rice

**Contract Group**
Manager: Scott Sorenson
Rob Watt
Sam Esposito
Mark Martin
David Hart
Jagreet Kaur
Anthony Lewis

**Accounting Group**
Vice President/Manager:
***Patrick Jay***
Dave Spencer
Kyle Watts
Tamisha Spencer
Misty Barber

**Payables Group**
Manager: Lyle Newhart
Dawn Hill
Mark Martin
Ho Lee
Bill Loos
Lane Conway
John Wallace

***Pine Valley, NY***
**Sr. Vice President**
Leonard Chou
Executive Secretary:
Jan Lawrence

**Contract Group**
Manager: Cara DeSoto
Annie D'Ogie
Joyce Donahue
Ray Ortiz
John Ackerman
S. Nelson-Leang
Tuan Tran

**Accounting Group**
Manager: Roy Brown
Shelly Grant
Tom Leman
Pilita Basto
E Osei-Shearman

**Payables Group**
Manager: Robert Stacy
Amy Hawkins
Leslie Hall
Waylon White
Susan Cooper
Ed Eowpun'
Tereasa Skelly

***Berlin, Germany***
**Sr. Vice President**
Louisa Gartner
Executive Secretary:
Darth Weitmeier

**Contract Group**
Manager: Joachim Mohr
Karl Meister
Steffi Freund
Paula Grossman
Gerhard Arnott
Tobias Stein
D Voigtsberger

**Accounting Group**
Manager: Franz Neuman
Karin Kratz
Stephan Niebur
Dieter Janssen
Astrid Gutentag

**Payables Group**
Manager: Astrid Dorftier
Gunther Merckel
Hans Meistersohn
Rudi Schertz
Walter Lehmann
Martin Edelmann
Gert Fromme

## c) Bank of Xanadu Memo Announcing Acquisition and Reorganization

**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**

---

**Date:** Friday, 11/30/12
**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.

## d) Bank of Xanadu Information Systems Work Request

**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**

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### Information Systems Work Request

| | | | |
|---|---|---|---|
| **Date** | **1/25/13** | **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, focus has shifted toward concentration on our core competencies, outsourcing any functions and processes that are not part of these core business operations. Since this process began late last year, all in-house programming positions have been redeployed, 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, respond to vendor inquiries, and generate accurate monthly financial reports.**

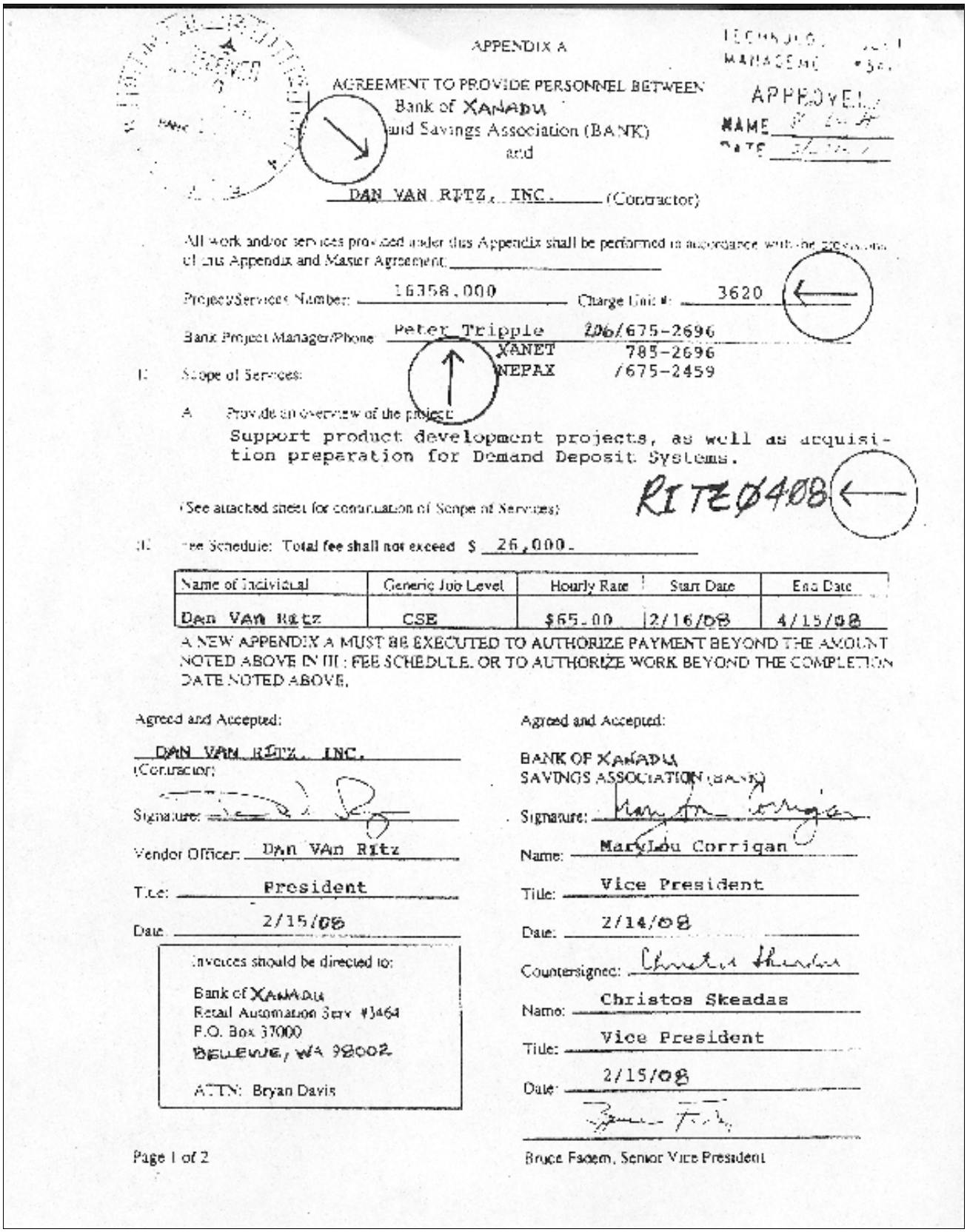
**The THREE most important functions the new system must perform are to determine whether each invoice falls within the contract time limitations (start & end dates), specifically if the work performed and billed on the invoice falls within the valid contract date range. It must also verify the hourly rate billed on the invoice matches the hourly rate stipulated on the contract. Finally, it must calculate whether there is enough funding left on the contract to pay the invoice.**

**In recent strategic planning sessions, the senior management has determined that there is a desperate need for a new, more automated process for managing contract payables. 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. Once approved, the chosen solution will need to be designed and implemented for use within the Bank's accounting departments.**

**Submitted by:** _____ **Date** _____

**Approved by:** _____ **Date** _____

## e) Appendix A – Agreement to Provide Personnel



APPENDIX A

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

DAN VAN RITZ, INC. (Contractor)

APPROVED
NAME
DATE

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
NEPAX /675-2459

II. Scope of Services:

A. Provide an overview of the project:

Support product development projects, as well as acquisition 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:

DAN VAN RITZ, INC.
(Contractor)

Signature:

Vendor Officer: Dan Van Ritz

Title: President

Date: 2/15/08

Invoices should be directed to:

Bank of XANADU
Retail Automation Serv #3464
P.O. Box 37000
BELLEVUE, WA 98002

ATTN: Bryan Davis

Agreed and Accepted:

BANK OF XANADU
SAVINGS ASSOCIATION (BANK)

Signature:

Name: MaryLou Corrigan

Title: Vice President

Date: 2/14/08

Countersigned:

Name: Christos Skeadas

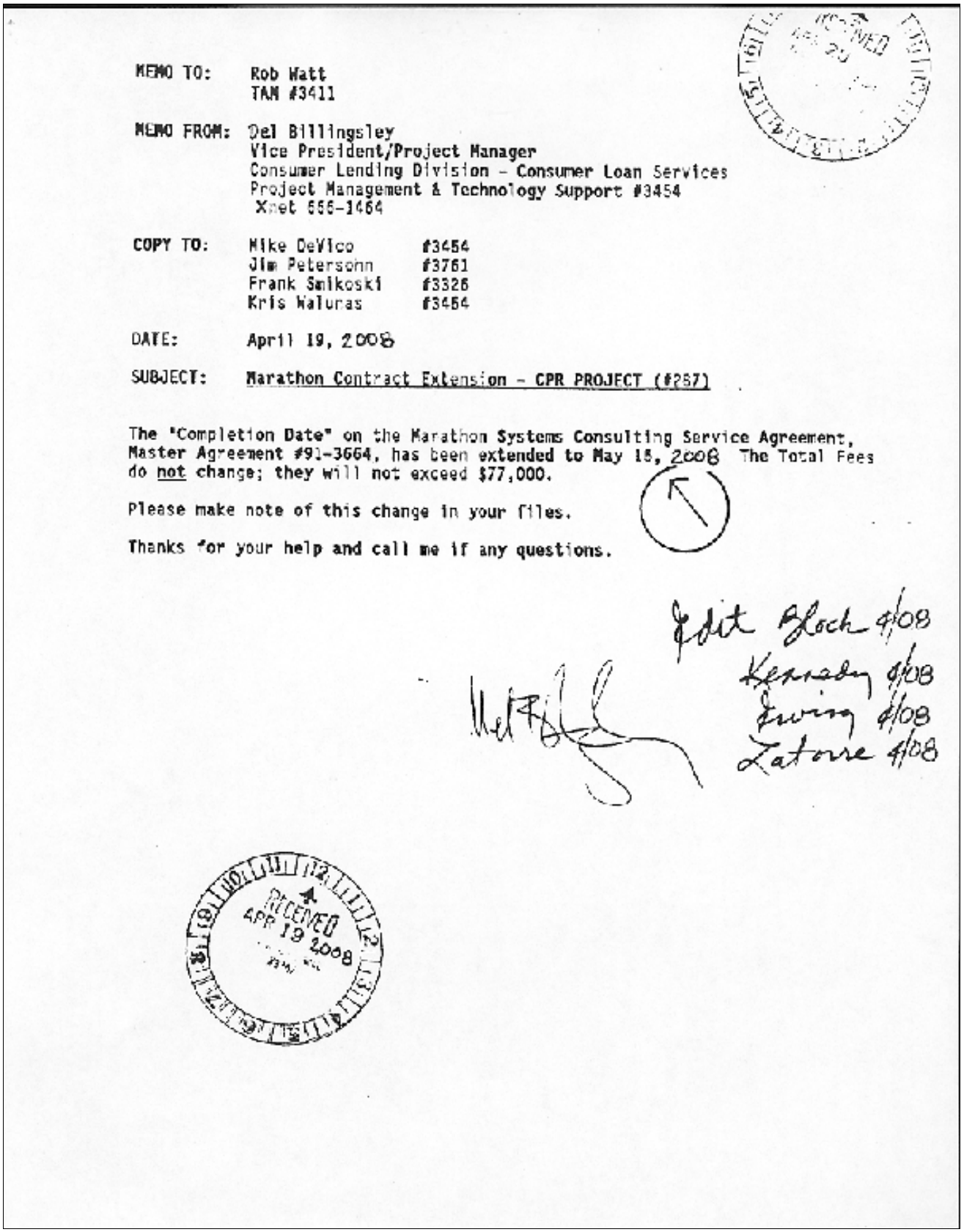
Title: Vice President

Date: 2/15/08

Bruce Fadem, Senior Vice President

Page 1 of 2

## f) Contract Extension for Programmer Services



MEMO TO: Rob Watt
TAN #3411

MEMO FROM: Del Billingsley
Vice President/Project Manager
Consumer Lending Division - Consumer Loan Services
Project Management & Technology Support #3454
Xnet 666-1464

COPY TO:
| | |
|---|---|
| Mike DeVico | #3454 |
| Jim Petersohn | #3761 |
| Frank Sailkoski | #3326 |
| Kris Waluras | #3464 |

DATE: April 19, 2008

SUBJECT: Marathon Contract Extension - CPR PROJECT (#257)

The "Completion Date" on the Marathon Systems Consulting Service Agreement, Master Agreement #91-3664, has been extended to May 15, 2008 The Total Fees do not change; they will not exceed $77,000.

Please make note of this change in your files.

Thanks for your help and call me if any questions.

Edit Block 4/08
Kennedy 4/08
Ewing 4/08
Latorre 4/08

RECEIVED APR 19 2008

## g) Sample of Vendor/Contractor Invoice and Time Sheet

**DAN VAN RITZ CONSULTING, INC.**
5820 Stoneridge Mall Road Suite #
Pleasanton, WA 98506

08MAR 19 PM 1:24

**INVOICE** 100154

| SALESPERSON | INVOICE DATE |
|---|---|
| DAn | 3/18/08 |

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

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

| 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 OF XANADU

APPROVED FOR PAYMENT
BY DSmith
UNIT # 3620

TOTAL 5720.00

*Thank You*

## 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 | 8 | 25 | |
| 11 | 8 | 26 | |
| 12 | 8 | 27 | |
| 13 | 8 | 28 | |
| 14 | 8 | 29 | |
| 15 | | 30 | |
| | | 31 | |

**Total Hours:** 88

Client Company Representative **Acceptance:** Carolyn Nonix 3/19/08

Signature Date

Mail To: Dan Van Ritz Consulting, Inc.

## h) Contractor Invoice Problems Exception Memo

# 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.

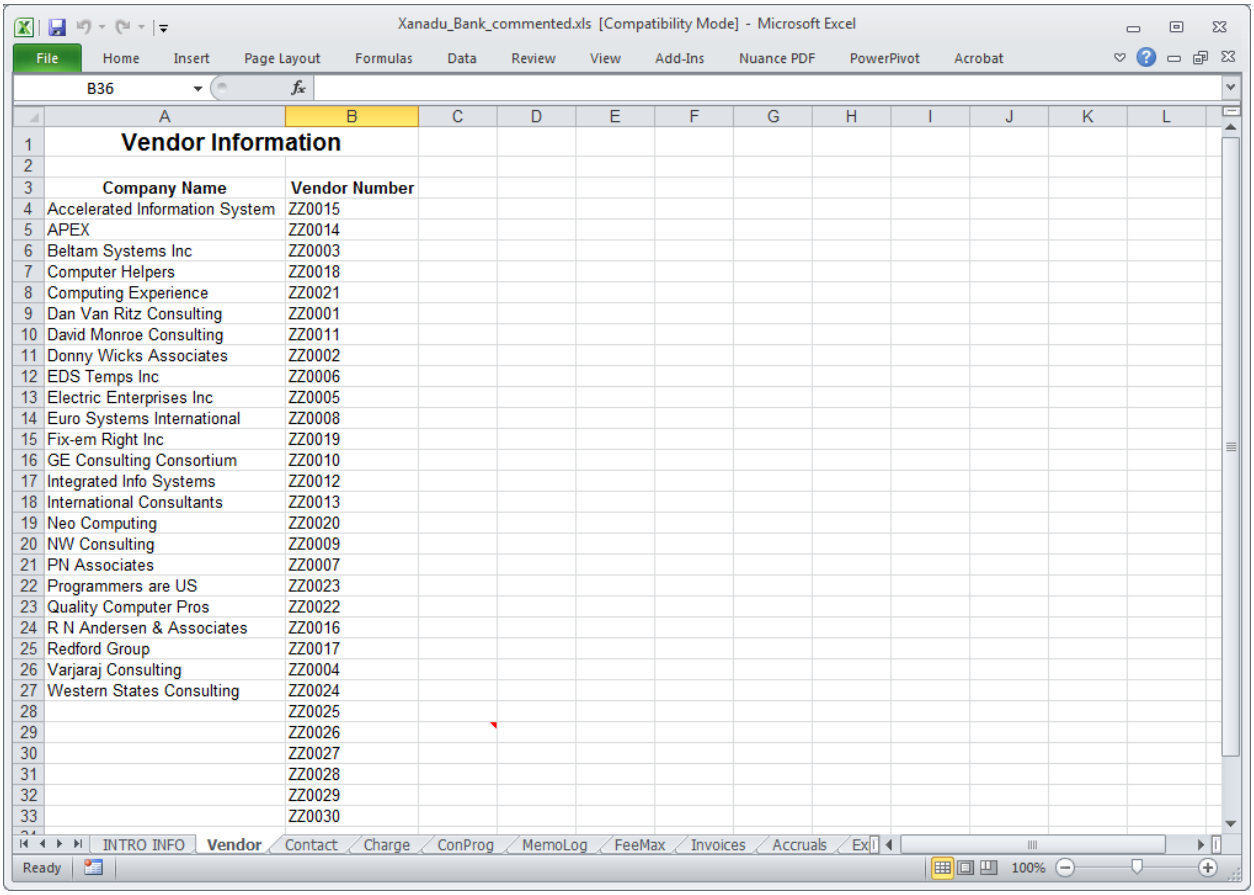
| DATE | ACTION |
|---|---|
| | |
| | |
| | |

## i) Xanadu_Bank Excel Workbook

The Xanadu_Bank Microsoft Excel workbook is the current system used for tracking and reporting on payments for IT contract services. The following screens show screenshots from each worksheet.

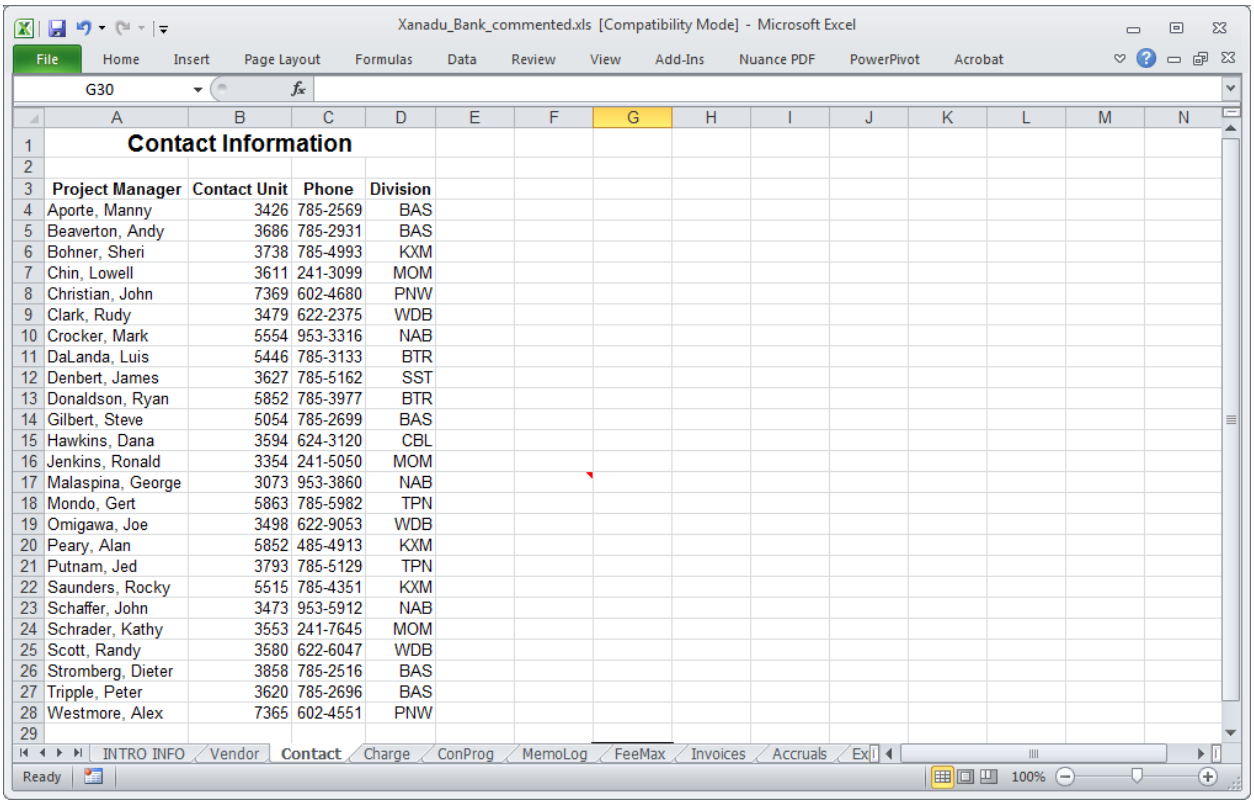
### i) Vendor Worksheet

The Vendor worksheet lists the Vendor Numbers the Accounts Payable group sends to Accounting. These numbers are put onto the data entry sheets that accompany the invoices to the Accounts Payable department for payment. Note the Vendor Numbers created and waiting for Company Name.



## ii) Contact Worksheet

The Contact worksheet lists the Bank of Xanadu's Project Managers, Contact Unit, Phone, and Division.



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**Contact Information**

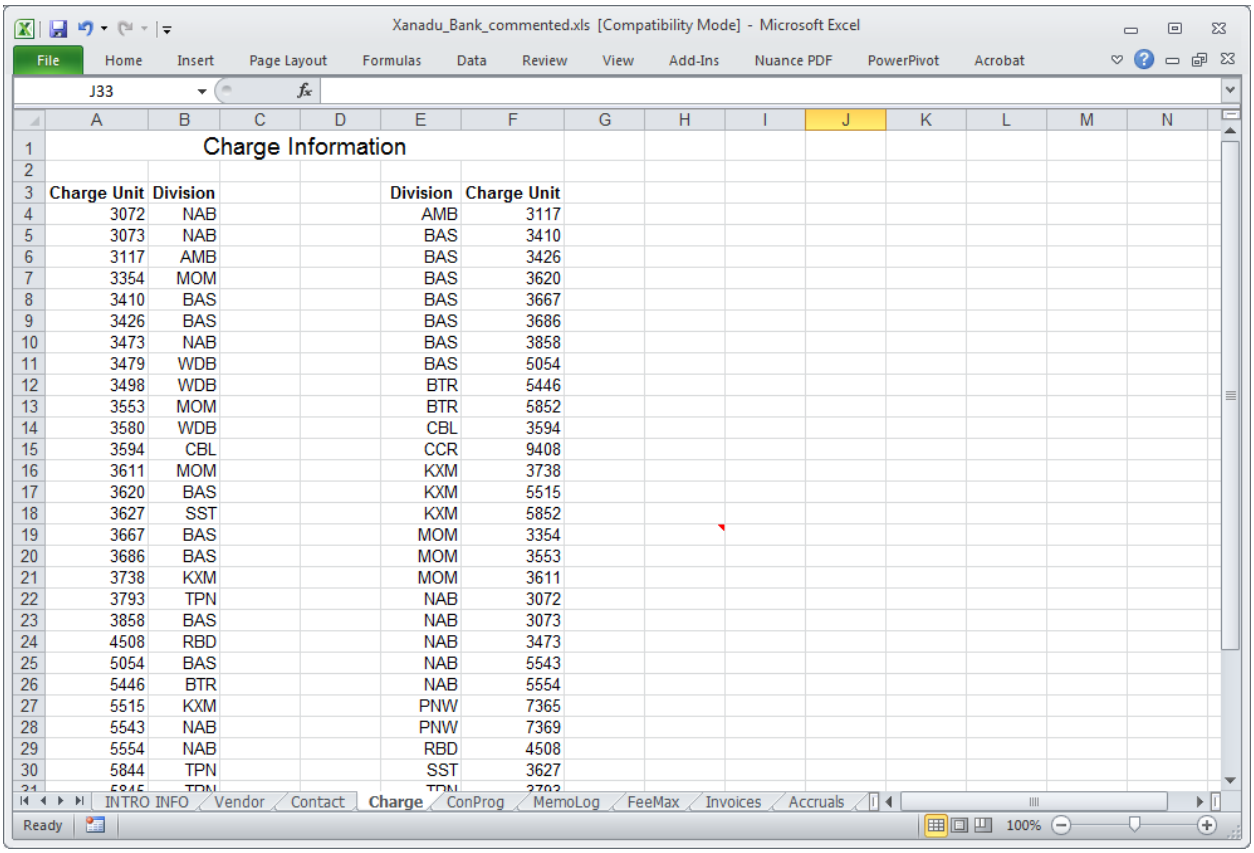
| Project Manager | Contact Unit | Phone | Division |
|---|---|---|---|
| Aporte, Manny | 3426 | 785-2569 | BAS |
| Beaverton, Andy | 3686 | 785-2931 | BAS |
| Bohner, Sheri | 3738 | 785-4993 | KXM |
| Chin, Lowell | 3611 | 241-3099 | MOM |
| Christian, John | 7369 | 602-4680 | PNW |
| Clark, Rudy | 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 | 953-5912 | 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 |

INTRO INFO Vendor Contact Charge ConProg MemoLog FeeMax Invoices Accruals Ex

Ready 100%

### iii) Charge Worksheet

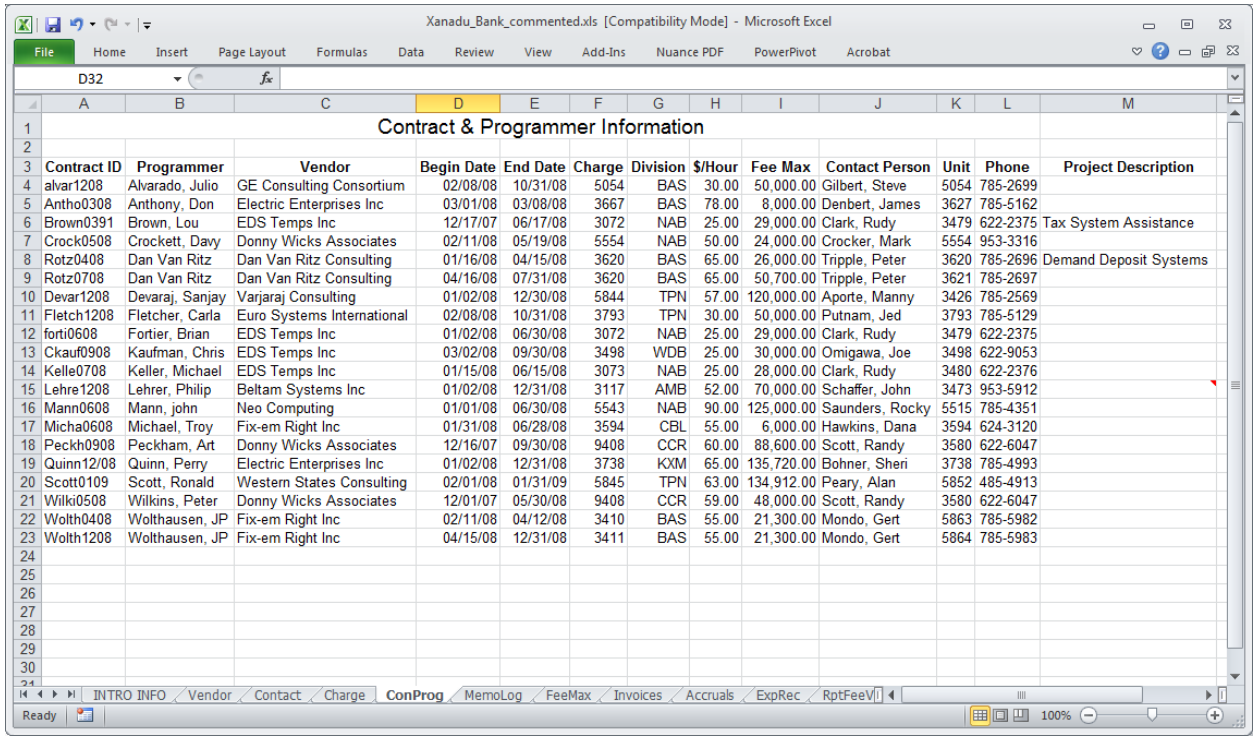
The Charge worksheet lists Bank Units that accept expense charges (cost centers). The list is sorted by the Unit, its division, and then sorted by Bank Division and associated unit.




| 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 |

## iv) ConProg Worksheet

The ConProg worksheet displays vendor information from Appendix A.



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Contract & Programmer Information

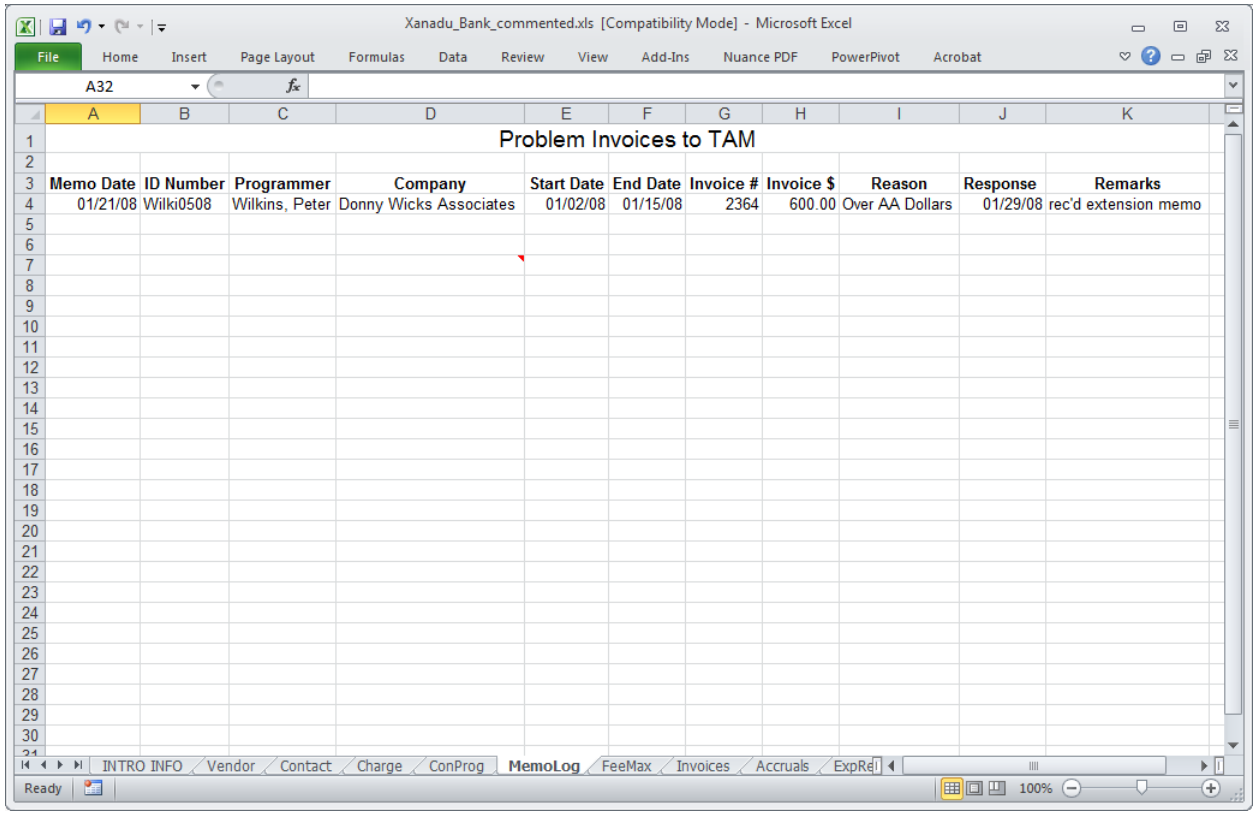
| Contract ID | Programmer | Vendor | Begin Date | End Date | Charge | Division | $/Hour | Fee Max | Contact Person | Unit | Phone | Project Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| alvar1208 | Alvarado, Julio | GE Consulting Consortium | 02/08/08 | 10/31/08 | 5054 | BAS | 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 | |
| Quinn12/08 | 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 | |

INTRO INFO | Vendor | Contact | Charge | ConProg | MemoLog | FeeMax | Invoices | Accruals | ExpRec | RptFeeV

Ready 100%

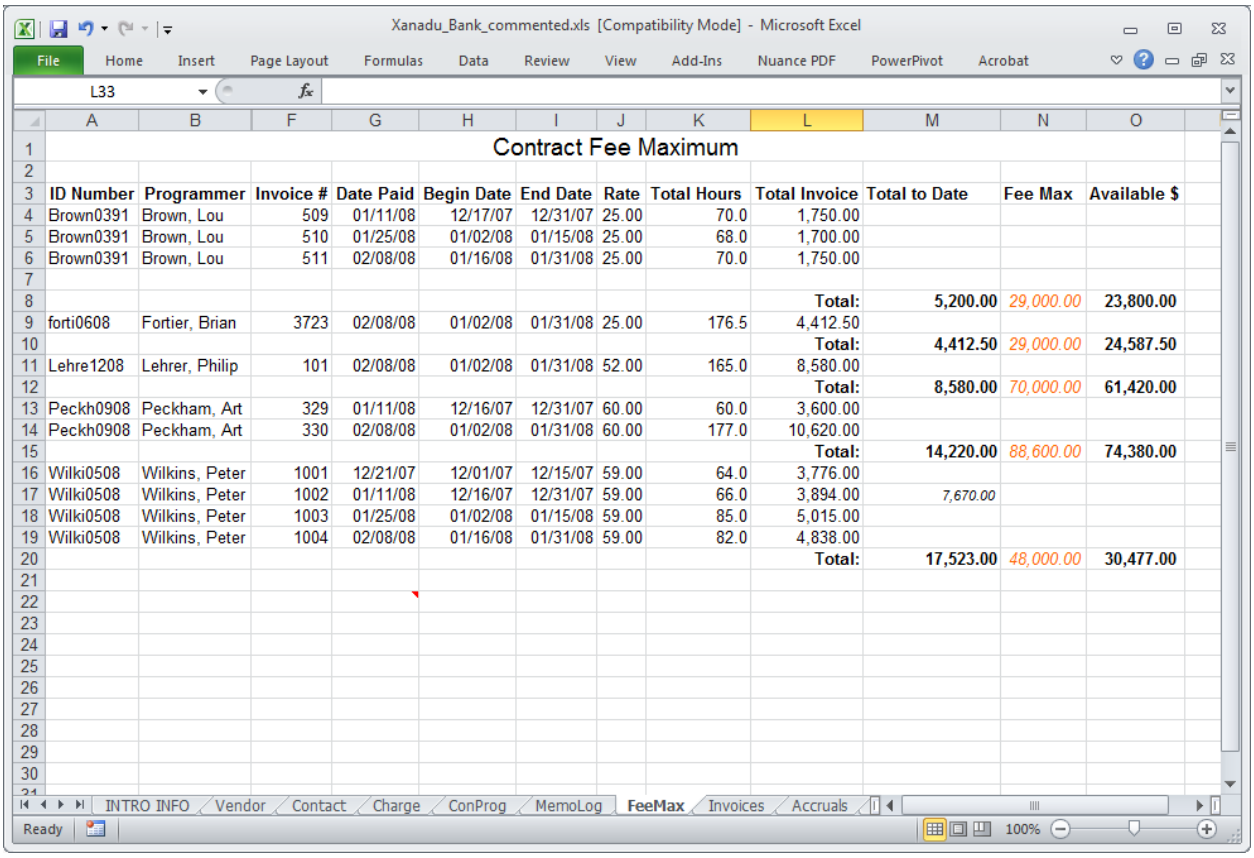
## v) MemoLog Worksheet

The MemoLog worksheet lists Exception Memos sent to the Bank's Buyers.



## vi) FeeMax Worksheet

The FeeMax worksheet list paid Invoices sorted by contract. It also displays a contract's maximum fee amount, listing how dollars are available to charge against the contract.



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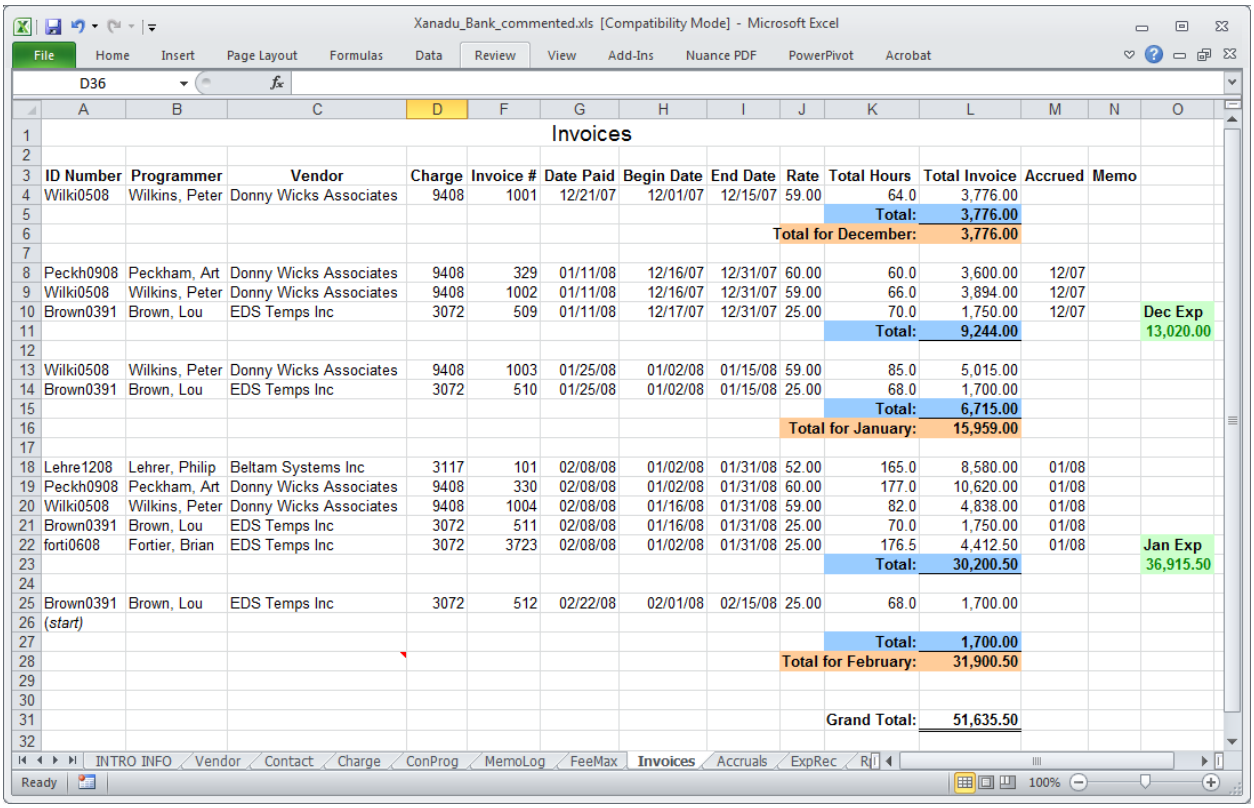
| | A | B | F | G | H | I | J | K | L | M | N | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Contract Fee Maximum | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | **ID Number** | **Programmer** | **Invoice #** | **Date Paid** | **Begin Date** | **End Date** | **Rate** | **Total Hours** | **Total Invoice** | **Total to Date** | **Fee Max** | **Available $** |
| 4 | Brown0391 | Brown, Lou | 509 | 01/11/08 | 12/17/07 | 12/31/07 | 25.00 | 70.0 | 1,750.00 | | | |
| 5 | Brown0391 | Brown, Lou | 510 | 01/25/08 | 01/02/08 | 01/15/08 | 25.00 | 68.0 | 1,700.00 | | | |
| 6 | Brown0391 | Brown, Lou | 511 | 02/08/08 | 01/16/08 | 01/31/08 | 25.00 | 70.0 | 1,750.00 | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | **Total:** | **5,200.00** | *29,000.00* | **23,800.00** |
| 9 | forti0608 | Fortier, Brian | 3723 | 02/08/08 | 01/02/08 | 01/31/08 | 25.00 | 176.5 | 4,412.50 | | | |
| 10 | | | | | | | | | **Total:** | **4,412.50** | *29,000.00* | **24,587.50** |
| 11 | Lehre1208 | Lehrer, Philip | 101 | 02/08/08 | 01/02/08 | 01/31/08 | 52.00 | 165.0 | 8,580.00 | | | |
| 12 | | | | | | | | | **Total:** | **8,580.00** | *70,000.00* | **61,420.00** |
| 13 | Peckh0908 | Peckham, Art | 329 | 01/11/08 | 12/16/07 | 12/31/07 | 60.00 | 60.0 | 3,600.00 | | | |
| 14 | Peckh0908 | Peckham, Art | 330 | 02/08/08 | 01/02/08 | 01/31/08 | 60.00 | 177.0 | 10,620.00 | | | |
| 15 | | | | | | | | | **Total:** | **14,220.00** | *88,600.00* | **74,380.00** |
| 16 | Wilki0508 | Wilkins, Peter | 1001 | 12/21/07 | 12/01/07 | 12/15/07 | 59.00 | 64.0 | 3,776.00 | | | |
| 17 | Wilki0508 | Wilkins, Peter | 1002 | 01/11/08 | 12/16/07 | 12/31/07 | 59.00 | 66.0 | 3,894.00 | *7,670.00* | | |
| 18 | Wilki0508 | Wilkins, Peter | 1003 | 01/25/08 | 01/02/08 | 01/15/08 | 59.00 | 85.0 | 5,015.00 | | | |
| 19 | Wilki0508 | Wilkins, Peter | 1004 | 02/08/08 | 01/16/08 | 01/31/08 | 59.00 | 82.0 | 4,838.00 | | | |
| 20 | | | | | | | | | **Total:** | **17,523.00** | *48,000.00* | **30,477.00** |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |

INTRO INFO | Vendor | Contact | Charge | ConProg | MemoLog | **FeeMax** | Invoices | Accruals

Ready 100%

## vii) Invoices Worksheet

The Invoices worksheet lists invoices paid against the vendor's expense account. It is also functions as month-end report, used by the Accounting group's Accountant's to balance accounts at the end of each month.



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Invoices

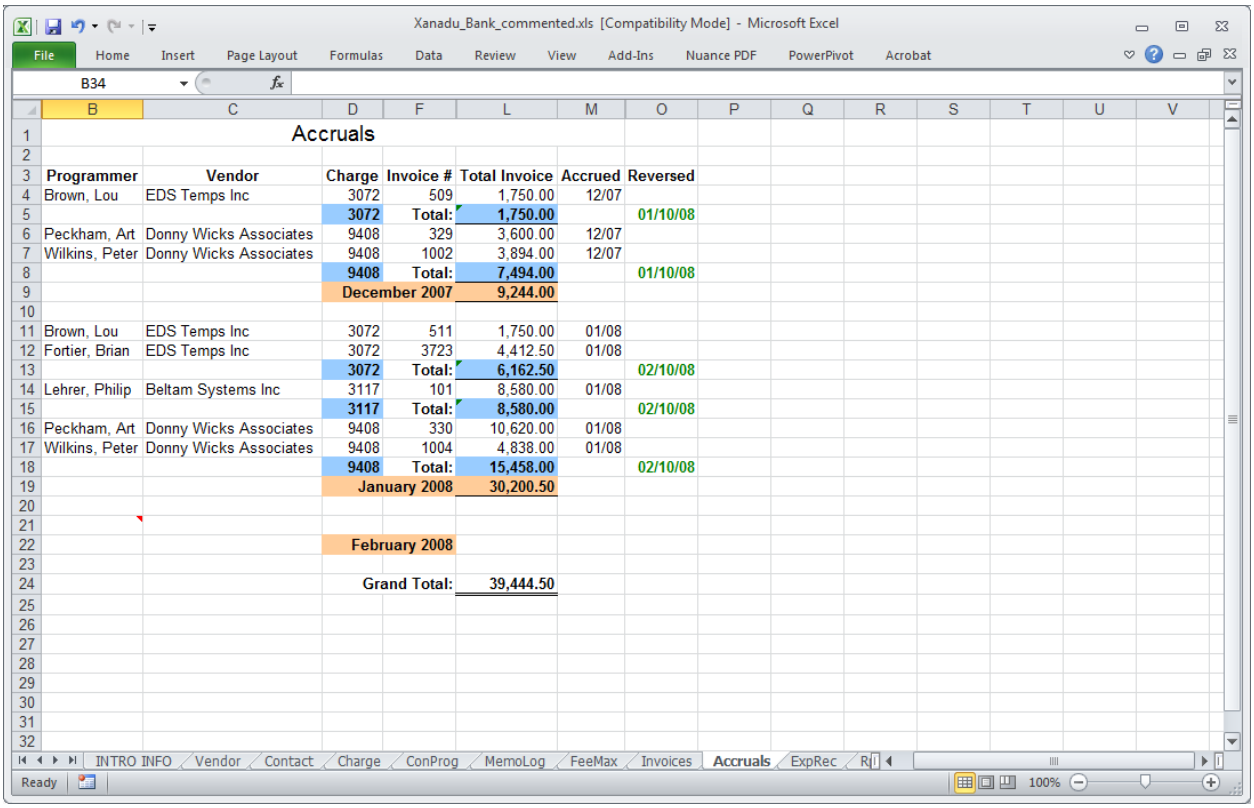
| ID Number | Programmer | Vendor | Charge | Invoice # | Date Paid | Begin Date | End Date | Rate | Total Hours | Total Invoice | Accrued | Memo | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wilki0508 | Wilkins, Peter | Donny Wicks Associates | 9408 | 1001 | 12/21/07 | 12/01/07 | 12/15/07 | 59.00 | 64.0 | 3,776.00 | | | |
| | | | | | | | | | Total: | 3,776.00 | | | |
| | | | | | | | | | Total for December: | 3,776.00 | | | |
| Peckh0908 | Peckham, Art | Donny Wicks Associates | 9408 | 329 | 01/11/08 | 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 | | |
| Brown0391 | 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 | | Dec Exp |
| | | | | | | | | | Total: | 9,244.00 | | | 13,020.00 |
| Wilki0508 | Wilkins, Peter | Donny Wicks Associates | 9408 | 1003 | 01/25/08 | 01/02/08 | 01/15/08 | 59.00 | 85.0 | 5,015.00 | | | |
| Brown0391 | Brown, Lou | EDS Temps Inc | 3072 | 510 | 01/25/08 | 01/02/08 | 01/15/08 | 25.00 | 68.0 | 1,700.00 | | | |
| | | | | | | | | | 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 | | |
| Brown0391 | 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 | | |
| forti0608 | 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 | | Jan Exp |
| | | | | | | | | | Total: | 30,200.50 | | | 36,915.50 |
| Brown0391 | 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 | | | |

INTRO INFO | Vendor | Contact | Charge | ConProg | MemoLog | FeeMax | Invoices | Accruals | ExpRec

Ready

## viii) Accruals Worksheet

The Accruals worksheet lists all accrued invoices. It also functions as a month-end report by the Accounting group's Accountant's so that accruals can be processed and then be reversed the following month.



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**Accruals**

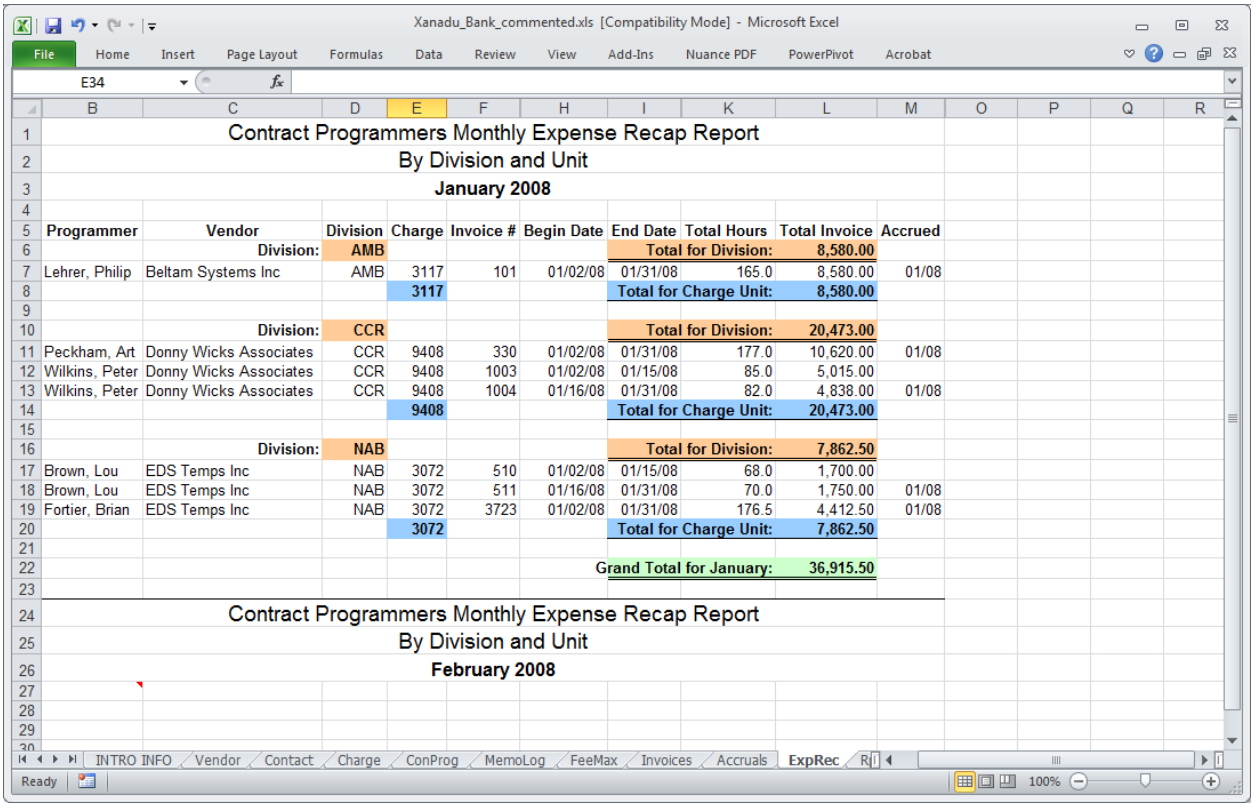
| Programmer | Vendor | Charge | Invoice # | Total Invoice | Accrued | Reversed |
|---|---|---|---|---|---|---|
| Brown, Lou | EDS Temps Inc | 3072 | 509 | 1,750.00 | 12/07 | |
| | | 3072 | Total: | 1,750.00 | | 01/10/08 |
| Peckham, Art | Donny Wicks Associates | 9408 | 329 | 3,600.00 | 12/07 | |
| 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 | | |

INTRO INFO | Vendor | Contact | Charge | ConProg | MemoLog | FeeMax | Invoices | Accruals | ExpRec

Ready 100%

## ix) ExpRec Worksheet

The ExpRec worksheet lists vendor invoice expenses paid each month, sorted by Charge Unit. It also functions as a report sent to each Bank division.

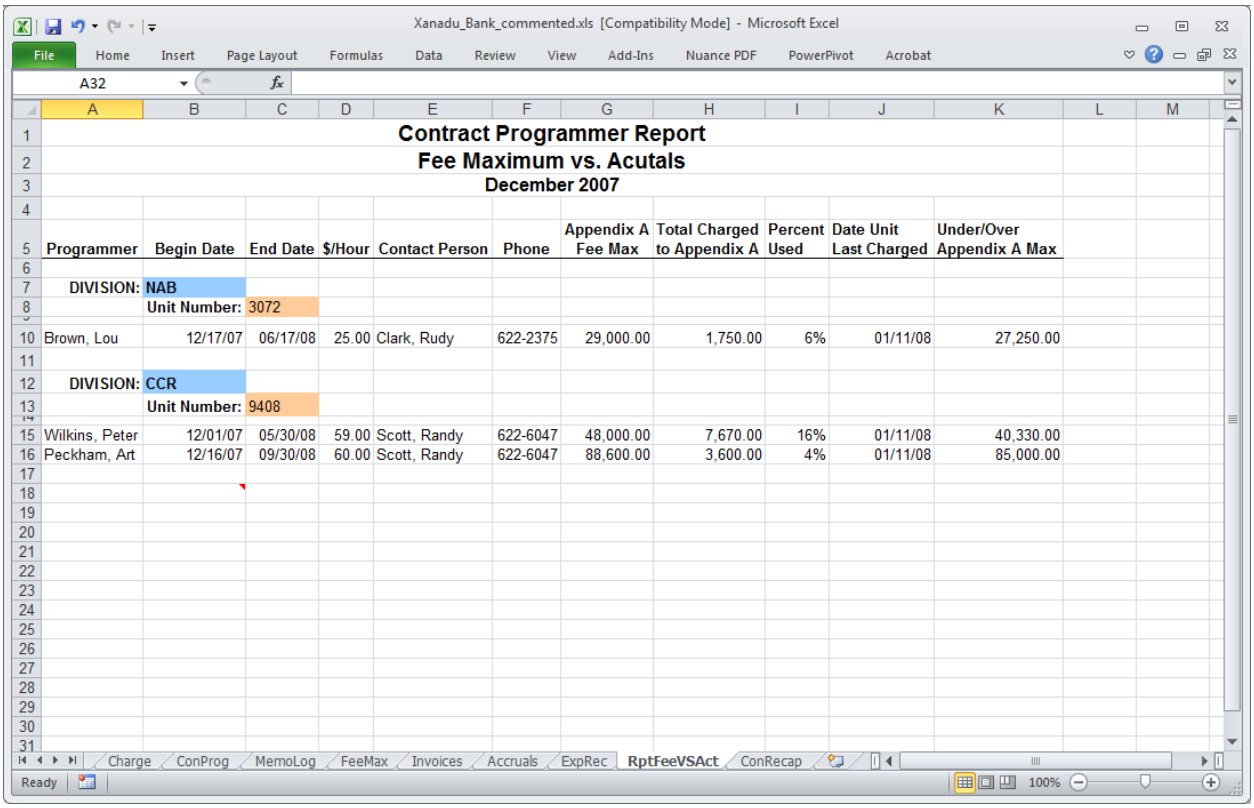


Xanadu_Bank_commented.xls [Compatibility Mode] - Microsoft Excel

| | Programmer | Vendor | Division | Charge | Invoice # | Begin Date | End Date | Total Hours | Total Invoice | Accrued |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Contract Programmers Monthly Expense Recap Report | | | | | | | | | |
| 2 | By Division and Unit | | | | | | | | | |
| 3 | January 2008 | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | Programmer | Vendor | Division | Charge | Invoice # | Begin Date | End Date | Total Hours | Total Invoice | Accrued |
| 6 | | Division: | AMB | | | | Total for Division: | | 8,580.00 | |
| 7 | Lehrer, Philip | Beltam Systems Inc | AMB | 3117 | 101 | 01/02/08 | 01/31/08 | 165.0 | 8,580.00 | 01/08 |
| 8 | | | | 3117 | | | Total for Charge Unit: | | 8,580.00 | |
| 9 | | | | | | | | | | |
| 10 | | Division: | CCR | | | | Total for Division: | | 20,473.00 | |
| 11 | Peckham, Art | Donny Wicks Associates | CCR | 9408 | 330 | 01/02/08 | 01/31/08 | 177.0 | 10,620.00 | 01/08 |
| 12 | Wilkins, Peter | Donny Wicks Associates | CCR | 9408 | 1003 | 01/02/08 | 01/15/08 | 85.0 | 5,015.00 | |
| 13 | Wilkins, Peter | Donny Wicks Associates | CCR | 9408 | 1004 | 01/16/08 | 01/31/08 | 82.0 | 4,838.00 | 01/08 |
| 14 | | | | 9408 | | | Total for Charge Unit: | | 20,473.00 | |
| 15 | | | | | | | | | | |
| 16 | | Division: | NAB | | | | Total for Division: | | 7,862.50 | |
| 17 | Brown, Lou | EDS Temps Inc | NAB | 3072 | 510 | 01/02/08 | 01/15/08 | 68.0 | 1,700.00 | |
| 18 | Brown, Lou | EDS Temps Inc | NAB | 3072 | 511 | 01/16/08 | 01/31/08 | 70.0 | 1,750.00 | 01/08 |
| 19 | Fortier, Brian | EDS Temps Inc | NAB | 3072 | 3723 | 01/02/08 | 01/31/08 | 176.5 | 4,412.50 | 01/08 |
| 20 | | | | 3072 | | | Total for Charge Unit: | | 7,862.50 | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | Grand Total for January: | | 36,915.50 | |
| 23 | | | | | | | | | | |
| 24 | Contract Programmers Monthly Expense Recap Report | | | | | | | | | |
| 25 | By Division and Unit | | | | | | | | | |
| 26 | February 2008 | | | | | | | | | |

## x) RptFeeVSAct Worksheet

The RptFeeVSAct worksheet list the Contract Fee Maximum and Invoices paid against each contract and the amount of dollars available to spend against the contract, sorted by Charge Unit. It also functions as a month-end report sent to each Bank division.



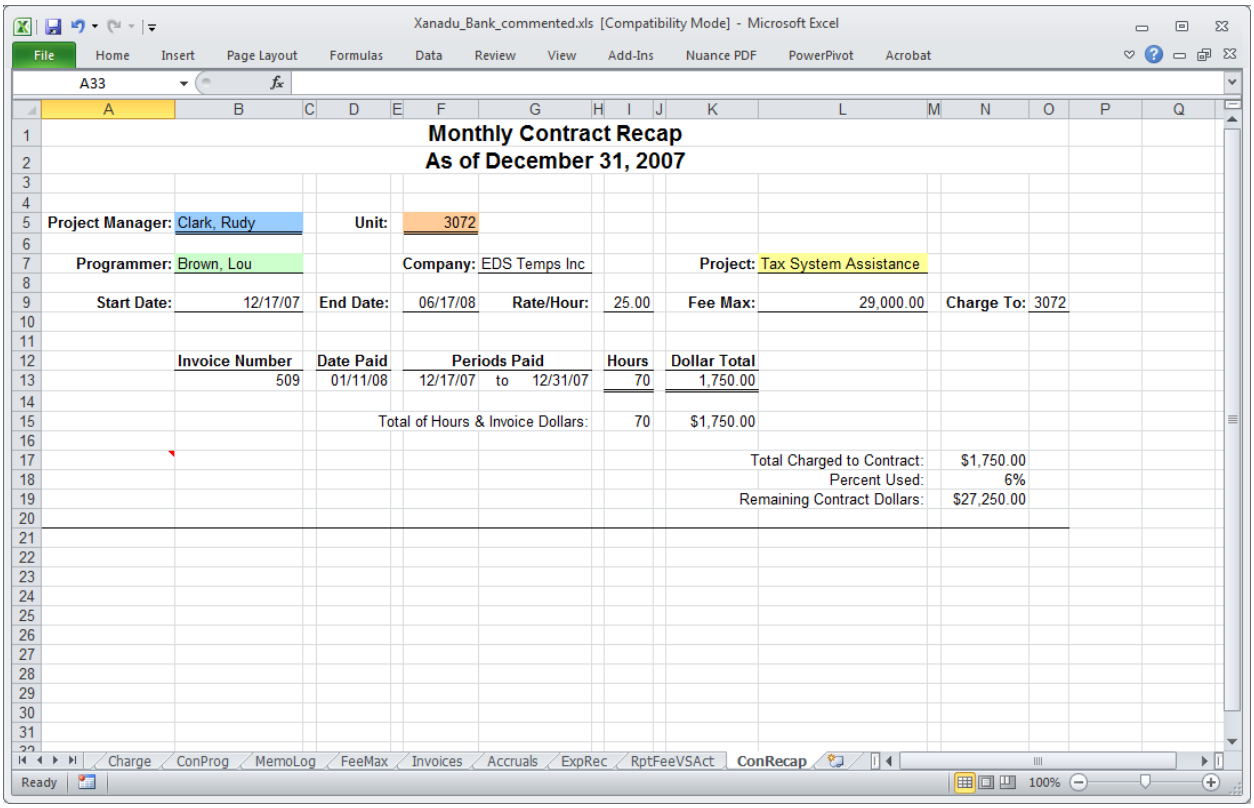
Xanadu_Bank_commented.xls [Compatibility Mode] - Microsoft Excel

**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 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 |

## xi) ConRecap Worksheet

The ConRecap worksheet list contract and invoice information for each Bank Project Manager. The Project Managers receive this as a month-end report and use it to keep track of the vendors working for them.



Xanadu_Bank_commented.xls [Compatibility Mode] - Microsoft Excel

**Monthly Contract Recap**
**As of December 31, 2007**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Manager:** | Clark, Rudy | **Unit:** | 3072 | | | | |
| **Programmer:** | Brown, Lou | **Company:** | EDS Temps Inc | | **Project:** | Tax System Assistance | |
| **Start Date:** | 12/17/07 | **End Date:** | 06/17/08 | **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 |

Charge | ConProg | MemoLog | FeeMax | Invoices | Accruals | ExpRec | RptFeeVSAct | ConRecap

Ready

## j) Data Entry Sheet Example

# 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

## 9) Appendix D – Assumptions

The following assumptions are in effect for the Preliminary Investigation Report (Feasibility Study). A new Assumptions section will be prepared for any subsequent phases (i.e. a System Requirement phase).

- The Bank of Xanadu's senior management will continue to support the project to replace their current stopgap solution and continue to commit resources to the project.
- The Bank of Xanadu's project team will remain intact and available for questions.
- The Bank of Xanadu's budget will remain stable through the next phase.
- The information provided by Bank of Xanadu staff is accurate and complete.
- The TFM project team will remain intact and able to contribute for the next phase.
- The TFM project team's other project commitments will not conflict with this project.

## 10) Appendix E – Issues

The following issues are not necessarily relevant for the Preliminary Investigation Report (Feasibility Study), but they may aid development of a System Requirements document.

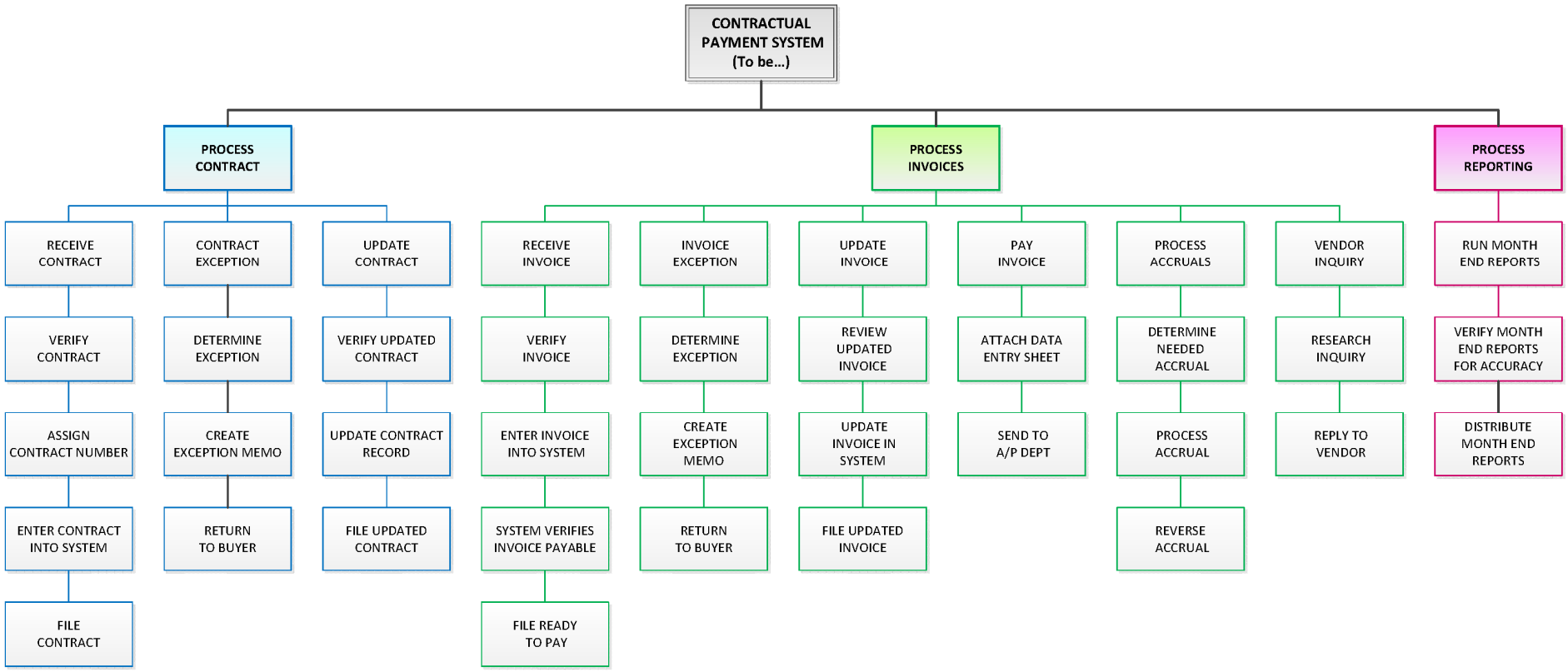
- What is the expected volume of processing when the system goes live?
- Does the Bank want to consider and COTS (commercial-off-the-shelf) products to meet its goals?
- The TFM team has not observed the Bank's staff actually performing the processes discussed at the October 18, 2013 meeting.
- Patrick Jay mentioned the possibility for Access as a possible solution. Access is seen as an ideal solution at the workgroup level, but is probably not scalable for a global enterprise.
- Patrick Jay also mentioned the possibility for a browser-based solution with a relational database backend. A form-based solution might be easier, cheaper, and quicker to develop, secure, and maintain.
- The Bank's Bellevue branch office computers were using a variety of browsers. It would be ideal if the users would settle on a single browser family (assuming the final solution is browser-based).
- Report layouts will need to be approved.

# B. Proposed System FDD and DFD Documents

## 1. FDD

Bank of Xanadu FDD

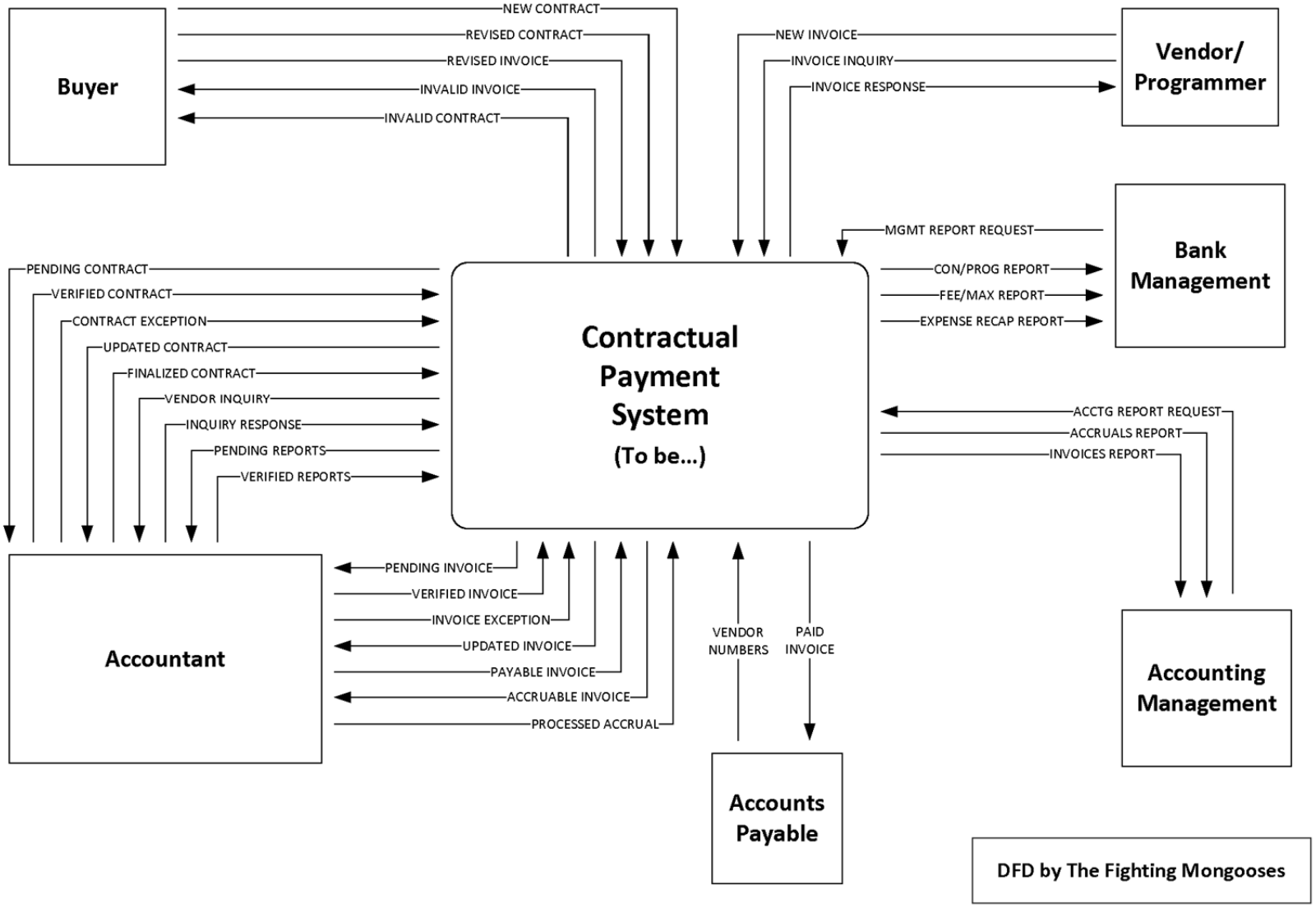
11/14/2013



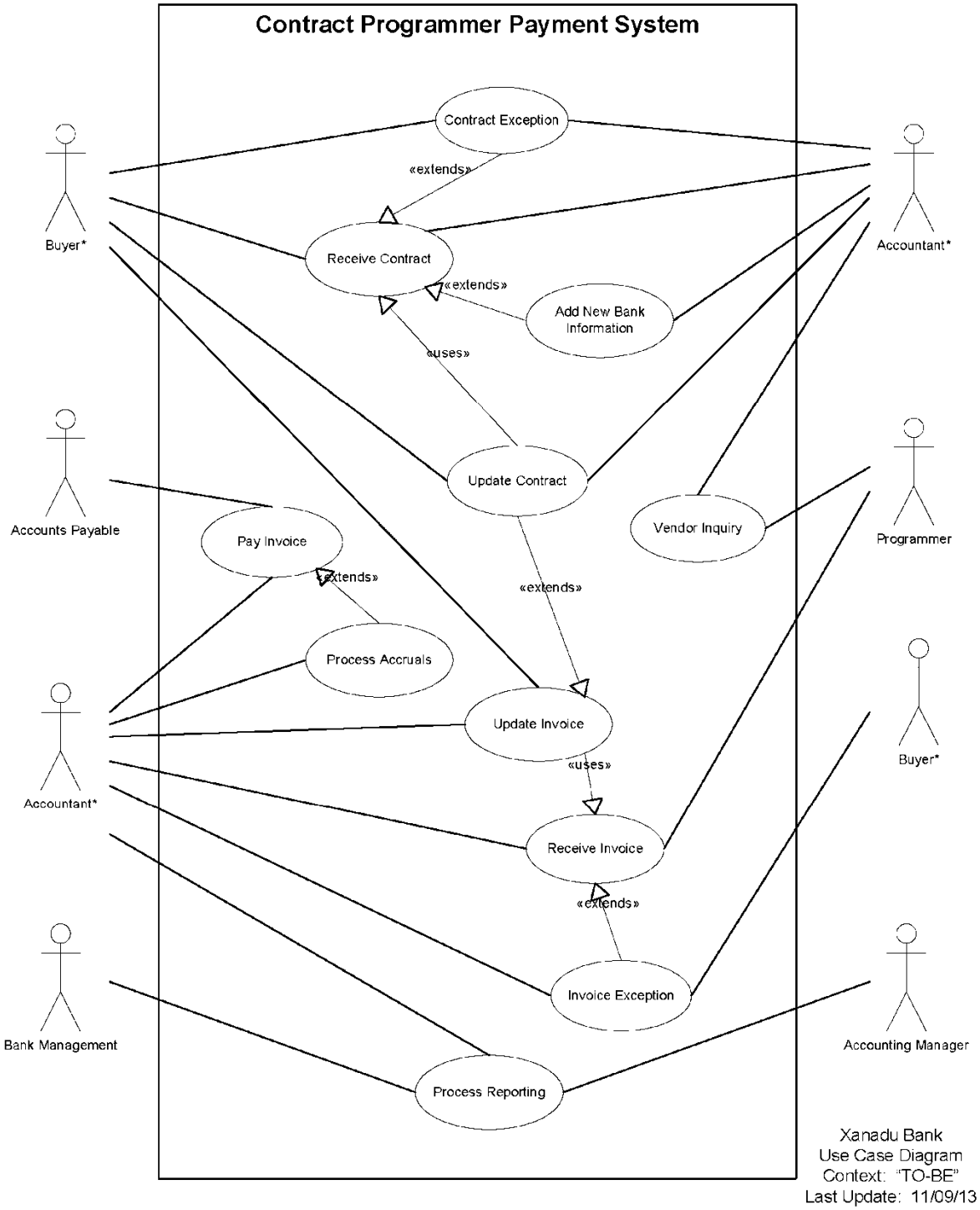
## 2 DFD

# Bank of Xanadu DFD

11/14/2013



# C. 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 Receive Contract, from the time the Accountant receives a new contract from the Buyer, until a new contract record has been successfully entered into the system and the original has been filed. | |
| **Trigger:** | When the Buyer delivers a new contract to the Accountant. | |
| **Related Use Cases:** | Contract Exception (extends); Update Contract (uses) | |
| **Normal Flow of Events:** | This use case begins when the Buyer delivers a new contract to the Accountant:<br><br>1) The Accountant visually verifies that all information required by the accounting department is on the contract Appendix A.<br><br>2) The Accountant manually assigns a special contact number based on the last name and contract end date.<br><br>3) The Accountant logs onto the system and navigates to the contract entry screen.<br><br>4) The Accountant selects the correct vendor.<br><br>5) The Accountant selects the correct project manager (contact).<br><br>6) The Accountant selects the charge unit and bank division.<br><br>7) The Accountant enters all contract information, including programmer name, project start and end dates, hourly pay rate, fee max amount, and project description (see information requirements below).<br><br>8) The Accountant saves the new contract record into the system.<br><br>9) The original hard-copy of the contract is filed for future reference.<br><br>This use case ends when a new contract record is created and the original contract is filed away. | |

| | |
|---|---|
| **Exceptions:** | 1) If any required information is missing, the Accountant returns the contract to the Buyer (see U002 Contract Exception use case).<br><br>2) If the vendor doesn't exist in the system, the Accountant creates a new vendor record.<br><br>3) If the project manager (contact) doesn't exist in the system, the Accountant creates a new contact record.<br><br>4) If the charge unit or bank division doesn't exist in the system, the Accountant creates a new unit and/or division record. |
| **Pre-condition(s):** | A new contract must exist. |
| **Post-condition(s):** | The new contract record has been created and is ready to have invoices processed against it. |
| **Information Requirements:** | Contact Number<br>Vendor Name<br>Charge Unit<br>Project Manager (contact)<br>Fee Maximum<br>Hourly Rate<br>Start Date<br>End Date<br>Project Description |
| **Assumptions:** | The Buyer will always deliver a contract with all required information. If the contract work exceeds the contractual limitations, the buyer will proactively extend the contract. |
| **Business Rules:** | 1) The Accounting department will return a contract to the Buyer if any of the information required by the Accounting department is missing from the *Appendix A* document.<br><br>2) Only one programmer may be associated with a particular contract (*Appendix A*).<br><br>3) A special contract number for internal accounting department use only must be assigned to each *Appendix A* and it is comprised of the last name of the programmer and the end date of the contract.<br><br>4) The Buyer must deliver the *Appendix A* (contract) to the Accounting department before any invoice is sent by the vendor. |

## UC002 – Contract Exception

| USE CASE NAME: | Contract Exception | ID: UC002 |
|---|---|---|
| **Primary Actor:** | Accountant | |
| **Brief Description:** | This use case describes the 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 a contract is delivered by the Buyer to the Accounting department with new vendor, contact, unit, or division information.<br>1) Search for the correct Vendor (Contractor) Number and cannot find one.<br>2) Navigate to the "Create Vendor" screen.<br>3) Enter the required vendor name into the system.<br>4) Search for the correct Contact Person and cannot find one.<br>5) Navigate the "Create Contact" screen.<br>6) Enter the required bank contact name into the system.<br>7) Search for the correct Charge Unit and cannot find one.<br>8) Navigate to the "Create Unit" screen.<br>9) Enter the required bank unit number into the system<br>10) Search for the correct Bank Division and cannot find one.<br>11) Navigate to the "Create Division" screen.<br>12) Enter the required bank division name into the system.<br>13) When finished entering any of the required information above, SAVE the new record into the system.<br>This use case ends when the new vendor, contact, unit, or division record is entered into the system. | |

| | |
|---|---|
| **Exceptions:** | None |
| **Pre-condition(s):** | The existence of a contract with new vendor, contact, unit, or division information. |
| **Post-condition(s):** | The new vendor, contact, unit, or division information has been entered into the system. |
| **Information Requirements:** | Vendor Name<br>Contact Person (Project Manager)<br>Charge Unit<br>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/or exist in the new system. |

## UC003 – Update Contract

| USE CASE NAME: | Update Contract | ID: UC003 |
|---|---|---|
| **Primary Actor:** | Accountant | |
| **Brief Description:** | This use case describes the steps for processing a *Contract Exception Memo* to return an incomplete or invalid contract to a Buyer, from the time an incomplete or 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.<br><br>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.<br><br>2) Enter the contract into the system with as much information as possible.<br><br>3) Enter "missing/invalid" or default to "zero" value in the field for the piece(s) of information that is missing or invalid<br><br>4) Enter the date and reason for the contract return in the "Contract Notes" field<br><br>5) SAVE the contract record into the system<br><br>6) Generate a return memo to the Buyer explaining the reason for the return<br><br>7) Attach the return memo to the contract and send it back to the Buyer<br><br>This use case ends when the incomplete/invalid contract has been returned to the Buyer. | |
| **Exceptions:** | None | |
| **Pre-condition(s):** | A contract has been received and is missing information or contains invalid information. | |

| | |
|---|---|
| **Post-condition(s):** | The incomplete or invalid contract has been returned to the Buyer |
| **Information Requirements:** | Contract ID<br>Programmer<br>Vendor<br>Begin Date<br>End Date<br>Charge Unit<br>Bank Division<br>Hourly Fee<br>Fee Maximum<br>Project Manager<br>PM contact info<br>PM phone number<br>Project Description |
| **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<br>2) It is the Buyer's responsibility to correct any errors in the contract and return it to the Accountant. |

## UC004 – Receive Invoice

| | | |
|---|---|---|
| **USE CASE NAME:** | **Receive Invoice** | **ID: UC004** |
| **Primary Actor:** | Accountant | |
| **Brief Description:** | This use case describes the steps for receiving an invoice from the time it is delivered to the Accountant until it is validated, submitted to A/P for payment and filed. | |
| **Trigger:** | A new invoice is delivered to the Accountant by the vendor. | |
| **Related Use Cases:** | Invoice Exception (extends), Update Invoice (uses) | |
| **Normal Flow of Events:** | This use case starts when the vendor/contractor delivers a new invoice to the Accountant.<br>1) Accountant receives invoice.<br>2) Accountant validates the invoice to ensure information needed is provided.<br>3) Accountant enters the invoice into the system, including all the required information (see information requirements below).<br>4) Accountant saves the record.<br>5) Accountant files hard copy of invoice.<br>The use case ends when a valid invoice has been entered, saved into the system, and filed. | |
| **Exceptions:** | 1) If any required information is missing or incomplete, the accountant returns the invoice to the Buyer.<br>2) If an invoice is received from a vendor and there is no contract on record for that vendor, the Accountant returns the invoice to the Buyer.<br>Also see UC005 Invoice Exception. | |
| **Pre-condition(s):** | There must be a new invoice that needs to be entered into the system. | |

| | |
|---|---|
| **Post-condition(s):** | A new invoice record has been created in the system and the original copy has been filed. |
| **Information Requirements:** | Invoice date<br>Contract ID number<br>Contractor name<br>Vendor<br>Charge unit<br>Service start date<br>Service end date<br>Description of service<br>Hourly rate<br>Total hours<br>Total invoice |
| **Assumptions:** | 1) The vendor/contractor will deliver an invoice with all the required information.<br>2) A contract is on record for the vendor that submitted the invoice.<br>3) The information on the invoice is valid, within contractors/limits.<br>4) The system will be able to accept all the required information on the invoice. |
| **Business Rules:** | 1) The vendor/contractor will deliver the invoice to the accountant.<br>2) All invoice hard copies are filed for future reference.<br>3) All invoices must be entered in the system.<br>4) All invoices receive an auto-generated unique invoice ID number.<br>5) Each invoice can only have one contractor name on it.<br>6) Each invoice must have all the required information needed (see Information Requirements above).<br>7) All time on the invoice must be approved by the project manager. |

## UC005 – Invoice Exception

| 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 determines the new invoice from the buyer has an error until the Accountant has returned the invoice to the buyer. | |
| **Trigger:** | When the invoice is found to contain an error | |
| **Related Use Cases:** | Update Invoice (uses) Receive Invoice (extends) | |
| **Normal Flow of Events:** | This use case begins when the Accountant has determined a new invoice has an error.<br>1) The Accountant has determined that there is an error in the Invoice through the system<br>2) The Accountant creates and enters the error in the system to an Exception Memo<br>3) The Accountant sends the Exception Memo to the Buyer<br><br>This use case ends when the Buyer has received the Exception Memo for the Invoice | |
| **Exceptions:** | None | |
| **Pre-condition(s):** | A new invoice will have invalid information. | |
| **Post-condition(s):** | Invoice has been returned to the Buyer. | |
| **Information Requirements:** | Buyer's Name<br>Buyer's Unit Number<br>Buyer's Division<br>Accountant's Name<br>Accountant's Unit Number<br>Accountant's Division<br>Vendor Name<br>Invoice<br>Date Exception Memo created<br>Action done with Exception Memo<br>Reasons for Failed Invoice Including<br>- Dollar Amount Exceeded by for Invoice<br>- No Contract on File<br>- Invoice Period Outside of Contract Dates<br>- No Time Sheet<br>- No Invoice/ Time Sheet Approval<br>- Time Sheet and Invoice Discrepancy<br>- Billed Rate Different from Contract Rate<br>- Other selection | |
| **Assumptions:** | The system determined that there is indeed an error in the invoice. | |
| **Business Rules:** | 1) The Accounting department will return an invoice to the Buyer if any of the information required by the Accounting department is | |

| | |
|---|---|
| | missing from the *Appendix A* document.<br>2) The invalid invoice shall be returned by the Accounting department with an *Exception Memo* to the Buyer. |

## UC006 – Update Invoice

| USE CASE NAME: | Update Invoice | ID: UC006 |
|---|---|---|
| **Primary Actor:** | Accountant | |
| **Brief Description:** | This use case describes the steps for updating an invoice from the time the Buyer returns an updated invoice to the Accountant until the Accountant has filed the invoice to be ready to be paid. | |
| **Trigger:** | When a Buyer has sent an updated invoice to the Accountant. | |
| **Related Use Cases:** | Pay Invoice (uses) Invoice Exception, Receive Invoice (extends) | |
| **Normal Flow of Events:** | This use case begins when the Buyer returns an updated invoice to the Accountant.<br>1) The Accountant receives an updated invoice from the Buyer.<br>2) The Accountant visually verifies that all the information required by the Accounting department is on the invoice.<br>3) The Accountant logs onto the system and navigates to the invoice entry screen<br>4) The Accountant verifies and enters all contract information, including programmer name, invoice number, project start and end dates for invoice, hourly pay rate, hours worked. (See information requirements below).<br>5) The system then verifies that the information of the previously saved contract or previous invoice data matches the information on the invoice.<br>6) The system then finishes compiling and verifies if the invoice is payable<br>7) The invoice is filed by the Accountant and ready to be paid.<br>This use case ends when the Accountant has filed an invoice to be paid. | |
| **Exceptions:** | | |
| **Pre-condition(s):** | An invoice is needed to be updated. | |
| **Post-condition(s):** | The invoice is ready to be paid. | |
| **Information Requirements:** | Contract Number<br>Vendor Name/ Number<br>Charge Unit<br>Client Company<br>Invoice Number<br>Date Paid<br>Begin and End Date<br>Hourly Rate<br>Total Hours<br>Project Manager/ Contact | |
| **Assumptions:** | 1) An invoice has been updated by the Buyer and returned to the Accountant.<br>2) An invoice at this stage will not have any more errors<br>3) If the vendor doesn't exist in the system, the Accountant will create | |

| | |
|---|---|
| | a new vendor record.<br>4) If the project manager (contact) doesn't exist in the system, the Accountant will create a new vendor record.<br>5) If the charge unit or bank division doesn't exist in the system, the Accountant will create a new unit and/ or division record. |
| **Business Rules:** | 1) The Buyer shall submit a correct and updated invoice to the Accountant.<br>2) The Accountant will verify the information visually and using the automated system<br>3) Only one programmer may be associated with a particular contract (*Appendix A*)<br>4) A special contract number for internal accounting department use only must be assigned to each *Appendix A* and is comprised of the last name of the programmer and the end date of the contract.<br>5) The Buyer must deliver the *Appendix A* (invoiced) to the Accounting department before any invoice is sent by the vendor. |

## UC007 – Pay Invoice

| USE CASE NAME: | Pay Invoice | ID: UC007 |
|---|---|---|
| **Primary Actor:** | Accountant | |
| **Brief Description:** | This use case describes the steps for paying an invoice from the time the Accountant selects an invoice to be paid until the invoice and a data entry sheet has been sent to the Accounts Payable department. | |
| **Trigger:** | When an Invoice is ready to be paid. | |
| **Related Use Cases:** | Process Reporting (uses), Update Invoice, Receive Invoice(extends) | |
| **Normal Flow of Events:** | Use case begins when an Accountant selects an invoice to be paid.<br>1) The Accountant selects an invoice to be paid.<br>2) The Accountant fills out a data entry sheet.<br>3) The Accountant attaches the data entry sheet to the invoice<br>4) The Accountant sends the data entry sheet with the invoice to the Accounts Payable department.<br>This use case ends when the Accountant has sent the invoice and data entry sheet to the Accounts Payable department. | |
| **Exceptions:** | None | |
| **Pre-condition(s):** | An invoice has been completed, filed, and is ready to be paid. | |
| **Post-condition(s):** | The invoice will be attached with a data entry sheet and sent to the Accounts Payable department. | |
| **Information Requirements:** | Completed Invoice<br>Vendor Name<br>Vendor Number<br>Invoice Number<br>Description<br>Invoice Date<br>Due Date<br>Invoice Total<br>G/L Account<br>P.O Number<br>Charge Unit<br>Date Processed<br>Accountant's Name | |
| **Assumptions:** | 1) An invoice is completed, error free, and ready to be paid.<br>2) A data entry sheet will be filed out by an Accountant<br>3) The data entry sheet will be attached with the invoice and sent to the Accounts Payable department. | |
| **Business Rules:** | 1) An invoice will be processed to be paid by an Accountant after it has been completed.<br>2) A data entry sheet will be filled out by an Accountant to give relevant information to the Accounts Payable department<br>3) The data entry and invoice will be attached together and sent to the Accounts Payable department when finished processing. | |

## UC008 – Process Accrual

| USE CASE NAME: | Process Accrual | ID: UC008 |
|---|---|---|
| **Primary Actor:** | Accountant | |
| **Brief Description:** | This use case describes the steps for processing an invoice accrual, from the time the determination is made to accrue the invoice until the invoice has been accrued in the system. | |
| **Trigger:** | When a payable invoice is unable to be paid for the current month. | |
| **Related Use Cases:** | UC007 Pay Invoice | |
| **Normal Flow of Events:** | This use case begins when the Accountant receives a payable invoice that is not payable for the current month.<br><br>1.The Accountant will process accrual<br>2. The system determines the needed accrual<br>3. The system generates an accrual report<br>4. The system reverses the accrual<br><br>This use case ends when the system reverses accrual. | |
| **Exceptions:** | Not applicable | |
| **Pre-condition(s):** | A Payable invoice must exist. | |
| **Post-condition(s):** | This use case ends when the Accrual is reversed. | |
| **Information Requirements:** | 1. Vendor Name<br>2. Vendor Address<br>3. invoice #<br>4. Invoice Date<br>5. Bank address<br>6. Sales Person<br>7. Master Agreement #<br>8. Project/Service#<br>9. Start and End Date<br>10. Hours<br>11. Hourly Rate<br>12. Charge unit<br>13.Contract #<br>14.Client Company<br>15.accrual date | |
| **Assumptions:** | The Vendor will always deliver a payable invoice will all the required Information. | |
| **Business Rules:** | 1) The accrual will be processed at the beginning of the next month.<br>2.) The Accounting department will generate an accrual report and send it to accounting management. | |

## UC009 – Vendor Inquiry

| USE CASE NAME: | Vendor Inquiry | ID: UC009 |
|---|---|---|
| **Primary Actor:** | Accountant | |
| **Brief Description:** | This use case describes the steps for vendor inquiry, from the time the Accountant receives inquiry, until the invoice is sent out to the vendor | |
| **Trigger:** | When the vendor sends out a inquiry. | |
| **Related Use Cases:** | Invoice exception (extends), update Invoice (uses) | |
| **Normal Flow of Events:** | This use case begins when the Accountant receives an invoice inquiry form a vendor.<br><br>1. The Accountant receives vendor inquiry.<br>2. The Accountant researches for the vendors invoice.<br>3. The Accountant then sends out the inquiry response<br><br>This use case ends when the Accountant sends out the inquiry response. | |
| **Exceptions:** | Not applicable | |
| **Pre-condition(s):** | An invoice must exist. | |
| **Post-condition(s):** | This use case ends when the inquiry response is send to the vendor. | |
| **Information Requirements:** | 1. Vendor Name<br>2. Vendor Address<br>3. Invoice #<br>4. Invoice Date<br>5. Bank address<br>6. Sales Person<br>7. Master Agreement #<br>8. Project/Service#<br>9. Start and End Date<br>10. Hours<br>11. Hourly Rate<br>12. Charge unit<br>13.Contract #<br>14.Client Company<br>15.Date invoice is sent | |
| **Assumptions:** | The vendors will inquiry about the invoice. | |
| **Business Rules:** | 1. The Accountant will respond to the vendor with a timely manner. | |

## UC0010 – Run Month End Reports

| USE CASE NAME: | Run Month End Reports | ID: UC010 |
|---|---|---|
| **Primary Actor:** | Accountant | |
| **Brief Description:** | This use case describes steps to generate the Accounting department's month-end reports from the time they are due until they have been printed. | |
| **Trigger:** | Month-end triggers generation of Accounting department reports | |
| **Related Use Cases:** | Receive Contract (extends), Receive Invoice (extends) | |
| **Normal Flow of Events:** | This use case begins at the end of every month.<br>1. Verify the accruals for the month.<br>2. Generate a monthly Accrual Report.<br>3. Verify Invoices during the month.<br>4. Generate Invoice Report.<br>5. Verify monthly Audits.<br>6. Generate Audit Report.<br>7. Save a copy of all reports.<br>8. Send all reports to Accounting department.<br>This use case ends when the reports are sent out. | |
| **Exceptions:** | None | |
| **Pre-condition(s):** | End-of-month | |
| **Post-condition(s):** | Reports are sent to the Accounting department, bank management | |
| **Information Requirements:** | Accruals<br>ID numbers<br>Programmers<br>Vendors<br>Charges<br>Invoice #s<br>Dates Paid<br>Begin Dates<br>End Dates<br>Rates<br>Total Hours<br>Total invoices<br>Memos<br>Total of this Month<br>Audits | |
| **Assumptions:** | Reports are manually delivered to the Accounting department, Bank management. | |
| **Business Rules:** | 1. Reports and report recipients remain the same for To-Be system.<br>2. Accruals have been generated for current month.<br>3. All invoice expenses, fee max info, and contract info has been entered for the current month. | |

# D. Requirements Catalog

The requirements list is divided into sections related to contract, invoices, reports, or general processing requirements. Use case scenarios are mapped to each requirement (see XXX for Use Case Scenarios).

### Contract Processing

**CP1.** The system must allow for creating new contract records, allowing input of all to-be-designated information and any other identified by the Bank of Xanadu project team. (UC001, UC002, UC003)

**CP2.** The system must assign new contract records a unique contract number. (UC001)

**CP3.** The system must present messages for any contract record with missing or invalid data. (UC001, UC002, UC003)

**CP4.** The system must allow saving the contract info into the database. (UC001, UC002, UC003)

**CP5.** The system must designate to the user that the contract record is considered valid or not valid. (UC001, UC002, UC003)

**CP6.** The system must allow for creating new vendor records, allowing input of all to-be-designated information and any other identified by the Bank of Xanadu project team. (UC001, UC002, UC003)

**CP7.** The system must assign new vendor records a unique vendor number. (UC001)

### Invoice Processing

**IP1.** The system must allow for creating new invoice records, allowing input of all to-be-designated information, including vendor information and any other identified by the Bank of Xanadu project team. (UC004, UC005, UC006, UC007)

**IP2.** The system must assign new invoice records a unique invoice number. (UC004, UC005, UC006, UC007)

**IP3.** The system must be able to duplicate the functionality of the *Contractor Invoice Problems Exception Memo*, alerting the Buyer that there is an invoice exception. (UC004, UC005, UC006, UC007)

**IP4.** The system must present messages for any invoice record with missing or invalid data. (UC004, UC005, UC006, UC007)

**IP5.** The system must allow saving the invoice info into the database. (UC004, UC005, UC006, UC007)

**IP6.** The system must designate to the user that the invoice record is considered valid or not valid. (UC004, UC005, UC006, UC007)

**IP7.** The system must be able to compare an invoiced amount to the maximum amount allowed for the contract and notify the user that the invoice is payable or requires attention. (UC004, UC005, UC006, UC007)

**IP8.** The system must be able to compare the hourly rate from the invoice to the hourly rate in the contract. (UC004, UC005, UC006, UC007)

**IP9.** The system must be able to compare the effective contract dates to the work dates on the invoice. (UC004, UC005, UC006, UC007)

**IP10.** The system must be able to create and reverse accruals. The system must be able to duplicate the functionality of the *Data Entry Sheet*, alerting Accounts Payable that an invoice is payable. (UC008)

### Reports Processing

**RP1.** The system must be able to generate the equivalent of the Excel-based *Invoices* report for the Accounting department (UC010)

**RP2.** The system must be able to generate the equivalent of the Excel-based *Accruals* report for the Accounting department (UC010)

**RP3.** The system must be able to generate the equivalent of the Excel-based *Contract Programmers Monthly Expense Recap Report* for the Bank management. (UC010)

**RP4.** The system must be able to generate the equivalent of the Excel-based *Contract Programmer Fee Maximum vs. Actuals Report* for the Bank management. (UC010)

**RP5.** The system must be able to generate the equivalent of the Excel-based *Monthly Contract Recap* report for the Bank management. (UC010)

**RP6.** The system must be able to generate email messages when new reports are available (at month end). (UC010)

**RP7.** Reports will be available online, dependent upon security level, and printable to local printers within the bank. (UC010)

### General Processing

**GP1.** The system rather than the Accountant must handle calculations. (UC001, UC002, UC003, UC004, UC005, UC006, UC007, UC008)

**GP2.** The system must handle error notification for improperly entered or missing information where practical. (UC001, UC002, UC003, UC004, UC005, UC006, UC007, UC008)

**GP3.** The system must be able to gracefully recover from exceptions and not crash because of improperly entered or missing information. (UC001, UC002, UC003, UC004, UC005, UC006, UC007, UC008)

**GP4.** The system must have levels of authorization for various processes, to be determined at design time. (UC001, UC002, UC003, UC004, UC005, UC006, UC007, UC008, UC009, UC010)

**GP5.** The system must allow for updates, changes, and deletions of records and information when the proper level of access is used. (UC001, UC002, UC003, UC004, UC005, UC006, UC007, UC008)

**GP6.** The system must disallow updates, changes, and deletions of records and information when an access level is forbidden from making any such changes. (UC001, UC002, UC003, UC004, UC005, UC006, UC007, UC008, UC009, UC010)

**GP7.** The system must have the ability to make certain queries at the time of implementation and allow for new queries to be built for the system as needed on a time/cost basis or by the Bank's IT staff if simple database queries. (UC009, UC010)

| Input Type | Data Element |
|---|---|
| **Contract (Appendix A)** | ○ Vendor name<br>○ Project/Services Number<br>○ Charge Unit<br>○ Bank Project Manager (and contact info)<br>○ Fee Schedule (contract max)<br>○ Generic Job Level<br>○ Hourly Rate<br>○ Start Date<br>○ End Date<br>○ Contract agreements<br>○ Instructions of submitting invoices<br>○ Scope of Services |

| Input Type | Data Element |
|---|---|
| **Invoice** | ○ Vendor name<br>○ Vendor Invoice Date<br>○ Vendor Invoice Number<br>○ Vendor Time Period<br>○ Vendor Total Hours Worked<br>○ Vendor Pay Rate<br>○ Bank Rep Acceptance Signature |
| **Data Entry** | ○ Vendor Name<br>○ Vendor Number<br>○ Invoice Number<br>○ Description<br>○ Invoice Date<br>○ Due Date<br>○ Invoice Total<br>○ G/L Account<br>○ P.O. Number<br>○ Charge Unit<br>○ Processed By |
| **Contract Extension** | ○ Change to End Date<br>○ Change to Fee Schedule (contract max) |

## E. Other Charts

No other charts were available at time of publication. See CIS 234 documentation, Spring 2014 for more information.