JN Bentley UK

BUDT758N – Business Process Analysis

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Executive Summary

This report concerns JN Bentley UK, which is a construction company in the UK specializing in projects related to the water industry. This report would take a look into the steps taken by our team to better their current information. This summary expands upon the analysis and design phase as well as looking into the final conclusion and recommendation.

Summary of the Analysis Phase Report:

While evaluating the current systems at JN Bentley, we found out that they are using a legacy system based on Lotus Notes. This system currently works for them but is prone to bottlenecking and random shutdowns leading to loss of data and a lot of frustration with the current users.

A lot of their current processes are based on individual users working on pre-coded excel sheets which need definitive inputs and are very hard to error correct. They also have a steep learning curve for new users while the older users have gotten very used to the current process and refuse to learn a new way of working with the system.

Additionally, the data flow between the departments is not very organized and often leads to data duplication and lack of co-ordination between multiple departments due to lack of data replication on different department servers. This is especially prevalent in the two sub-departments of the procurement department, namely the buying department and the sub-contracting department.

The changes made to the system would serve an ensemble of functions. When implemented, the new system should be able to manage all of the processes in a centralized fashion. The system would be efficient while managing to keep all of its databases at various locations as required. It should also be able to merge all the processes without creating conflicts in between departments and generate all of its outputs in a standardized fashion.

Summary of the Design Phase Report:

This stage involves the final touches of implementing the new information system. The system needs satisfactory approval from JN Bentley management and feasibility testing. It is inclusive of a final evaluation letter from the client, a complete system analysis report, synchronized system models (CRUD Matrix), the physical system design, the feasibility analysis matrix, physical data flow diagrams (DFDs), input and output design, the implementation plan, and lessons learned.

The candidate solutions table compared viable options to improve the JN Bentley information system. We realized the need to switch to an ERP system in order to streamline all of the processes and came up with two alternate solutions and an option of updating our current systems. Since JN Bentley isn't a technology firm, we found it to be in our best interest to either outsource the production of a new software, buy a new packaged system, or outsource an upgrade of our current systems. Based on these requirements, we identified three main options which were the **Xpedeon system** (Outsource), **SAP** (COTS) and a **local vendor** for the upgrade.

SAP offers a ton of features but lacks customizability, which would result in changes to a lot of our processes. These changes may be hard to implement as the users have gotten very used to the current processes and would offer significant opposition to the idea. SAP is also a very costly option to implement due to their renowned brand value.

When it came to a local vendor, we run into issues of trying to revive a dying system. They may fix the system intermittently but in the long run, the system may continue failing due to its dependencies on legacy systems and lack of viable upgrades.

Finally, we settled on the Xpedeon system as our recommendation, mainly because it maintains our current processes while merging it with state of the art systems. Xpedeon is also a growing company and has incentive to deliver a system which aligns perfectly with our processes while eradicating all the flaws of the previous system. Although the development time is slightly longer, the implementation plan is a phased plan which maintains current working systems while integrating them seamlessly.

Survey Phase Report

Client and Industry Background:

Our client is JN Bentley UK. This is a market leading UK based Civil Engineering and Construction company which has its projects mainly related to the water sector in UK. While the Water Sector is its primary market, JN Bentley is a part of the global management, engineering and development consultancy Mott MacDonald. JN Bentley is a large-scale company which employs in excess of 1300 employees and has a portfolio of over 250 live projects.

In addition to the water works, JN Bentley is looking to expand its horizons into the renewable energy sector as working in conjunction with the government for water work projects has made the company highly environmentally aware. They are also planning on expanding into the Solid Waste sector as their work also involves wastewater management.

Seeing how our client is intent on massively scaling up their business, our primary objective is to figure out a way to integrate all of these business functions without compromising on the quality, rather improving on it

Areas for Improvement, Opportunities, and Directives:

The current business functions of the company are divided into multiple departments which handle different aspects of all of their projects. The four primary departments on which we will be focusing are:

1. Steering Committee: This is the department responsible for project cost assessment. They review government projects which are up for bid and decide the lowest amount JN Bentley can bid while staying competitive with their competitors and make a profit.

2. Surveying: This is the department which is responsible for developing detailed overviews of all the resources that will be required on a project. Each project has an assigned Quantity Surveyor who keeps a track of their projects while the project is going on and makes changes to their monthly feasibility and cost reports.

3. Procurement: This is the department which is responsible for finding suppliers based on project needs, placing orders for the supplies needed for various projects and coordinating with the surveying department to ensure timely delivery and execution of all tasks related to a project.

4. Accounting: The accounting department takes care of all of the things related to the costs of each project. They handle the invoices, payments, payroll and taxes while keeping track of the expenditure for each project and appraising the customers or suppliers of any changes in the budgets.

We have identified the following specific issues at JN Bentley:

- Steering Committee:
    - The projects selected by this department may not always result in a profit despite the department stating so explicitly, mainly due to project scope revisions, intangible events and other reasons.
        - Potential opportunities:
            - Establish communication with the quantity survey department in order to better estimate the project costs and risk profiling.
            - Having a reservoir of data of previous similar projects which could help in estimation.

- Procurement Department:
    - The buying and sub-contracting functions within this department are working on different software and the software is not well integrated.
    - This causes communication failures between the two sub-departments. For example, a task may be subcontracted, but the buyers also order the materials for the task though that is no longer the responsibility of JN Bentley.
        - Potential opportunities:
            - There is a potential opportunity to integrate to a single software.

- Lotus Notes:
    - The quantity survey and Accounting departments uses Lotus Notes which, in its time was highly advanced, but now is considered a legacy system.
    - While Lotus Notes is functional, we are beginning to see significant issues on the horizon due to increasing data quantities and an inability for Lotus Notes to handle the increase in data. There are often days when the system crashes and the client has to re-enter significant amounts of data in the database.
    - While Lotus Notes is widely accepted throughout the company, there is a high probability that the system will be unable to keep up with load that will result from the expansion plans.
        - Potential Opportunities:
            - There is a potential opportunity to integrate all the departments in the company under one ERP software which takes into account all the needs of the different departments while allowing some leeway to each department.
            - We see an opportunity to streamline processes by eliminating data consistency issues.
            - The business processes can be optimized in order to increase the overall company data management efficiency.

Project Scope:

- In Scope:
    - Improve JN Bentley systems and business processes that are related to the following:
        - Steering Committee
        - Procurement Department
        - Surveying Department
        - Accounting Department
- Out of Scope:
    - Any departments, other than the ones mentioned above, even if they have similar issues.

Project Objectives:

- General:
    - Improve all of the immediately addressable processes within the system.
    - This should be managed using a calculated mix of sound business practices and efficient ERP/technology stack implementation.
    - Make changes to the RFP business processes for reviewing and approving specific projects, should account for communication between departments throughout project selection process
    - Make changes to the Budgeting, Resourcing, and Reporting process as currently they are not very organized.
    - Simplify the payment process so that the suppliers and the customers are kept fully informed and there is steady cash flow.

- Time based milestones:
    - Project proposal presentation: February 12th, 2018
    - Understanding current strategies, business requirements and technology scope revisions: February 19th, 2018
    - Logical technical design: March 5th, 2018
    - Technology implementation: April 10th, 2018
    - Review and final approval from client: April 17th, 2018
    - System Analysis Presentation and Phase Report: April 26th, 2018
    - Final Project Presentation and Design Phase Report: May 7th, 2018

Project Constraints:

- Funds, to make necessary improvements to current systems or switch to new systems.
- Funds, to employ skilled staff that will support any new business systems we may recommend.
- The technology stack implemented for the system is esoteric and might not efficiently adapt with the proposed changes; requiring iterative tests.
- The time to implement the changes to the existing system and user learning time for the new system as this is a company-wide change.
- Data collection, replication and synchronization; ensuring that all data is received from the previous system and integrated into the new system.
- Obtaining buy-in. All decisions have to made in coordination with concerned departments. Each of those departments may resist changes.

Analysis Phase Report

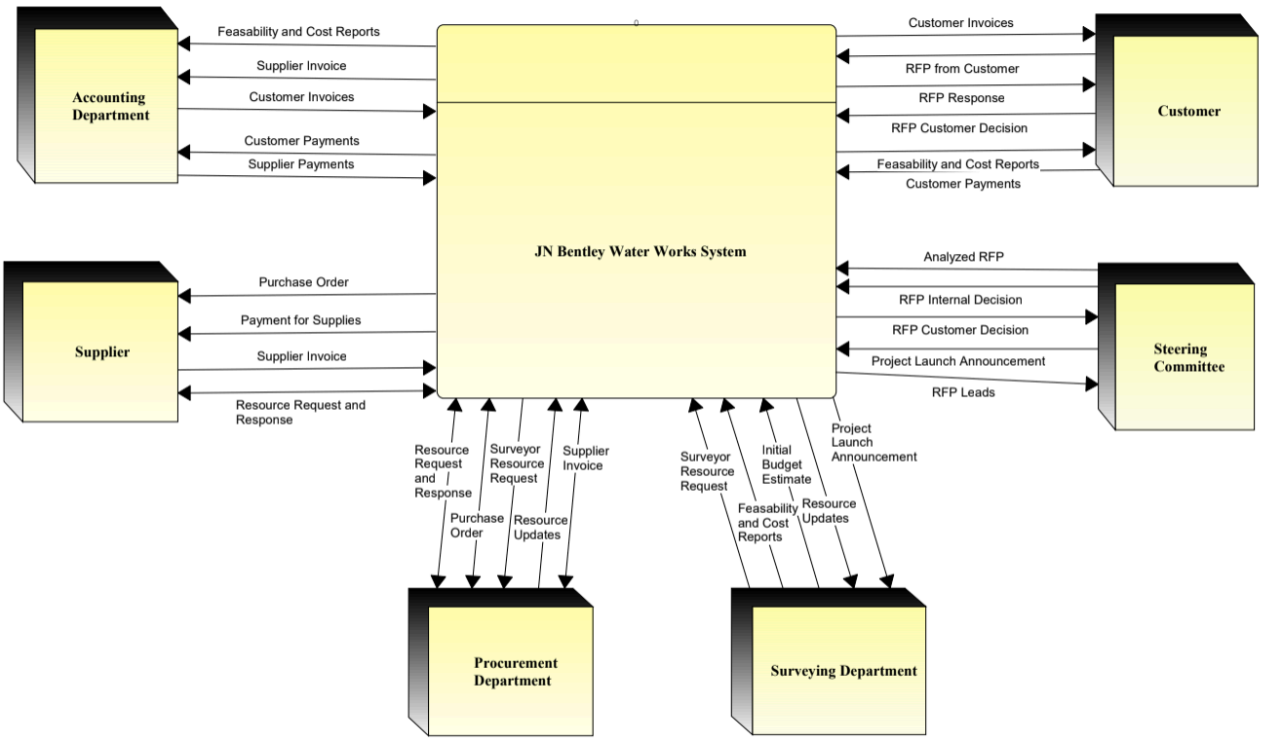
Fact Findings and Information Gathering Techniques:

We used two main fact findings and information gathering techniques in order to properly map the current system of JN Bentley. We used the interviewing fact finding technique to study the current system. We carefully selected interviewees, designed interview questions, and prepared the agenda for the interview and post-interview follow-up. All the interviews were conducted one on one. Due to time constraints, we also designed a questionnaire for people from whom information and opinions were needed.

We asked department managers information that they give and receive to the information system. We learned that the accountant, supplier, buyer, surveyor, steering committee, and customer are all entities involved in data flow.

Data Flow Diagrams of the Current System

DFD – Context Level:



External Entities/Agents:

Accounting Department: The accounting department is its own external agent/entity within the company. The accounting department is responsible for managing and collecting customer payments. The department is also responsible for generating and sending customer invoices as well as receiving supplier invoices from the supplier. The accounting department also receives a copy of the feasibility and cost reports for a project from the surveying department for filing.

Supplier: The supplier is an external entity to our client. The supplier is responsible for receiving resource requests and responding in a timely manner. The supplier sends supplier invoices to the accounting department, detailing supplies necessary for a project. Suppliers will then receive payment for supplies purchased by procurement.

Procurement Department: Procurement is ultimately the purchasing department internal to our client. The procurement department receives buyer resource requests and responds accordingly. The procurement department receives, reviews, and sends purchase orders for supplies needed for a specific project. The procurement department receives a copy of the supplies, after purchasing, on the supplier invoice and receives periodic resource updates for any given project as well.

Surveying Department: The surveying department is responsible for reviewing a project and generating a feasibility and cost report for a specific project. The surveying department conducts research to determine resource requests and estimated budgets for a project recently launched and approved by the Steering Committee. The surveying department is responsible for generating estimates and feasibility reports for any given approved project. This internal department plays a critical role in the initial success of a project.

Steering Committee: The Steering Committee determines which projects should and should not be accepted and on-boarded by our client. The steering committee receives Requests for Proposal (RFP's) and reviews these projects to determine likelihood of success. The Steering Committee is internal and comprised of a variety of professionals from various departments. The steering committee plays a critical role in the Bidding and RFP processes in the current system.

Customer: A customer is a potential client of JN Bentley specifically. A customer is an external entity/agent and submits a RFP to our client in hopes of the project being approved, worked on, and executed successfully by JN Bentley.

Systems Input:

From Accounting Department:

Supplier Payments: Accounting department receives payment for supplies from the supplier.

Customer Invoices: Accounting department generates customer invoice and sends to the customer.

From Supplier:

Supplier Invoice: Supplier sends an invoice detailing supplies JN Bentley will be purchasing for a specific project.

Resource Request/Response: Supplier submits a resource response to the resources requests by the internal procurement department.

From Procurement Department:

Resource Request: Procurement department submits a request for certain resources based on the surveyor resource request.

Purchase Order: Procurement department generates a purchase order detailing supplies needed that is then sent to the supplier directly.

Resource Updates: Procurement department will submit any resource updates to the system for any given project as needed.

From Surveying Department:

Surveyor Resource Request: Surveying department submits a surveyor resource request detailing resources the surveying department thinks is necessary for the project.

Feasibility and Cost Reports: Surveying department submits a feasibility and cost report that is then sent to the accounting department and the client.

Initial Budget Estimate: Surveying department generates an initial budget estimate for an approved project and submits to the system.

From Steering Committee:

Project Launch Announcement: Steering committee submits a project launch announcement that is then sent to the surveying department. This project launch announcement is generated after the Steering Committee has reviewed a RFP from the client and approved a project for onboarding.

RFP Internal Decision: Steering Committee submits an RFP Internal Decision to the system after a project has been reviewed for potential acceptance by JN Bentley.

From Customer:

Customer Payments: Customer sends payment to the accounting department after receiving notice that their project has been approved and onboarded by JN Bentley.

RFP Customer Decision: Customer submits acceptance of terms and their decision to become a client of JN Bentley.

RFP from Customer: Customer submits an initial RFP to be reviewed by the Steering Committee.

Systems Output:

To Accounting Department:

Customer Payments: Accounting department receives payment from the customer for accepting a project for the client.

Supplier Invoices: Accounting department receives supplier invoices directly from the supplier detailing supplies JN Bentley will be purchasing from the external supplier.

Feasibility and Cost Reports: Accounting department receives feasibility and cost reports from the Surveying Department. The feasibility and cost reports include rough estimates and feasibility measures of an approved and onboarded project.

To Supplier:

Purchase Order: Supplier receives a purchase order from the procurement department and then generates a sales invoice based on the resources requested.

Payment for Supplies: Supplier receives compensation by JN Bentley for supplies purchased for a specific project.

Resource Request: Supplier receives a request for certain resources from the procurement department.

To Procurement Department:

Resource Response: Procurement department receives a copy of a response from the supplier regarding what resources were requested and available for purchase for any given project.

Purchase Order: Procurement department receives a copy of the purchase order sent out for filing.

Surveyor Resource Request: Procurement department receives the resources requested from the surveyor department.

Supplier Invoice: Procurement department receives a copy of the supplier invoice from the supplier directly as well as accounting department.

To Surveying Department:

Resource Updates: Surveying department receives resource updates from the procurement department as necessary.

Project Launch Announcement: Surveying department receives the project launch announcement from the Steering Committee after the Steering Committee has approved a project.

To Steering Committee:

RFP Customer Decision: Steering Committee receives an RFP Customer Decision from the customer stating if the customer has accepted the terms to onboard.

Analyzed RFP: Steering Committee receives an analyzed RFP emphasizing key stakeholders and feasibility of onboarding a potential project.

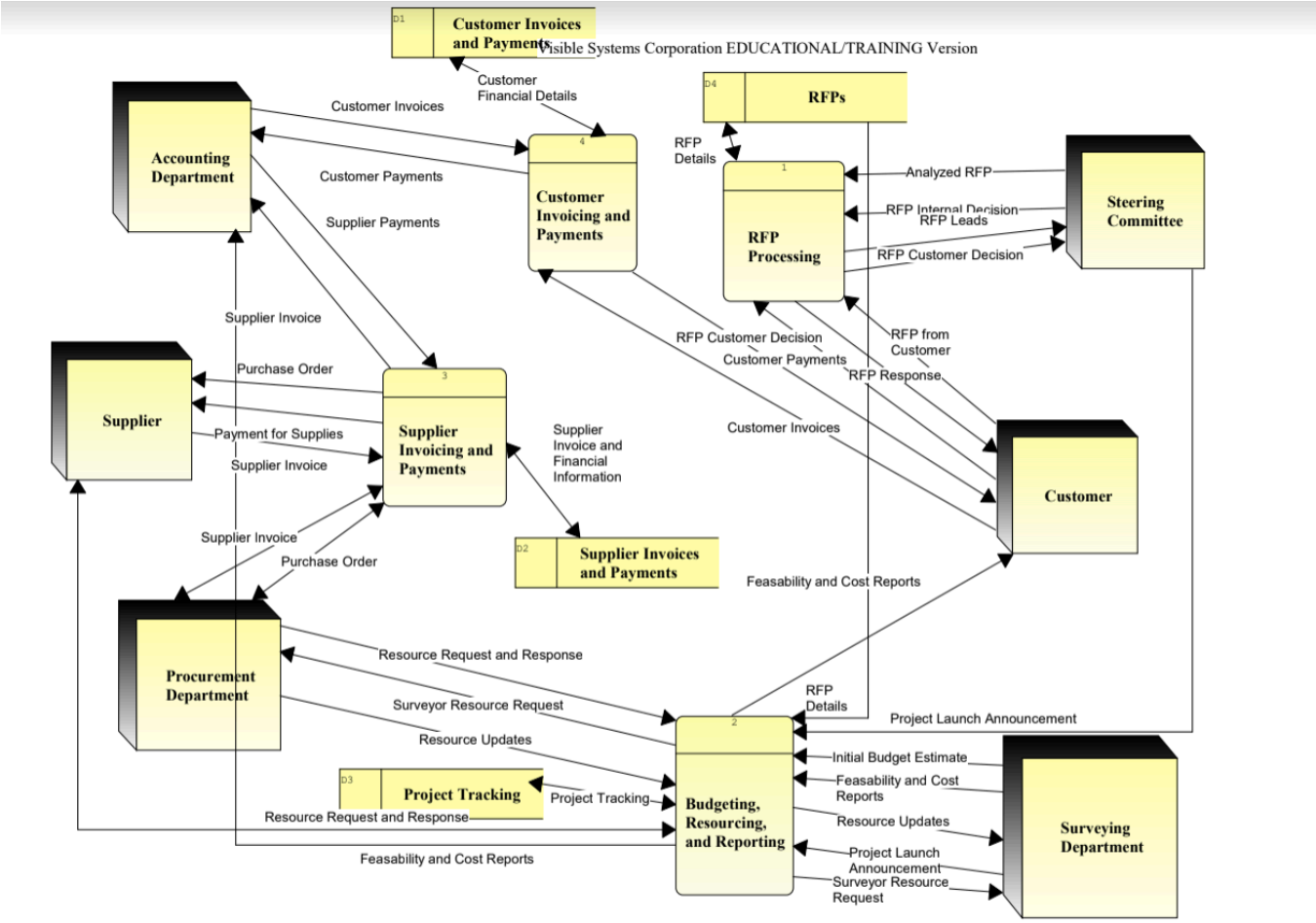
To Customer:

Customer Invoice: Customer receives an invoice for the accounting department detailing the amount they are being billed by JN Bentley.

RFP Response: Customer receives a response from the Steering Committee stating that their RFP has been approved or not.

Feasibility and Cost Reports: Customer will receive a copy of the feasibility and cost report generated by the Surveying Department.

DFD – Level 0:



Data Stores:

Customer Invoices and Payments: This data store is used to store information about customer payments and invoices. Customers may pay with different payment methods (i.e. cash, credit/debit card, etc.), and this data store keeps records of all related customer financial details.

RFPs: This data store is used to keep track all RFP details collected from customers. This RFP information is useful in creating budgeting, resourcing and reporting.

Supplier Invoices and Payments: This data store is used to store information about supplier payments and invoices. Suppliers may have different preferred methods of getting paid. This data

store also includes payment amounts, payment date, invoice number and all other related supplier financial information.

Project Tracking: This data store is used to store all project details related to the process of budgeting, resourcing and reporting. These details may include project budget, required materials & services, project feasibility and cost reports, etc.

Processes:

RFP Processing: This process details the process between the customer and steering committee relating to requests for proposals for potential projects on boarded by JN Bentley.

Budgeting, Resourcing, and Reporting: This process is related to the process of creating budgets, identifying and documenting resources necessary for a project. This process also entails report generation by the respective entities regarding feasibility and cost of an approved project.

Supplier, Invoicing, and Payments: This process is related to the purchasing of materials from an external supplier by procurement. This process also includes the accounting department as an internal entity that manages invoices and receives/sends payments in the company.

Customer, Invoicing, and Payments: This process manages the customer payment and includes capturing the related financial information needed for accounting department to process customer payments, adding this information to the right data store, and it includes the way in which JN Bentley generates invoices for their customers.

Systems Input:

From Accounting Department:

Supplier Payments: Accounting department receives payment for supplies from the supplier.

Customer Invoices: Accounting department generates customer invoice and sends to the customer.

From Supplier:

Supplier Invoice: Supplier sends an invoice detailing supplies JN Bentley will be purchasing for a specific project.

Resource Request/Response: Supplier submits a resource response to the resources requests by the internal procurement department.

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From Customer:

Customer Payments: Customer sends payment to the accounting department after receiving notice that their project has been approved and on boarded by JN Bentley.

RFP Customer Decision: Customer submits acceptance of terms and their decision to become a client of JN Bentley.
RFP from Customer: Customer submits an initial RFP to be reviewed by the Steering Committee.

Systems Output:

To Accounting Department:
Customer Payments: Accounting department receives payment from the customer for accepting a project for the client.
Supplier Invoices: Accounting department receives supplier invoices directly from the supplier detailing supplies JN Bentley will be purchasing from the external supplier.
Feasibility and Cost Reports: Accounting department receives feasibility and cost reports from the Surveying Department. The feasibility and cost reports include rough estimates and feasibility measures of an approved and on boarded project.

To Supplier:
Purchase Order: Supplier receives a purchase order from the procurement department and then generates a sales invoice based on the resources requested.
Payment for Supplies: Supplier receives compensation by JN Bentley for supplies purchased for a specific project.
Resource Request: Supplier receives a request for certain resources from the procurement department.

To Procurement Department:
Resource Response: Procurement department receives a copy of a response from the supplier regarding what resources were requested and available for purchase for any given project.
Purchase Order: Procurement department receives a copy of the purchase order sent out for filing.
Surveyor Resource Request: Procurement department receives the resources requested from the surveyor department.
Supplier Invoice: Procurement department receives a copy of the supplier invoice from the supplier directly as well as accounting department.

To Surveying Department:

Resource Updates: Surveying department receives resource updates from the procurement department as necessary.

Project Launch Announcement: Surveying department receives the project launch announcement from the Steering Committee after the Steering Committee has approved a project.

To Steering Committee:

RFP Customer Decision: Steering Committee receives an RFP Customer Decision from the customer stating if the customer has accepted the terms to onboard.

Analyzed RFP: Steering Committee receives an analyzed RFP emphasizing key stakeholders and feasibility of onboarding a potential project.

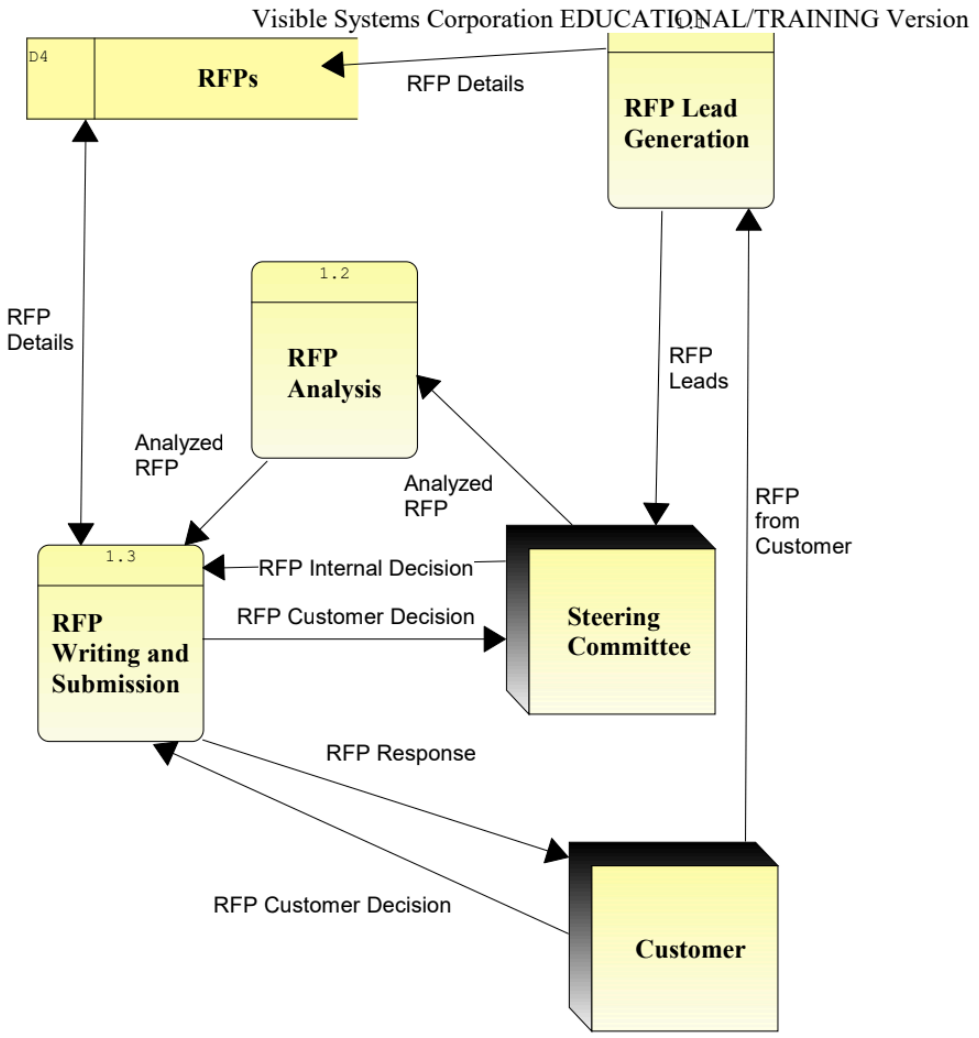
To Customer:

Customer Invoice: Customer receives an invoice for the accounting department detailing the amount they are being billed by JN Bentley.

RFP Response: Customer receives a response from the Steering Committee stating that their RFP has been approved or not.

Feasibility and Cost Reports: Customer will receive a copy of the feasibility and cost report generated by the Surveying Department.

DFD – Level 1 (RFP Processing):



This diagram describes the RFP processes, data flow, agencies involved, and areas for data store. This process is responsible for gathering information about prospective projects, analyzing them and bidding on the projects. This process has three sub-processes. These processes are:

3.1 RFP Lead Generation

This process deals with getting the RFPs from the customer and generating an initial lead for the prospective project.

Process Inputs:

From Customer:

RFP From Customer: Customer submits a RFP for evaluation by the company in order to commence a project.

Process Outputs:

To Steering Committee:

RFP Leads: Steering committee receives the RFP Leads and details and generates an initial RFP Analysis which is the starting point for any project

To RFPs (data store):

RFP From Customer: RFPs data store receives the RFPs from the customer to be stored.

3.2 RFP Analysis

This process mainly deals with further analyzing the RFP after the initial RFP Analysis by the steering committee.

Process Inputs:

From Steering Committee:

Analyzed RFP: Steering Committee sends an analyzed RFP with their initial analysis to further analyze it.

3.3 RFP Writing & Submission

This process deals with Communicating with the customer in regards to the final RFP response and then storing the status of the project.

Process Inputs:

From Steering Committee:

RFP Internal Decision: The steering committee comes up with a internal decision based on the RFP which is sent to the process in order to send it through to the customer.

From Customer:

RFP Customer Decision: The customer reviews the RFP response that it gets and gives out a decision of whether the company can initiate the project or not.

Process Outputs:

To Customer:

RFP Response: Customer receives a response from the company regarding the bid it has made for the project.

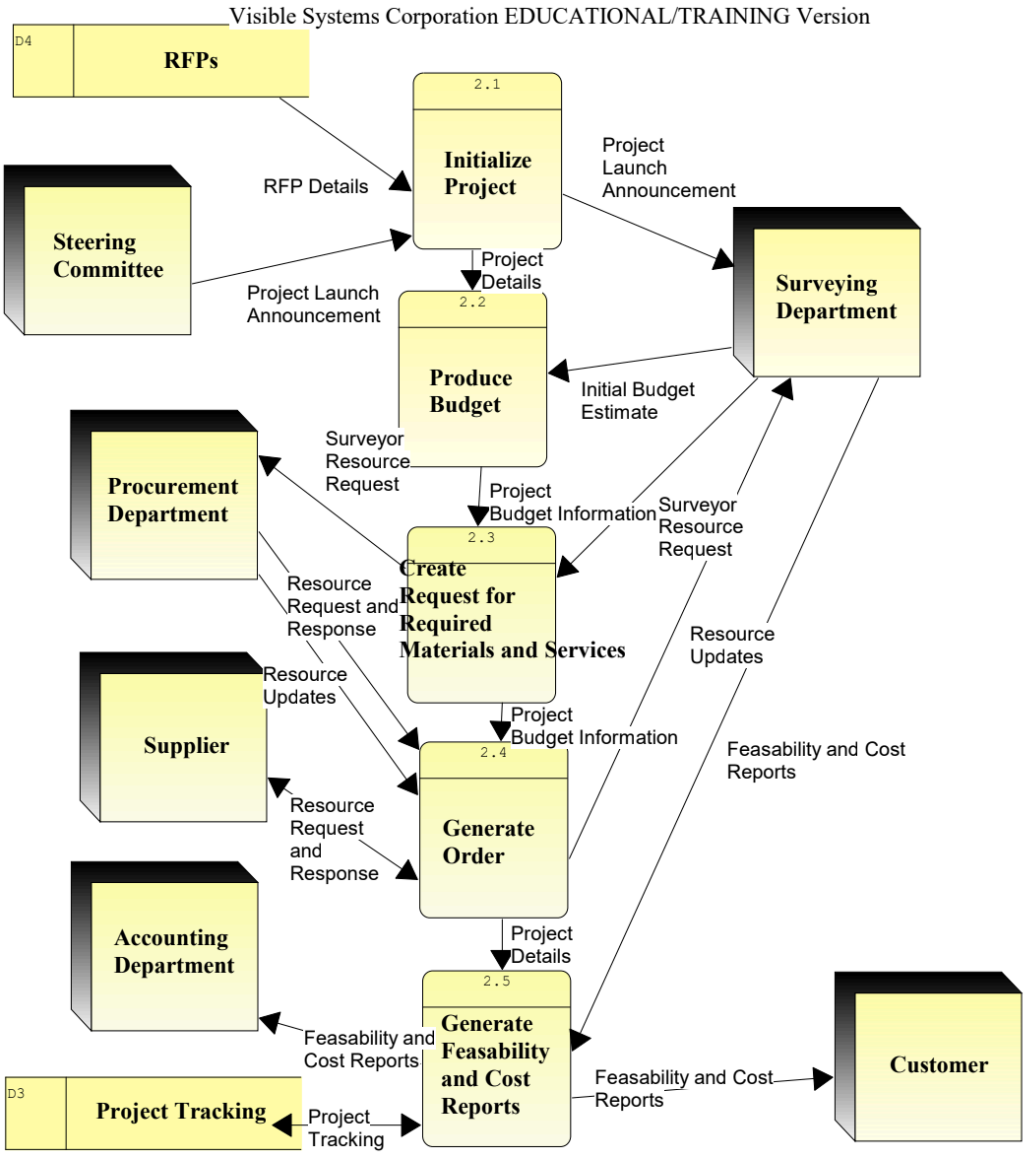
To Steering Committee:

RFP Customer Decision: Steering committee receives the decision from the customer about whether they want the company to go ahead with the project or not.

To RFPs (Data Store):

RFP Details: This contains all the details about the RFP including, but not limited to what was the bid for the project, what was the response from the customer and if it was a viable project or not.

DFD – Level 1(Budgeting, Resourcing, and Reporting):



This diagram describes the Budgeting, Resourcing, and Reporting processes, data flow, agencies involved, and areas for data store. The processes are as follows:

2.1 Initialize Project

This Process is used to initiate a new project after the RFP approval process is done

Process Inputs:

From Steering Committee:

Project Launch Announcement: Steering committee sends a project launch announcement to let the company know that a particular project has been chosen.

RPF Details: Contains details about the particular project at a lower level of detail.

Process Outputs:

To Surveying Department:

Project Launch Announcement: Sent in order to have them commence work on an initial budget and to let them know when a particular project has been chosen.

2.2 Produce Budgets

This process deals with the production and evaluation of an initial budget.

Process Inputs:

From Surveying Department:

Initial Budget Estimate: Surveying department sends in the initial budget estimate after having received the RFP details which is further evaluated by the process.

2.3 Create Request for required materials & services

This process is related to creating resource requests based on the project requirements

Process Inputs:

From Surveying Department:

Surveyor resource request: Surveying department sends in a resource request after carefully analyzing the needs of the project based on the task timelines

Process outputs:

To Procurement Department:

Surveyor resource request: Procurement department received a finalized version of the resources request so that they can initiate a purchase order for the same.

2.4 Generate order for resources

This process focuses on creating a purchase order from the supplier.

Process Inputs:

From Procurement Department:

Procurement resource request: Procurement department sends in a resource request after carefully analyzing the needs of multiple projects that it has gotten requests from.

From Supplier:

Procurement resource response: Supplier responds to the resource request with a quote for the requested resources.

From Procurement Department:

Resource updates: Procurement department sends in resource updates to the process once it has finalized the order with the supplier

Process outputs:

To Procurement Department:

Procurement resource response: Procurement department receives a quote from the supplier so that they can go ahead and place the order.

To Supplier:

Procurement resource request: Supplier receives a request for certain resources from the procurement department which it evaluates and sends back a quote.

To Surveying Department:

Resource updates: Surveying department gets resource updates for all of its requested resources.

2.5 Generate Feasibility & Cost Reports

This process is related to generating feasibility and cost reports for tracking and monitoring the project.

Process Inputs:

From Surveying Department:

Feasibility & cost reports: Surveying department sends in a monthly feasibility & cost report which is further evaluated in the process.

Process outputs:

To Accounting Department:

Feasibility & cost reports: Accounting department received a monthly feasibility and cost report to help it keep track of project expenditure and status.

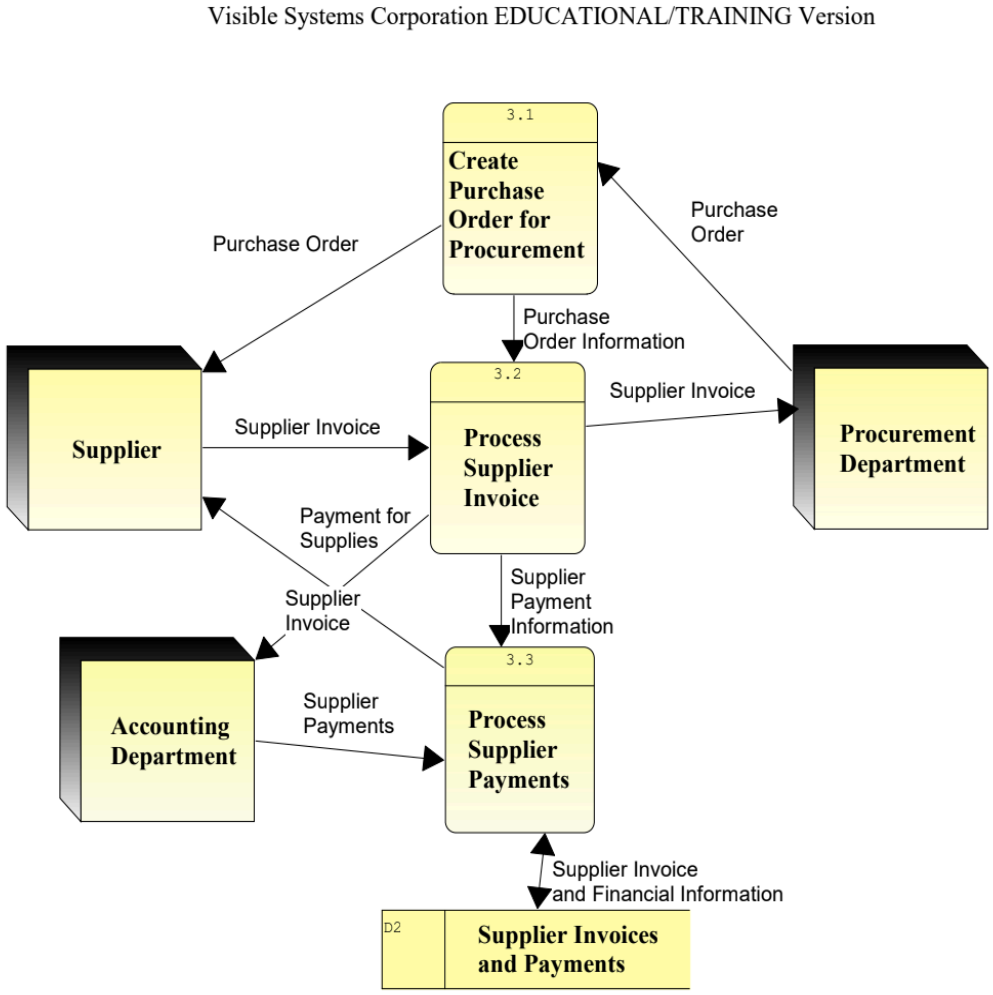
To Customer:

Feasibility & cost reports: customer received a monthly feasibility and cost report to help it keep track of project expenditure and status.

To Project Tracking (Data Store):

Project Details: All of the project details, updates, status, budgets, etc are stored in the project details data store for future reference.

DFD – Level 1(Supplier Invoices and Payments):



This diagram describes the supplier invoices and payment processes, data flow, agencies involved, and areas for data store.

3.1 Create Purchase Order for Procurement

This process is related to the procurement department generating a purchase order that is sent to supplier detailing which supplies are needed for a particular project.

Process Inputs:

From Procurement Department:

Resource Request: Procurement department submits a request for certain resources based on the surveyor resource request.

Process Outputs:

To Supplier:

Purchase Order: Supplier receives a purchase order from the procurement department and then generates a sales invoice based on the resources requested.

To Procurement Department:

Purchase Order: Procurement department receives a copy of the purchase order sent out for filing.

3.2 Process Supplier Invoice

This process deal with the receipt of the supplier invoice from the supplier. The accounting department and procurement department receives the supplier invoice and files accordingly.

Process Inputs:

From Supplier

Supplier Invoice: Supplier sends an invoice detailing supplies JN Bentley will be purchasing for a specific project.

Process Outputs:

To Procurement Department:

Supplier Invoice: Procurement department receives a copy of the supplier invoice from the supplier directly as well as accounting department.

To Accounting Department:

Supplier Invoices: Accounting department receives supplier invoices directly from the supplier detailing supplies JN Bentley will be purchasing from the external supplier.

3.3 Process Supplier Payments

This process is related to the sending payment for supplies for a particular project to the supplier.

Process Inputs:

From Accounting Department:

Supplier Payments: Accounting department receives payment for supplies from the supplier.

Process Outputs:

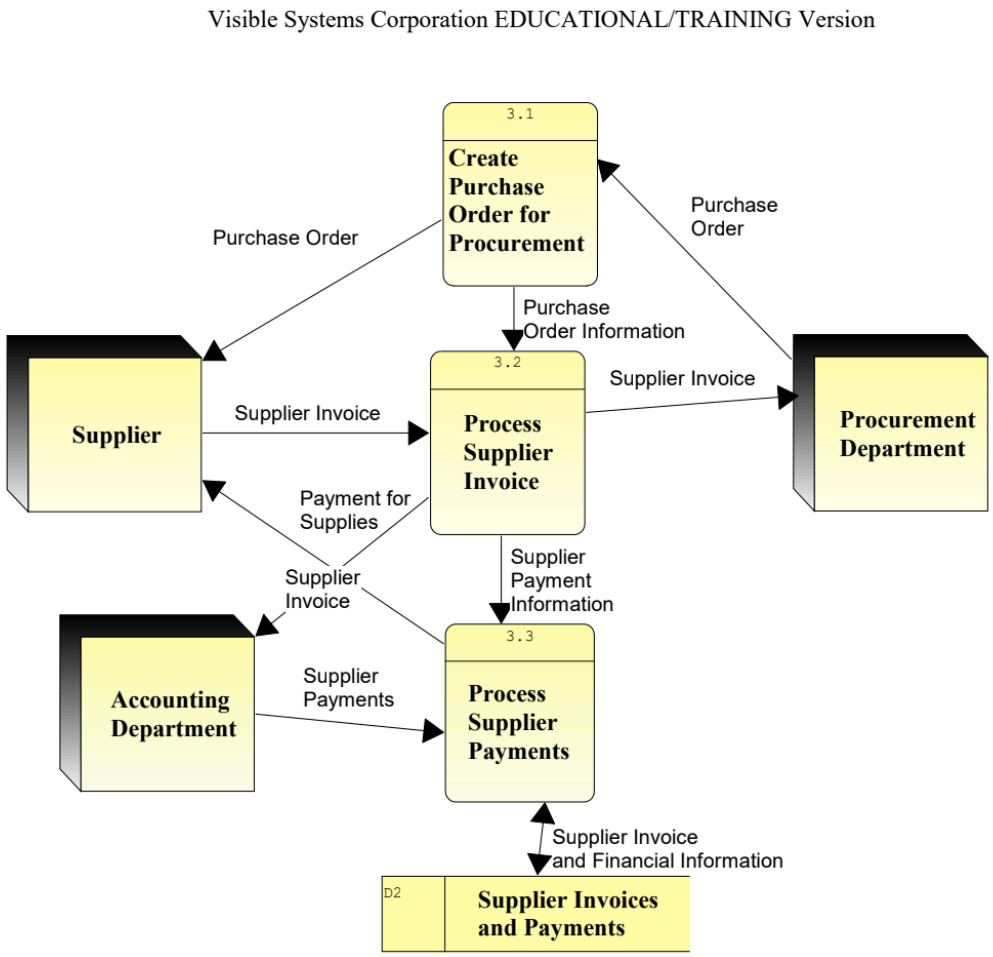
To Supplier:

Payment for Supplies: Supplier receives compensation by JN Bentley for supplies purchased for a specific project.

To Supplier Invoices and Payments (data store):

Supplier Invoice and Financial Information: Supplier Invoices and Payments data store receives the supplier invoices and supplier financial information to be stored.

DFD – Level 1(Customer Invoices and Payments):



This diagram depicts the process for managing customer invoices and payments. This process is responsible for gathering information about customer financial details, generating an invoice and receiving customer payments. This process has two sub-processes. These processes are:

Process 4.1 Generate Customer Invoice

This process uses all related customer financial information to generate an invoice for the customer. These invoices are then stored as a record of company's transactions for future reference.

Process Inputs:

From Accounting Department:

Cost Reports: The accounting department will send out cost reports for certain resources based on the transaction details.

Process Outputs:

To Customer:

Customer Invoice: Customer receives invoice from JN Bentley as a basis for their payments

To Customer Invoices and Payments (data store):

Customer Financial Details: The data store receives all related customer financial information such as invoice number and customer preferred payment methods to store for future reference.

Process 4.2 Process Customer Payments

This process primarily deals with customer payments processing. It uses all related customer financial details information to match customer invoices with customer payments so they can be smoothly transferred to company's accounting department.

Process Inputs:

From Customer:

Customer Payments: Customer will send payments via their preferred methods to JN Bentley.

From Customer Invoices and Payments (data store)

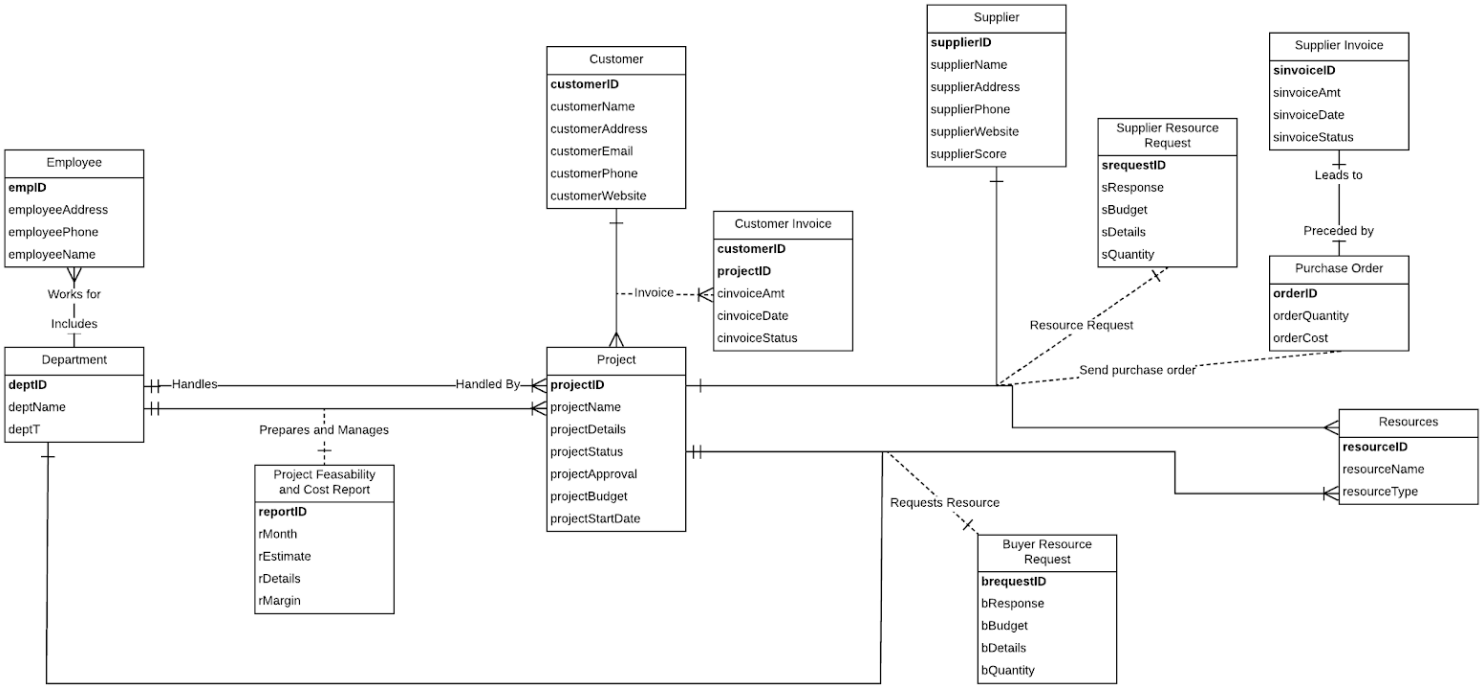
Customer Financial Details: The process will retrieve invoice and customer payments information from data store to process customer payments

Process Outputs:

To Accounting Department:

Customer Payments: JN Bentley's accounting department receives payment from its customers.

Entity Relationship Diagram of the Current System



The ERD diagram for the JN Bentley information system comprises 12 entities grouped together by a series of relationships. The entities, attributes and direct/associative relationships are depicted in the figure above.

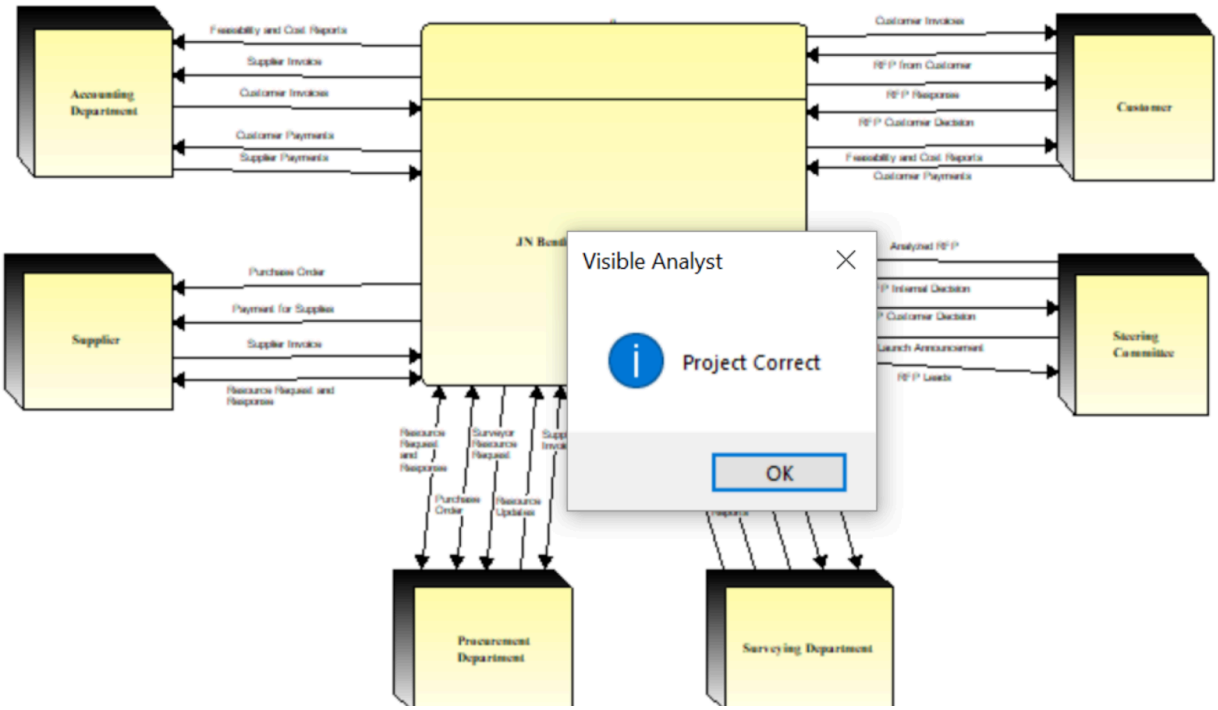
The 12 entities are as follows:

1. Employee
2. Department
3. Project Feasibility & Cost Report
4. Project
5. Customer
6. Customer Invoice
7. Buyer Resource Request
8. Buyer
9. Buyer Resource Request
10. Supplier Invoice
11. Purchase Order
12. Resources

Relationship Types

1. Works for/Includes: Binary Relationship
2. Handles/handled by: Binary Relationship
3. Leads to/Preceded by: Binary Relationship
4. Prepares and manages: Binary Relationship (with associative entity)
5. Invoice: Binary Relationship (with associative entity)
6. Resource request: Ternary Relationship (with associative entity)
7. Send purchase order: Ternary Relationship (with associative entity)
8. Requests resource: Ternary Relationship (with associative entity)

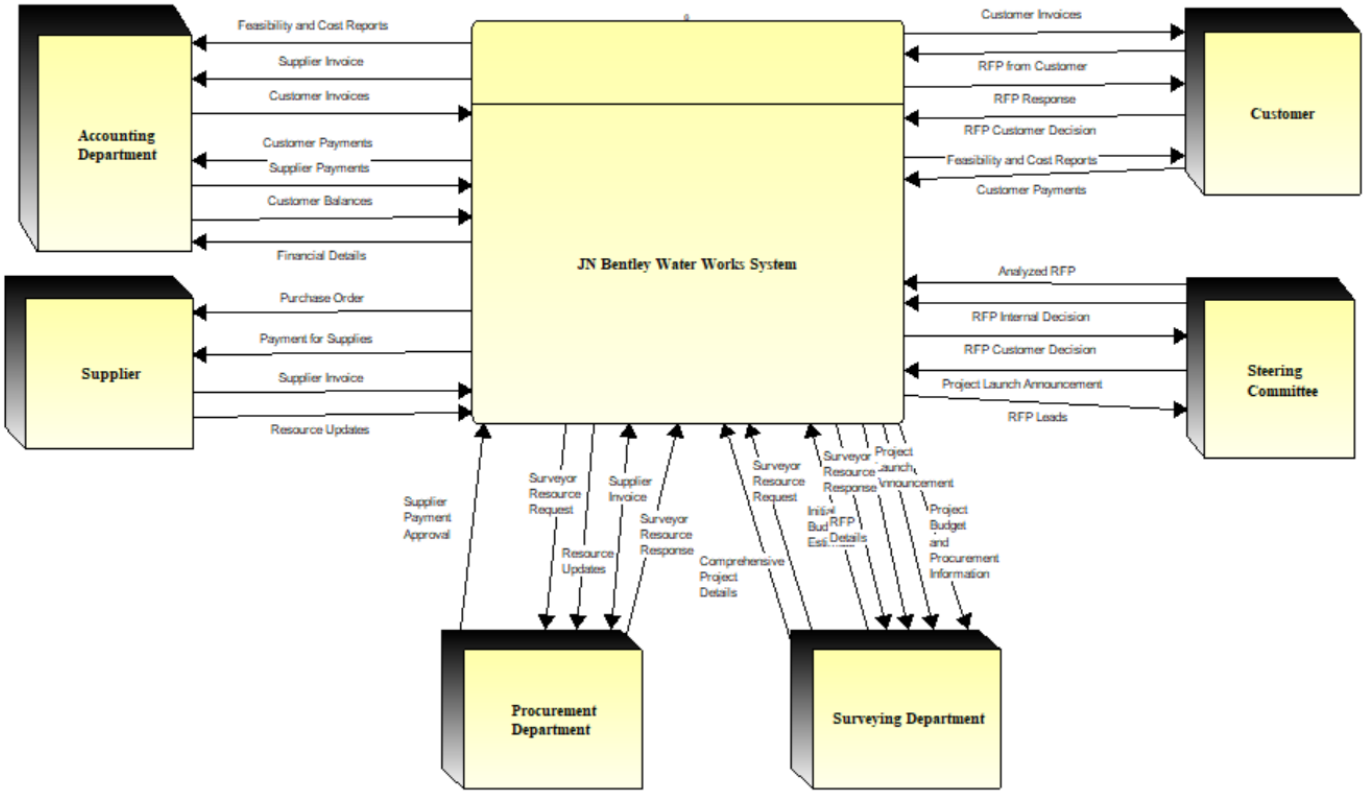
Error Report of the Current System



Survey Phase Report

Data Flow Diagrams of the Proposed System:

DFD – Context Level:



External Entities/Agents:

Accounting Department: The accounting department is its own external agent/entity within the company. The accounting department is responsible for managing and collecting customer payments. The department is also responsible for generating and sending customer invoices as well as receiving supplier invoices from the supplier. The accounting department also receives a copy of the feasibility and cost reports for a project from the surveying department for filing.

Supplier: The supplier is an external entity to our client. The supplier is responsible for receiving resource requests and responding in a timely manner. The supplier sends supplier invoices to the accounting department, detailing supplies necessary for a project. Suppliers will then receive payment for supplies purchased by procurement.

Procurement Department: Procurement is ultimately the purchasing department internal to our client. The procurement department receives buyer resource requests and responds accordingly. The procurement department receives, reviews, and sends purchase orders for supplies needed for a specific project. The procurement department receives a copy of the supplies, after purchasing, on the supplier invoice and receives periodic resource updates for any given project as well.

Surveying Department: The surveying department is responsible for reviewing a project and generating a feasibility and cost report for a specific project. The surveying department conducts research to determine resource requests and estimated budgets for a project recently launched and approved by the Steering Committee. The surveying department is responsible for generating estimates and feasibility reports for any given approved project. This internal department plays a critical role in the initial success of a project.

Steering Committee: The Steering Committee determines which projects should and should not be accepted and on-boarded by our client. The steering committee receives Requests for Proposal (RFP's) and reviews these projects to determine likelihood of success. The Steering Committee is internal and comprised of a variety of professionals from various departments. The steering committee plays a critical role in the Bidding and RFP processes in the current system.

Customer: A customer is a potential client of JN Bentley specifically. A customer is an external entity/agent and submits a RFP to our client in hopes of the project being approved, worked on, and executed successfully by JN Bentley.

Systems Input:

From Accounting Department:

Supplier Payments: Accounting department receives payment for supplies from the supplier.

Customer Invoices: Accounting department generates customer invoice and sends to the customer.

Customer Balances: This function was added and accounting department generates update statements for customers regarding their balances.

From Supplier:

Supplier Invoice: Supplier sends an invoice detailing supplies JN Bentley will be purchasing for a specific project.

Resource Updates: Supplier submits a resource response to the resources requests by the internal procurement department.

From Procurement Department:

Supplier Payment Approval: Procurement department submits an approval for supplier payment.

Supplier Invoice: Supplier invoice is generated and received by this department.

Surveyor Resource Response: Procurement department will enter any resource responses to the system for any given project as needed.

From Surveying Department:

Comprehensive Project Details: Surveying department submits a report with important project details.

Surveyor Resource Request: Surveying department submits a surveyor resource request detailing resources the surveying department thinks is necessary for the project.

Initial Budget Estimate: Surveying department generates an initial budget estimate for an approved project and submits to the system.

From Steering Committee:

Analyzed RFP: Steering committee submits to the system an analyzed RFP after it is reviewed and commentated on.

Project Launch Announcement: Steering committee submits a project launch announcement that is then sent to the surveying department. This project launch announcement is generated after the Steering Committee has reviewed a RFP from the client and approved a project for onboarding.

RFP Internal Decision: Steering Committee submits an RFP Internal Decision to the system after a project has been reviewed for potential acceptance by JN Bentley.

From Customer:

Customer Payments: Customer sends payment to the accounting department after receiving notice that their project has been approved and on boarded by JN Bentley.

RFP Customer Decision: Customer submits acceptance of terms and their decision to become a client of JN Bentley.

RFP from Customer: Customer submits an initial RFP to be reviewed by the Steering Committee.

Systems Output:

To Accounting Department:

Customer/Supplier Payments: Accounting department receives payment from the customer or supplier for accepting a project for the client.

Supplier Invoices: Accounting department receives supplier invoices directly from the supplier detailing supplies JN Bentley will be purchasing from the external supplier.

Feasibility and Cost Reports: Accounting department receives feasibility and cost reports from the Surveying Department. The feasibility and cost reports include rough estimates and feasibility measures of an approved and on boarded project.

Financial Details: Financial details of vendor or customer are submitted to the accounting department from the system.

To Supplier:

Purchase Order: Supplier receives a purchase order from the procurement department and then generates a sales invoice based on the resources requested.

Payment for Supplies: Supplier receives compensation by JN Bentley for supplies purchased for a specific project.

To Procurement Department:

Resource Updates: Procurement department receives updates regarding resource availability for any given project.

Surveyor Resource Request: Procurement department receives the resources requested from the surveyor department.

To Surveying Department:

Surveyor Resource Response: Surveying department receives resource response regarding resources necessary for a project.

Project Launch Announcement: Surveying department receives the project launch announcement from the Steering Committee after the Steering Committee has approved a project.

Project Budget and Procurement Information: Surveying department receives project budget and details regarding the project from the Procurement department.

To Steering Committee:

RFP Customer Decision: Steering Committee receives an RFP Customer Decision from the customer stating if the customer has accepted the terms to onboard.

RFP Launch: Steering Committee receives RFP launch details.

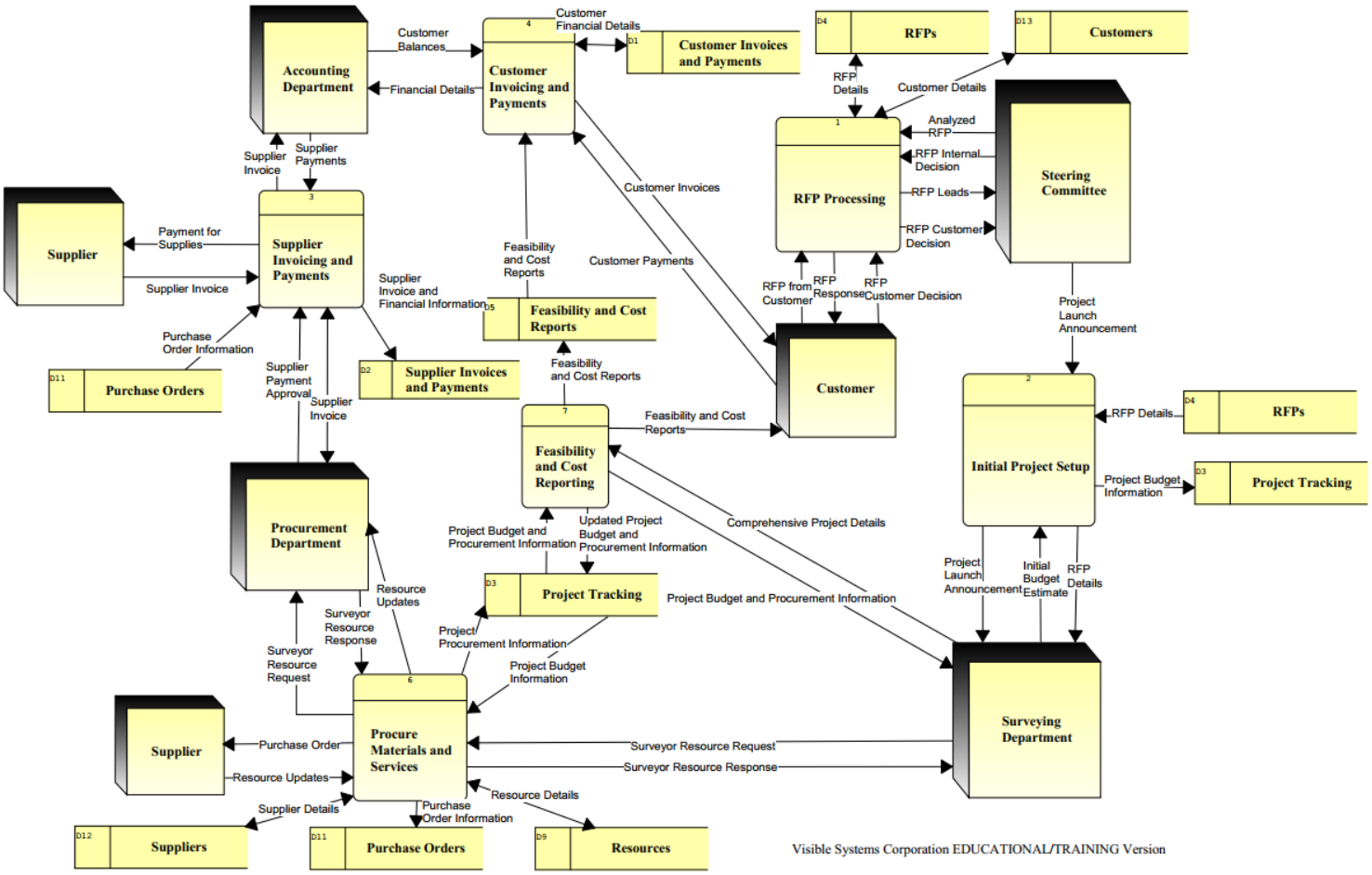
To Customer:

Customer Invoice: Customer receives an invoice for the accounting department detailing the amount they are being billed by JN Bentley.

RFP Response: Customer receives a response from the Steering Committee stating that their RFP has been approved or not.

Feasibility and Cost Reports: Customer will receive a copy of the feasibility and cost report generated by the Surveying Department.

DFD – Level 0:



Data Stores:

Customer Invoices and Payments: This data store is used to store information about customer payments and invoices. Customers may pay with different payment methods (i.e. cash, credit/debit card, etc.), and this data store keeps records of all related customer financial details.

RFPs: This data store is used to keep track all RFP details collected from customers. This RFP information are useful in creating budgeting, resourcing and reporting.

Supplier Invoices and Payments: This data store is used to store information about supplier payments and invoices. Suppliers may have different preferred methods of getting paid. This data store also includes payment amounts, payment date, invoice number and all other related supplier financial information.

Project Tracking: This data store is used to store all project details related to the process of budgeting, resourcing and reporting. These details may include project budget, required materials & services, project feasibility and cost reports, etc.

Customers: This is a data store used to store customer data information.

Feasibility and Cost Reports: This is a data store used to store all feasibility and cost reports. The updated feasibility and cost reports are also stored in this data store.

Purchase Orders: This is a data store used to store all purchase orders used and entered into the system.

Resources: This is a data store used to store all resources details.

Suppliers: This is a data store used to store all supplier data information.

Processes:

RFP Processing: This process details the process between the customer and steering committee relating to requests for proposals for potential projects on boarded by JN Bentley.

Feasibility and Cost Reporting: This process relates to the creation and submission of a feasibility and cost report for any given project. This process entails outlining the feasibility and potential costs of a project undertaken by the company.

Procure Materials and Services: This process is related to the procurement of materials and services for any given project. This process is typically completed by the procurement department.

Initial Project Setup: This process is related to the initial steps regarding project launch and estimation. This process entails the RFP details and project budget information as well.

Supplier, Invoicing, and Payments: This process is related to the purchasing of materials from an external supplier by procurement. This process also includes the accounting department as an internal entity that manages invoices and receives/sends payments in the company.

Customer, Invoicing, and Payments: This process manages the customer payment and includes capturing the related financial information needed for accounting department to process customer payments, adding this information to the right data store, and it includes the way in which JN Bentley generates invoices for their customers.

Systems Input:

From Accounting Department:

Supplier Payments: Accounting department receives payment for supplies from the supplier.

Customer Balances: This function was added and accounting department generates update statements for customers regarding their balances.

From Supplier:

Supplier Invoice: Supplier sends an invoice detailing supplies JN Bentley will be purchasing for a specific project.

From Procurement Department:

Supplier Payment Approval: Procurement department submits an approval for supplier payment.

Surveyor Resource Response: Procurement responds to the surveyor resource request with a surveyor resource response.

From Surveying Department:

Surveyor Resource Request: Surveying department submits a surveyor resource request detailing resources the surveying department thinks is necessary for the project.

Project budget and procurement information: Surveying department submits a feasibility and cost report that is then sent to the accounting department and the client.

Initial Budget Estimate: Surveying department generates an initial budget estimate for an approved project and submits to the system.

From Steering Committee:

RFP Internal decision: Steering Committee submits an RFP Internal Decision to the system after a project has been reviewed for potential acceptance by JN Bentley.

Analyzed RFP: Steering Committee sends an analyzed RFP with their initial analysis to further analyze it.

Project launch announcement: Once a project is on boarded, the steering committee announces project launch details.

From Customer:

Customer Payments: Customer sends payment to the accounting department after receiving notice that their project has been approved and on boarded by JN Bentley.

RFP Customer Decision: Customer submits acceptance of terms and their decision to become a client of JN Bentley.

RFP from Customer: Customer submits an initial RFP to be reviewed by the Steering Committee.

From Purchase Orders Data Store:

Purchase Order Information: This is data that entails specific information for any purchase orders in a given project.

From Feasibility and Cost Reports Data Store:

Feasibility and Cost Reports: Accounting department receives feasibility and cost reports from the Surveying Department. The feasibility and cost reports include rough estimates and feasibility measures of an approved and on boarded project.

From Suppliers Data Store:

Supplier Details: Information about suppliers.

From Resources Data Store:

Resource Details: Information about specific resources needed for a project.

From Project Tracking Data Store:

Project Budget and Procurement Information: Project Budget and Procurement Information: collected project budget and procurement information is given to the surveying department for generating project details

Project Budget Information: a. Project Budget Information: the related project budget estimates are stored and updated in the data store

From Customer Invoices and Payments Data Store:

Customer Financial Details: Customer Financial Details: customer financial-related information is extracted from the data store to process their payments

From RFPs Data Store:

RFP Details: RFP Details: This contains all the details about the RFP including, but not limited to what was the bid for the project, what was the response from the customer and if it was a viable project or not.

From Customers Data Store:

Customer Details: These details all relevant customer information for any given customer.

Systems Output:

To Accounting Department:

Supplier Invoices: Accounting department receives supplier invoices directly from the supplier detailing supplies JN Bentley will be purchasing from the external supplier.

Financial Details: Customers' financial information is sent to accounting department to determine balance

To Supplier:

Payment for Supplies: Supplier receives compensation by JN Bentley for supplies purchased for a specific project.

To Procurement Department:

Supplier Invoice: Procurement department receives a copy of the supplier invoice from the supplier directly as well as accounting department.

Surveyor Resource Request: Surveying department submits a surveyor resource request detailing resources the surveying department thinks is necessary for the project.

Resource Updates: Updates to resources allocated to specific projects are updated.

To Surveying Department:

RFP Details: RFP Details: This contains all the details about the RFP including, but not limited to what was the bid for the project, what was the response from the customer and if it was a viable project or not.

Project Launch Announcement: Surveying department receives the project launch announcement from the Steering Committee after the Steering Committee has approved a project.

Project Budget and Procurement Information: collected project budget and procurement information is given to the surveying department for generating project details

Surveyor Resource Request: Surveying department submits a surveyor resource request detailing resources the surveying department thinks is necessary for the project.

To Steering Committee:

RFP Customer Decision: Steering Committee receives an RFP Customer Decision from the customer stating if the customer has accepted the terms to onboard.

RFP Leads: the generated RFP is sent to steering committee for further evaluation

To Customer:

Customer Invoice: Customer receives an invoice for the accounting department detailing the amount they are being billed by JN Bentley.

RFP Response: Customer receives a response from the Steering Committee stating that their RFP has been approved or not.

Feasibility and Cost Reports: Customer will receive a copy of the feasibility and cost report generated by the Surveying Department.

To Supplier Invoices and Payments DS:

Supplier Invoices and Financial Information: Supplier sends an invoice detailing supplies JN Bentley will be purchasing for a specific project. Their financial information is also included in this to coordinate proper payment for supplies.

To Customer Invoices and Payments DS:

Customer Financial Details: The process will retrieve invoice and customer payments information from data store to process customer payments.

To Project Tracking Data Store:

Updated project budget and procurement information: updated project budget and procurement information is given to the surveying department for generating project details.

Project budget information: the related project budget estimates are stored and updated in the data store

Project budget and procurement information: collected project budget and procurement information is given to the surveying department for generating project details

To Purchase Orders Data Store:

Purchase Order Information: related purchase order information is updated and stored in this data store

To Resources Data Store:

Resource Details: Information about specific resources needed for a project.

To Feasibility and Cost Reports Data Store:

Feasibility and Cost Reports: Customer will receive a copy of the feasibility and cost report generated by the Surveying Department.

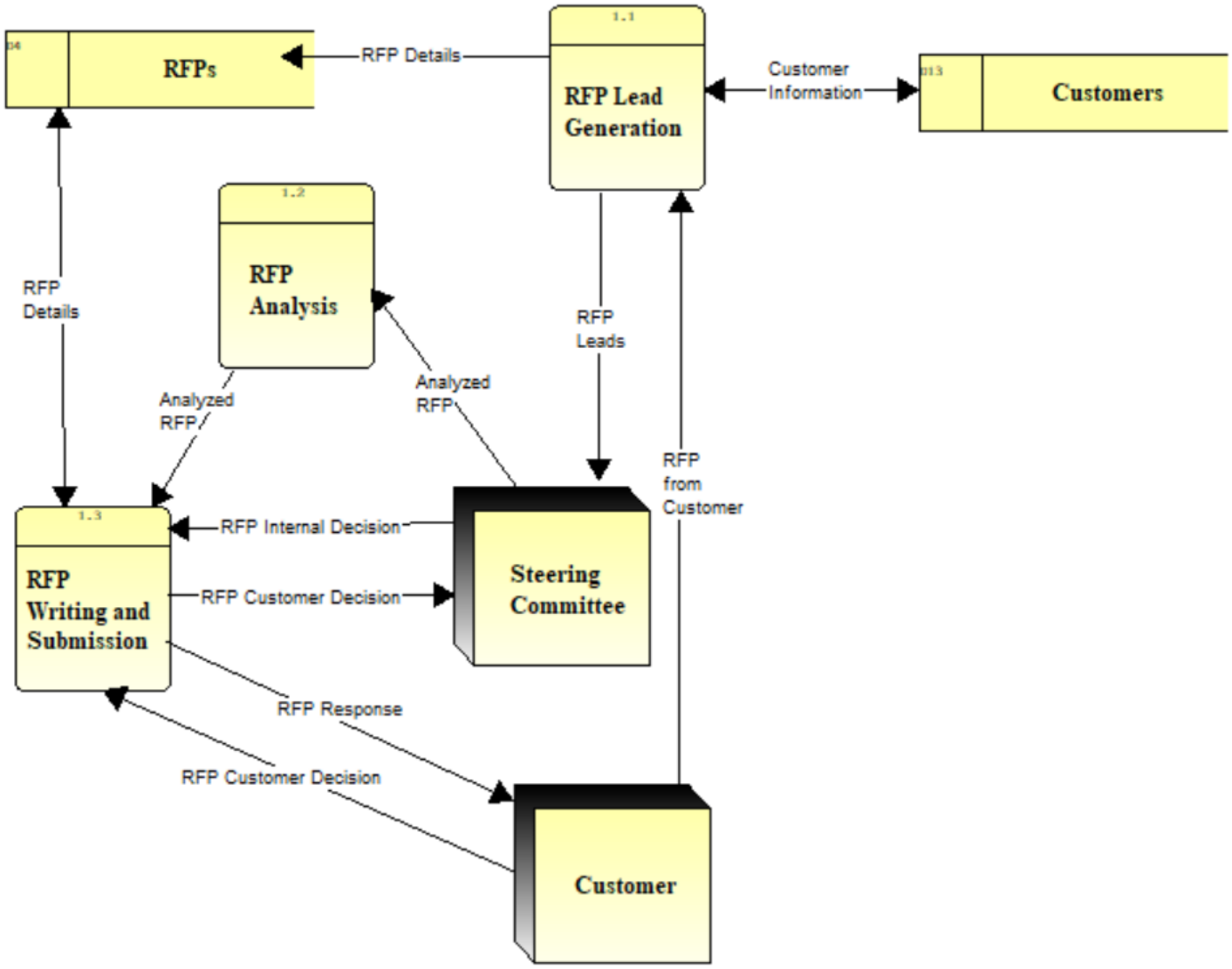
To RFPs Data Store:

RFP Details: RFP Details: This contains all the details about the RFP including, but not limited to what was the bid for the project, what was the response from the customer and if it was a viable project or not.

To Customers Data Store:

Customer Details: The process will retrieve invoice and customer information from data store to process customer information.

DFD – Level 1(RFP Processing):



This Diagram shows us the RFP processes, data flow, agencies involved, and areas for data store.

1.1 RFP Lead Generation:

This sub-process deals with getting RFPs from the customers and generating an initial lead for the prospective project

Process Inputs:

From Customers (data store):

Customer Information: Customer related information is retrieved from the data store to generate RFP leads

From Customers

RFP from Customer: Customers submit a RFP for evaluation by the company in order to commence a project

Process Outputs:

To RFPs (data store):

RFP details: RFPs data store receives the RFP from the customer to be stored

To Customers (data store):

Customer Information: Customer information is updated and sent to the data store

To Steering Committee:

RFP Leads: The generated RFP is sent to steering committee for further evaluation

1.2 RFP Analysis:

This sub-process deals with RFP leads analysis based on the RFP from steering committee and result presentation to the next sub-process

Process Inputs:

From Steering Committee

Analyzed RFP: The RFP leads are collected and sent to the process for analysis

Process Outputs:

To RFP Writing and Submission

Analyzed RFP: The analyzed RFP leads are forwarded to the next process for result wrap-up

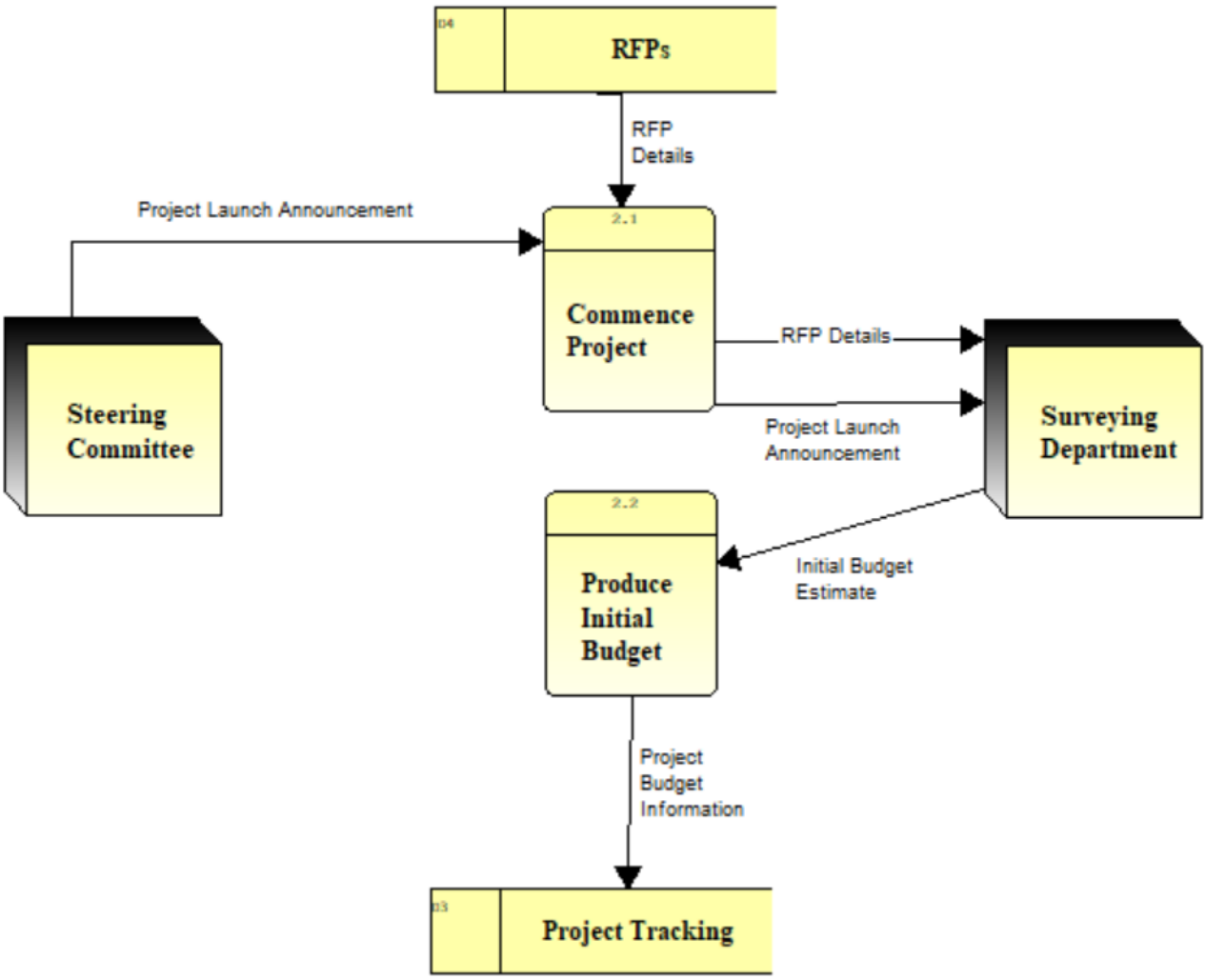
1.3 RFP Writing and Submission:

This sub-process deals with RFP report creation and submission. This involves the main interaction from steering committee to customer

Process Inputs:
From Steering Committee
RFP Internal Decision: Steering committee send out its RFP decision
From RFPs (data store)
RFP Details: The stored RFP information is retrieved from the data store for report writing
From RFP Analysis (process)
Analyzed RFP: The analyzed RFP leads collected from the previous process for result wrap-up
From Customer
RFP Customer Decision: Customer submits acceptance of terms and their decision to become a client of JN Bentley.

Process Outputs:
To Steering Committee
RFP Customer Decision: Steering Committee receives an RFP Customer Decision from the customer stating if the customer has accepted the terms to onboard.
To Customer
RFP Response: Customer receives a response from the Steering Committee stating that their RFP has been approved or not.

DFD – Level 1(Initial Project Setup):



This Diagram shows us the Initial Setup processes, data flow, agencies involved, and areas for data store.

2.1 Commence Project:

This sub-process is used to initiate a project and send RFP details to surveying department for further processing. This sub-process also handles the official announcement of the project.

Process Inputs:

From RFPs (data store)

RFP Details: project related details are retrieved from the data store to commence a project

From Steering Committee

Project Launch Announcement: the announcement of the project initiation is obtained from the committee

Process Outputs:

To Surveying Department

RFP Details: the details collected from customers were forward to surveying department for further evaluation

Project Launch Announcement: the commencement announcement is directed to surveying department to officially declare initiation

2.2 Produce Initial Budget:

This sub-process deals with initial estimation of the project budget and store this estimation into a data store

Process Inputs:

From Surveying Department

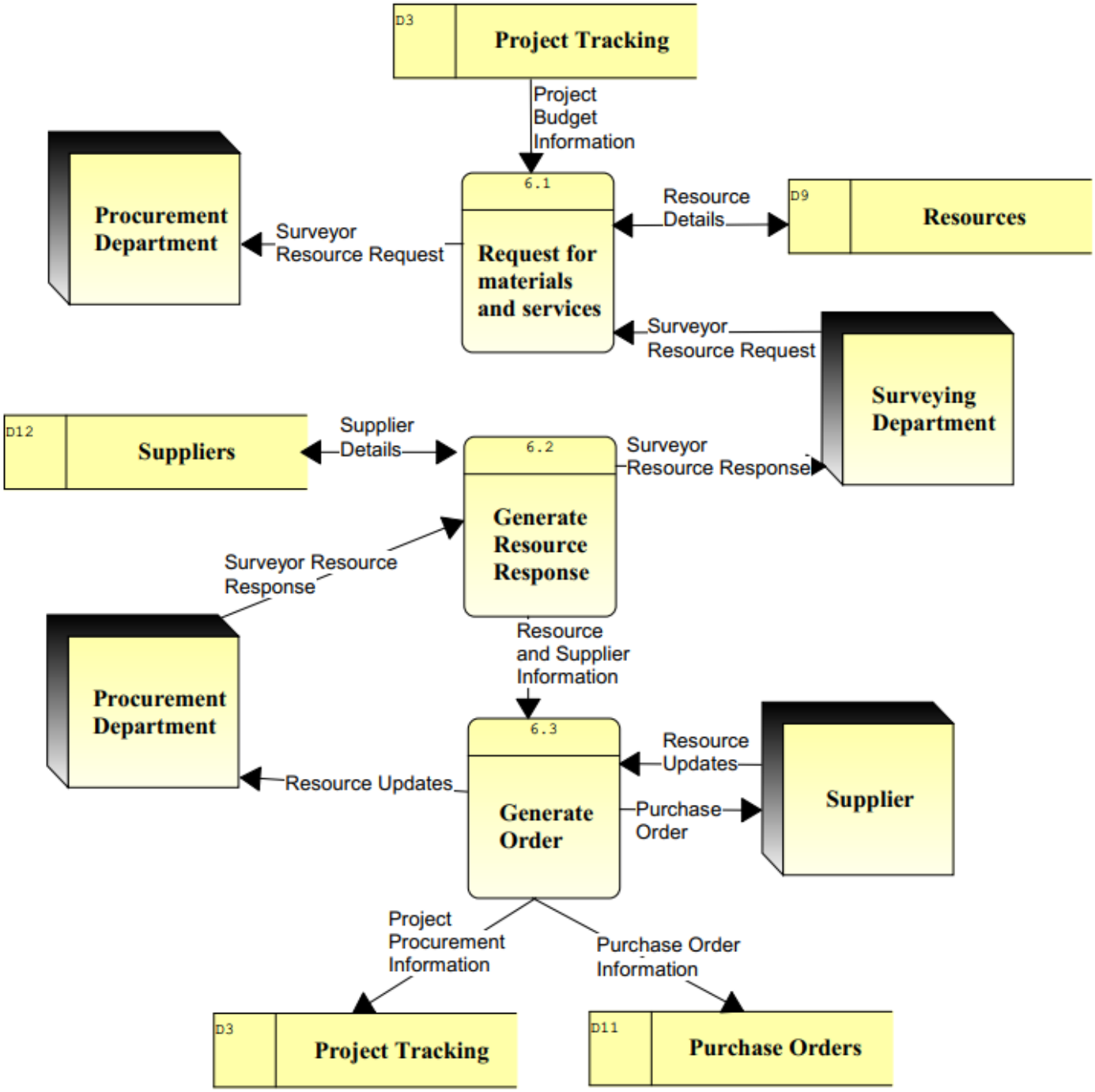
Initial Budget Estimate: the surveying department makes initial budget estimation on an approved project and submits it to the system.

Process Outputs:

To Project Tracking

Project Budget Information: the related project budget estimates are stored and updated in the data store

DFD – Level 1(Procure Materials and Services):



This Diagram shows us the Procurement and Services processes, data flow, agencies involved, and areas for data store.

6.1 Request for Materials and Services:

This sub-process is used to let surveying department to send out resource request and forward the request to procurement department for processing. It involves main interactions from surveying department and procurement department.

Process Inputs:
From Project Tracking (data store):
Project Budget Information: the data store contains all information about the different proposed project. Holds data of their financial details and budget.
From Surveying Department:
Surveyor Resource Request: surveyor requests a report of how much resource is needed to ensure the smooth implementation of project.

Process Outputs:
To Procurement Department:
Surveyor Resource Request: surveyor's request is forwarded to procurement department for confirmation.

6.2 Generate Resource Response:

This sub-process is primarily used to forward resource response generated from procurement department to surveying department. The response details what resources were requested and available for purchase for any given project.

Process Inputs:
1.From Procurement Department:
Surveyor Resource Response: procurement department submits a resource response to the resource requested by the surveying department

Process Outputs:

1. To Surveying Department

Surveyor Resource Response: surveying department receives the resource response from procurement department as necessary.

2. To Generate Order (process)

Resource and Supplier Information: forward related resource and supplier information to purchase order generation process

6.3 Generate Order:

This sub-process is used for procurement department to generate a purchase order that is sent to supplier detailing which supplies are needed for a particular project.

Process Inputs:

From Supplier

Resource Updates: catering resource status information is updated and sent by suppliers

Process Outputs:

To Procurement Department

Resource Updates: procurement department receives resource update stating details of catering purchase order

To Project Tracking (data store):

Project Procurement Information: catering procurement information is updated and stored

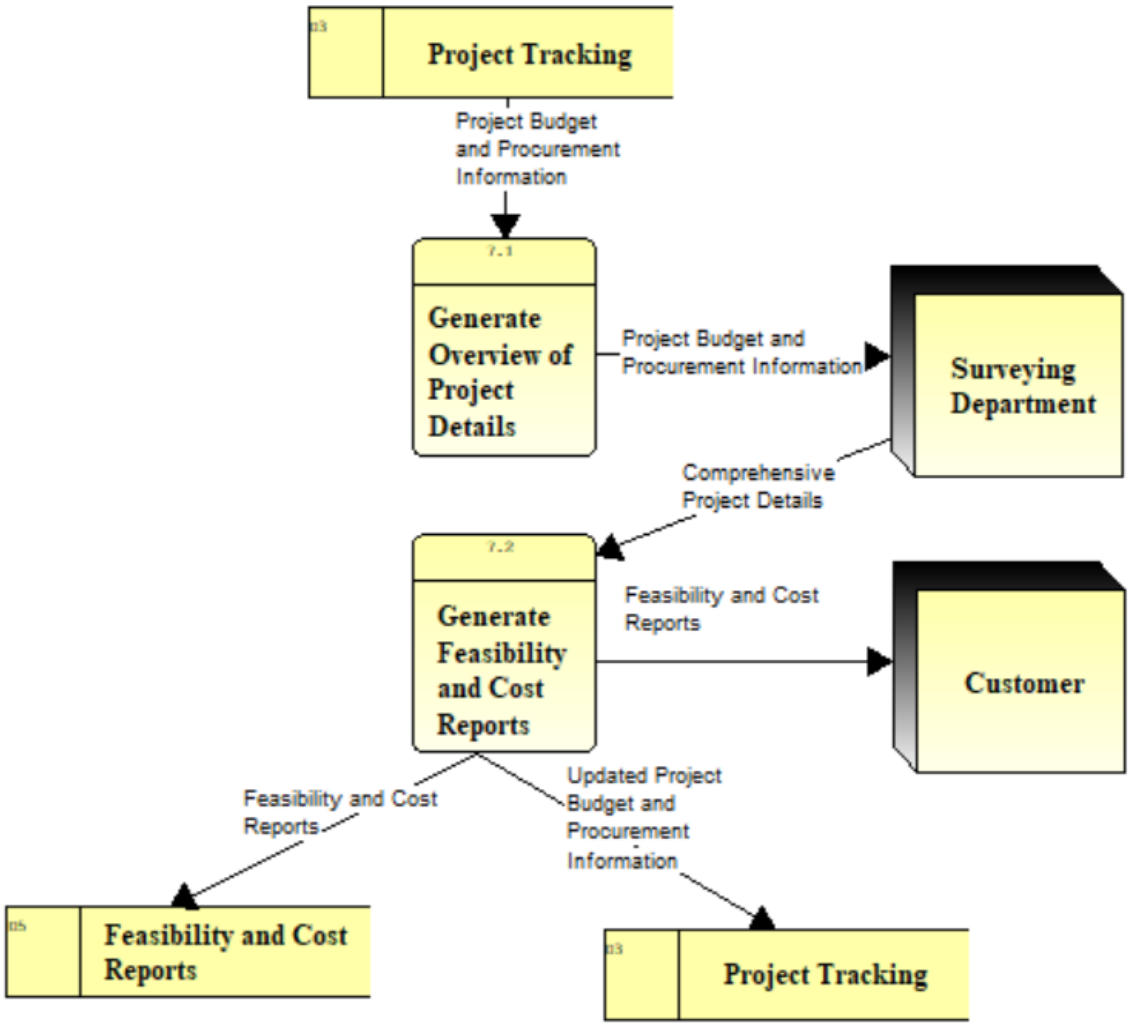
To Supplier:

Purchase Order: supplier receives a purchase order from procurement department and then generates invoice based on the resources requested.

To Purchase Order (data store):

Purchase Order Information: related purchase order information is updated and stored in this data store

DFD – Level 1(Feasibility and Cost Reporting):



This Diagram shows us the feasibility and cost reporting processes, data flow, agencies involved, and areas for data store.

7.1 Generate Overview of Project Details

This sub-process is used to retrieve all the relevant project budget and procurement information for surveying department to conduct further review.

Process Inputs:

From Project Tracking (data store):

Project Budget and Procurement Information: this data store sends out all related information about each JN Bentley's proposed project.

Process Outputs:

To Surveying Department:

Project Budget and Procurement Information: collected project budget and procurement information is given to the surveying department for generating project details

7.2 Generate Feasibility and Cost Reports

This sub-process is extremely essential to JN Bentley. There has to be some sort of documenting activity that validates the feasibility and cost reasonability of proposed projects. The crucial budget and procurement information will all be accumulated into this process and generate a report for accounting department and customer to review.

Process Inputs:

From Survey Department:

Comprehensive Project Details: project detailed information is inputted for report generation

Process Outputs:

To Project Tracking (data store):

Feasibility and Cost Reports: the report detailing budget, required materials & services, feasibility and cost generated from the process is stored in this data store

To Accounting Department:

Feasibility and Cost Reports: the generated report is forwarded to accounting department for budget reference

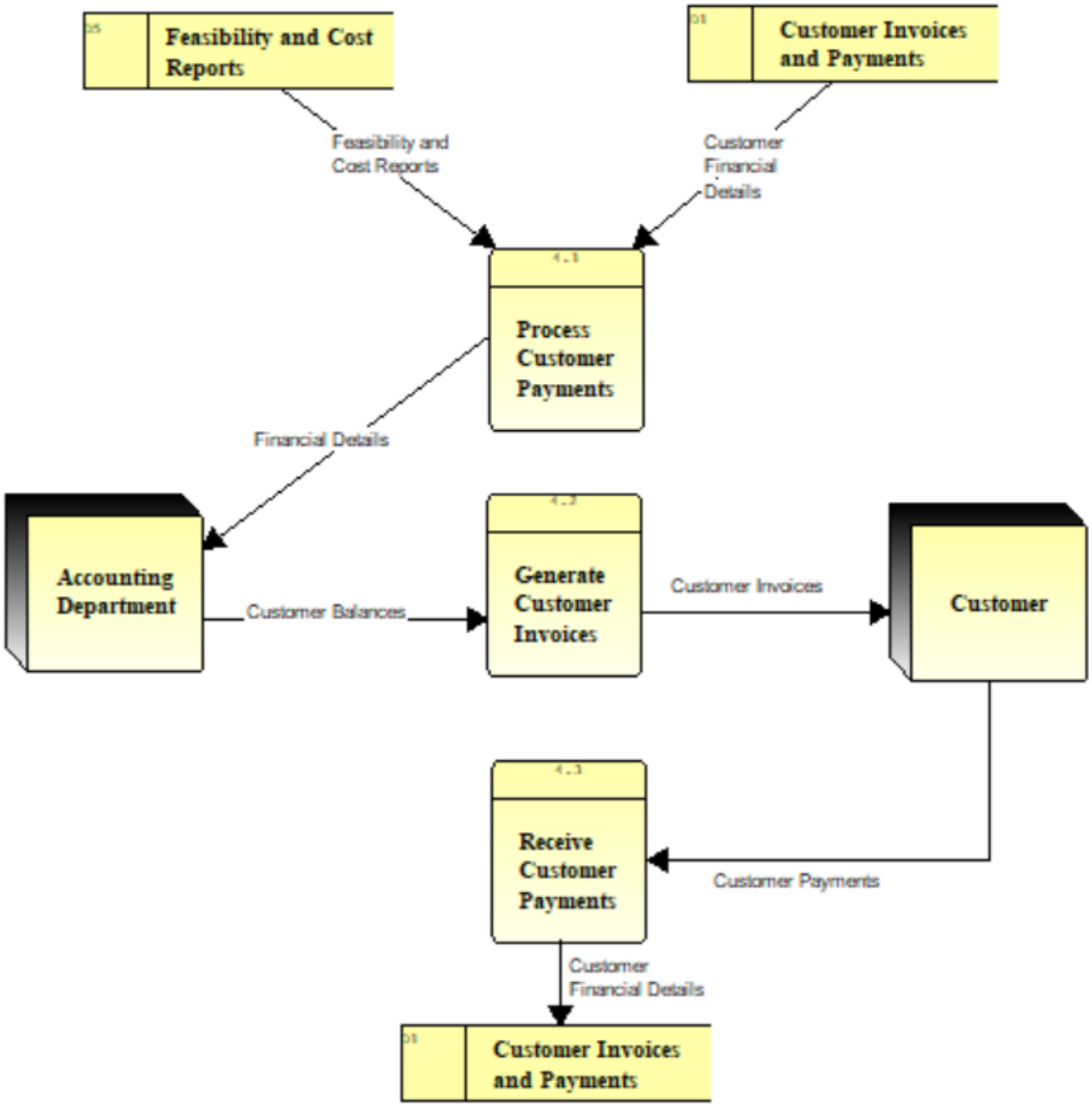
To Customer:

Feasibility and Cost Reports: the generated report is sent to customers to indicate feasibility and cost requirements

To Feasibility and Cost Reports (data store):

Feasibility and Cost Reports: the generated report is stored in this data store.

DFD – Level 1(Customer Invoicing):



This Diagram shows us the customer invoicing processes, data flow, agencies involved, and areas for data store.

4.1 Process Customer Payments:

This process deals with customer invoicing and payment processing. It involves main engagement of accounting department to accurately retrieve payment related information and thus forward it to customers

Process Inputs:

From Feasibility and Cost Reports (data store)

Feasibility and Cost Reports: The reports generated from comprehensive project details are retrieved from the data store

From Customer Invoices and Payments (data store)

Customer Financial Details: Customer financial-related information is extracted from the data store to process their payments

Process Outputs:

To Accounting Department

Financial Details: Customers' financial information is sent to accounting department to determine balance

4.2 Generate Customer Invoices:

This sub-process deals with the creation of customer invoices based on the project details and their financial information. It involves the major interaction between accounting and customers.

Process Inputs:

From Accounting Department

Customer Balance: The amount owed by customers are determined and sent out by accounting department for invoice generation.

Process Outputs:

To Customer

Customer Invoices: The invoices generated are forwarded to customers to collect their payments

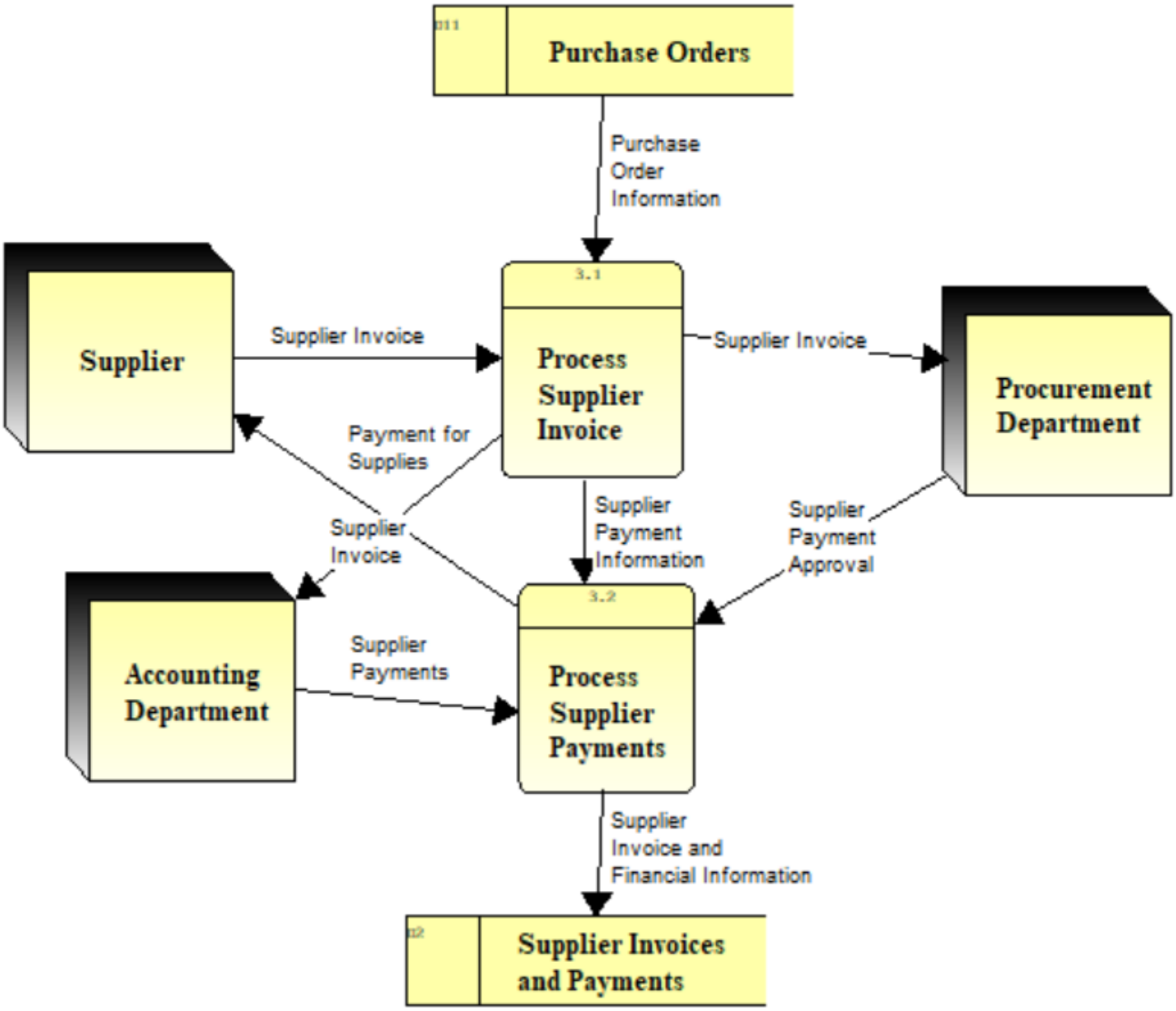
4.3 Receive Customer Payments:

This sub-process deals with customers payment processing and store their financial information into the specific data store

Process Inputs:
From Customers
Customer Payments: Payments made by customers are received

Process Outputs:
To Customer Invoices and Payments (data store)
Customer Financial Details: Customers' financial information is updated and stored in the data store.

DFD – Level 1(Supplier Invoicing):



This Diagram shows us the Supplier invoicing processes, data flow, agencies involved, and areas for data store.

3.1 Process Supplier Invoice:

This sub-process deals with receipt of the supplier invoice from supplier. The accounting department and procurement department receives supplier invoice and files accordingly.

Process Inputs:

From Supplier:

Supplier Invoice: Supplier sends an invoice detailing supplies JN Bentley will be purchasing for a specific project

From Purchase Order (data store):

Purchase Order Information: Information related to proposed supplies purchase is directed to the sub-process to help process supplier invoice

Process Outputs:

To Accounting Department

Supplier Invoice: Accounting department receives supplier invoices directly from the supplier detailing supplies JN Bentley will be purchasing from the external supplier.

To Procurement Department

Supplier Invoice: Procurement department receives a copy of the supplier invoice from the supplier directly as well as accounting department.

To Process Supplier Payments (process)

Supplier Payment Information: Detailed supplier financial information is forwarded to next sub-process for accounting department to process associated payment

3.2 Process Supplier Payments:

This sub-process is used to let accounting department to send payment for supplies for a particular project to the supplier.

Process Inputs:

From Process Supplier Invoice (process):

Supplier Payment Information: Related financial information (invoice number) needed for accounting department to process supplier payment is received from previous sub-process

From Procurement Department:

Supplier Payment Approval: Procurement department sends out payment consent notification to accounting department

From Accounting Department

Supplier Payment: Accounting department proceeds and sends payments to associated supplier in the way in which JN Bentley usually pays for its supplies

Supplier Invoice and Payments (data store)

Supplier Invoice and Financial Information: The latest supplier financial information is retrieved from the data store and used to process payment

Process Outputs:

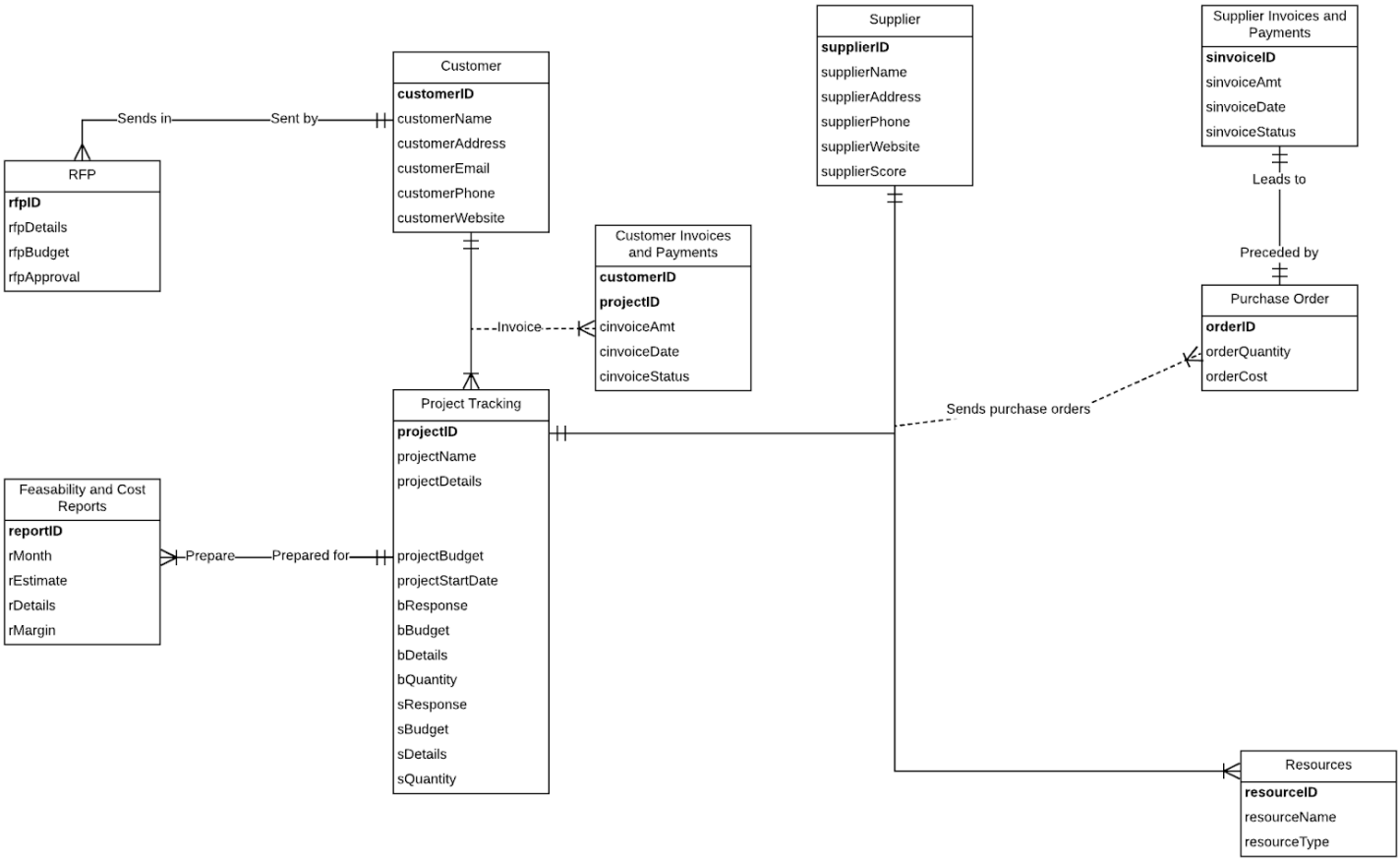
To Supplier:

Payment for Supplies: Supplier receives payment sent from JN Bentley for supplies purchased for a specific project.

To Supplier Invoice and Payments (data store):

Supplier Invoice and Financial Information: data store receives the supplier invoices and updated financial information to be stored for record.

Entity Relationship Diagram of the Proposed System



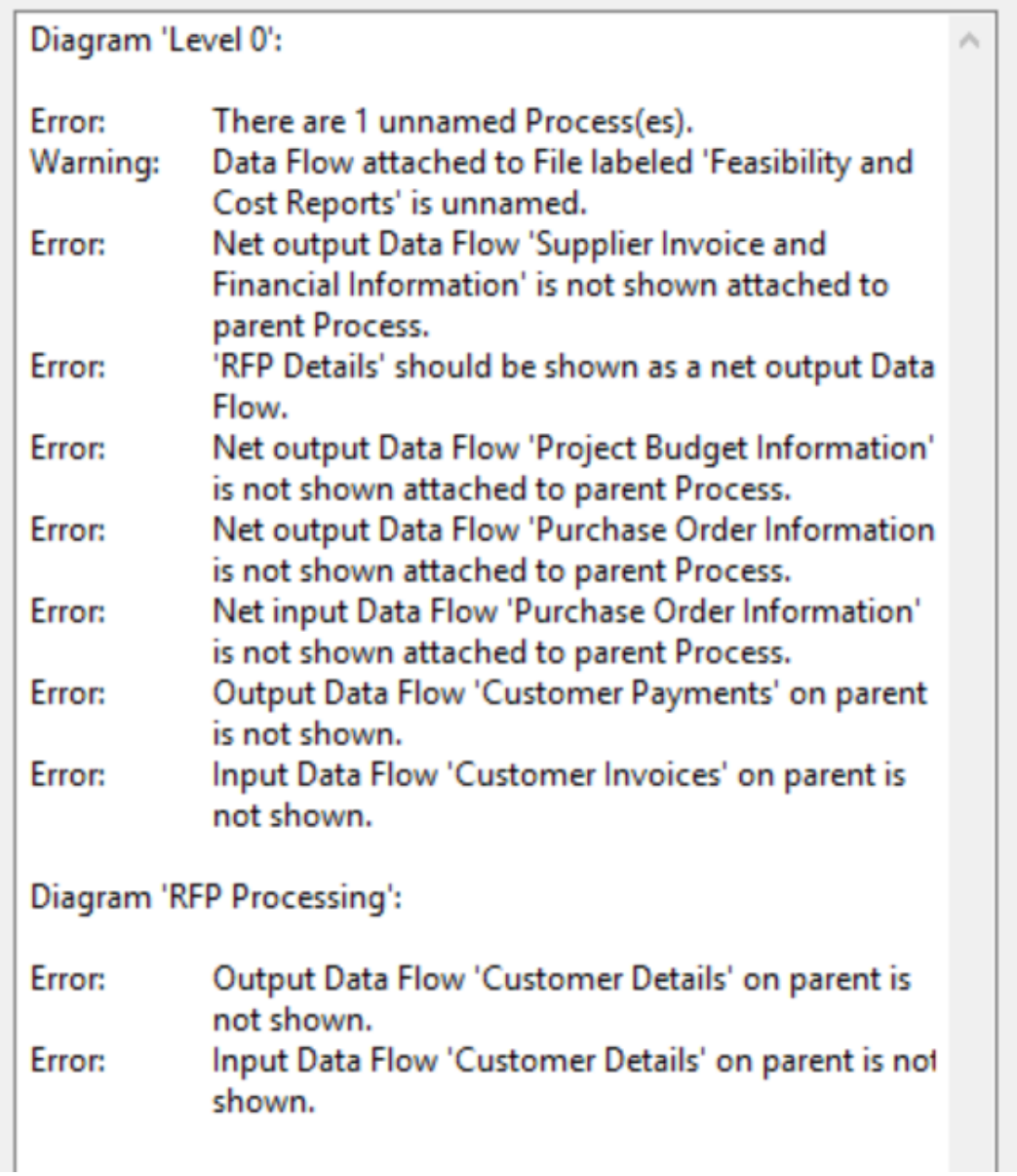
The ERD diagram for the JN Bentley information system comprises 9 entities grouped together by a series of relationships. The entities, attributes and direct/associative relationships are depicted in the figure below.

The updated ERD encompasses two new changes in the way we represent customer and supplier invoices; both the invoices had two different entities each being handled by separate departments. This led to many synchronization issues and time lag in the execution of business processes. The problems have been accounted for through an integrated solution in the current ERD representation.

The 9 entities are as follows:

1. Project Feasibility & Cost Report
2. Project Tracking
3. Customer
4. Customer Invoices and Payments
5. Supplier
6. Supplier Invoices and Payments
7. Purchase Order
8. Resources
9. RFP

Error Report of the Proposed System:



Our team double checked all of the errors in the error report and there should be no issues with the diagrams as proposed. We believe that these "errors" are all attributable to bugs in the product used to generate the diagrams.

Synchronized System Models (CRUD Matrix)

Entity Attribute	1.1 RFP Lead Generation	1.2 RFP Analysis	1.3 RFP Writing and Submission	2.1 Commence Project	2.2 Produce Initial Budget	3.1 Process Supplier Invoice	3.2 Process Supplier Payments	4.1 Process Customer Payments	4.2 Generate Customer Invoices	4.3 Receive Customer Payments	5.1 Request for Materials and Services	5.2 Generate Resource Response	5.3 Generate Order	6.1 Generate Overview of Project Details	6.2 Generate Feasibility and Cost Reports
Feasibility and Cost Reports								R							C
- reportID								R							C
- rMonth								R							C
- rEstimate								R							C
- rDetails								R							C
- rMargin								R							C
Project Tracking					C						R	U	U	R	U
- projectID					C						R			R	
- projectName					C						R			R	
- projectDetails					C						R		U	R	
- projectStatus					C										U
- projectApproval					C										
- projectBudget					C						R	U	U	R	U
- projectStartDate					C						R	U		R	
- bResponse											R	U			
- bBudget											R	U			
- bDetails											R	U			
- bQuantity											R	U			
- sResponse											R	U			
- sBudget											R	U			
- sDetails											R	U			
- sQuantity											R	U			

Customer Invoices and Payments								R		U					
- customerID								R		U					
- projectID								R		U					
- cinvoiceAmt								R		U					
- cinvoiceDate								R		U					
- cinvoiceStatus								R		U					
Supplier Invoices and Payments							C U								
- sinvoiceID							C U								
- sinvoiceAmt							C U								
- sinvoiceDate							C U								
- sinvoiceStatus							C U								
Purchase Order						R							C		
- orderID						R							C		
- orderQuantity						R							C		
- orderCost						R							C		
RFP	R		R U	R											
- rfpID	R		R U	R											
- rfpDetails	R		R U	R											
- rfpBudget	R		R U	R											
- rfpApproval	R		R U	R											

Candidate Systems Solution Table

Characteristics	Candidate 1	Candidate 2	Candidate 3
Portion of System Computerized	Custom solution	SAP Enterprise Resource Planning	Lotus Notes Enterprise Resource Planning
Benefits	Seamlessly integrated systems that can be operated independently or interfaced with legacy systems. Should be mapped to each individual business process as identified by us.	20% adaptable, predetermined packages, more widespread, larger customer base	E-mail, calendaring, scheduling, database, contacts, web server, and programming in one cohesive front end
Servers and Workstation	• Database Server • Application Server • Web Server • Desktops or Laptops for Core App usage • Mobile Devices • Printers • Network connectivity	Required hardware includes: Cash register, receipt planner, computers, mobile devices, network connectivity	Required hardware includes: Cash register, receipt planner, computers, mobile devices, network connectivity
Software Tools Needed	Compatible Server Level OS 64 Bit to be installed with the latest updates and service packs. Dot Net Framework 2.0, 3.0, 3.5, 4.0, 4.5.5 and / or above (as supported by the OS) to be present with the latest updates and service packs.	Applications software packages can be purchased.	Applications software packages can be purchased.

Application Software	Run on Windows and iOS with no additional items needed. Respective operating system will come with package purchase.	Run on Windows and iOS with no additional items needed. Respective operating system will come with package purchase.	Needs LotusNotes to operate in conjunction with excel sheets
Method of Data Processing	Core Application - Real Time and On Line Mobile Applications - Off line and Data sync by user when he has connectivity	On-line and in real-time. The system is updated/ connected to the internet but it is not mandatory to run the application.	You can work online with this application. When online, user is connected to server and transmitting receiving data.
Output Devices and Implications	Computers for on-site and mobile devices for off-site usage	Computers and registers to process and print receipts or important orders or forms.	Computers and registers to process and print receipts or important orders or forms.
Input Devices and Implications	All input devices like keyboards, mouse, mobile devices and tablets	Employees input information into the information system using a computer keyboard. The system can be run, updated, and viewed on a computer.	Employees input information into the information system using a computer keyboard. The system can be run, updated, and viewed on a computer.
Storage Devices and Implications	SQL Server 2012 Standard edition or above 64 bit with the with latest service packs.	SAP works and stores data on many databases such as DB2, MS SQL, Oracle, and HANA.	Notes Storage Facility is a non-relational database file used to store different kinds of data such as email messages, documents, and appointments. Each individual user has a single username.nsf file.

Feasibility Analysis Matrix:

Feasibility Criteria	Wt.	Candidate 1 Xpedeon (Custom Built Solution)	Candidate 2 SAP Oracle	Candidate 3 IBM Lotus Note
Operational Feasibility **Functionality**	40%	JN Bentley would benefit primarily from our custom software's supports in both pre and post contract activities, from estimating through to final account. The software will help capture information from far-flung project locations through electronic data transfer, bring important project control information (vendor/subcontract, enquiry process, past bidding, etc.) online.	The potential benefits obtained from SAP Oracle can span the entire stack-from storage, networks, compute and operating systems, to enterprise applications and databases- and is integrated to work together to provide complex solutions. The candidate acts as a powerful business application suite that empowers. Usually comes with standard packages, not very customizable.	The candidate provides comprehensive functions, such as email, calendars, contracts management, file sharing, and user directory, etc. However, the Lotus Note is not the brand new groundbreaking platform it once was and it is not much optimized to fit modern business needs. It can crush frequently and take up storage space.
Political		Users would have to adjust to using the new system but we believe the highly customized solution will improve JN Bentley's user and organization efficiency in the long run.	It is very likely that this candidate will be well-received by both users and management due to its maturity and industry popularity. Frequent integration problems may occur during implementation but	Most easily-implemented solution because employees have been working on Lotus Notes for the past 15 years. However, user and management may crave for solutions with better

			vendors would be readily available for Long term technical support. The SAP Oracle agent will ultimately make it easier and more efficient for JN Bentley to manage its processes such as contracting and documenting in the long run. Score: 85	integrations, up-to-date features, and more efficient central management. Score: 80
Technical Feasibility **Technology** **Expertise**	30%	Our custom solution is readily available/able to be acquired on up to Windows 10 devices. It requires high technical expertise to develop and customize Xpedeon. Additional expertise would be needed to implement and test the platform within the company.	Computer based application. Everything is entirely conducted through the app. SAP Oracle Agent is readily available to be installed on multiple OS including UNIX/Linux, Windows. Medium technical expertise may be required to implement SAP Oracle. The agent comes with globalized packages and reliable	Computer based application. Lotus Notes is a mature, established, and highly ranked desktop workflow application readily available on Windows, OS X, and Linux. A low to medium level of technical expertise would be required to implement this solution. JN Bentley's IT administers need to

		Score: 95	technical support. JN Bentley would have no major difficulty implementing or maintaining. Score: 90	spend much efforts in updating and maintaining systems in a timely manner. Score: 75
Economic Feasibility **Cost to develop:** Net Present Value: Detailed Calculations:	25%	~$3,000,000 for development of a custom solution + $895,000 for one year of Lotus Notes during development of the new solution + $10,000/month for ongoing service NPV= -3,577,295.60 Detailed Calculations: Initial Costs= 1,120,000 Year 1 Costs=2,120,000 Year 2-5 Costs=120,000 Discount rate=4% Score: 90	$30,000 initial cost + $4,000,000/year ($800 per user * 5,000 users) + $895,000 for one year of Lotus Notes during implementation of the new solution NPV=-18,697,866.25 Initial Costs=-30,000 Year 1 Costs= 4,895,000 Year 2-5 Costs=4,000,000 Discount rate =4% Score: 75	$895,000/year ($179 per user * 5,000 users) NPV=-3,984,380.99 Initial Costs=0 Year 1-5 Costs=895,000 Discount rate =4% Score: 85
Schedule Feasibility	5%	Up to 1.5-2 years Score: 80	Up to 1-1.5 years Score: 85	Estimated 2-3 months Score: 95
Ranking	100%	91	84	80.5

Rationale for weighting system for the feasibility matrix:

Operational: Weight: 40%

This is weighted the highest as we are attaching greatest importance on how new solution should substantially improve user and organization efficiency, and must work smoothly to provide long-term benefits to JN Bentley. The solution is supposed to improve JN Bentley's efficiency in all aspects to help the company run more smoothly - process orders/inquiries more quickly, and document complex processes m more accurately. Political hurdles, like learning curves and user acceptance easiness, are also of a huge part of consideration and should be overcome to earn management's approval.

Technical: Weight: 30%

Technical feasibility is also an important determinant of project success. The proposed solution technology should be readily available and easy for us to implement across different levels of organization. This requires us to look into how well the proposed solution integrate processes, systems, applications and data to work together. Furthermore, we also need to evaluate whether we need to acquire additional technical expertise to help deploy and maintain the solution so the new technology would be deemed an overall success in the long run.

Economic: Weight: 25%

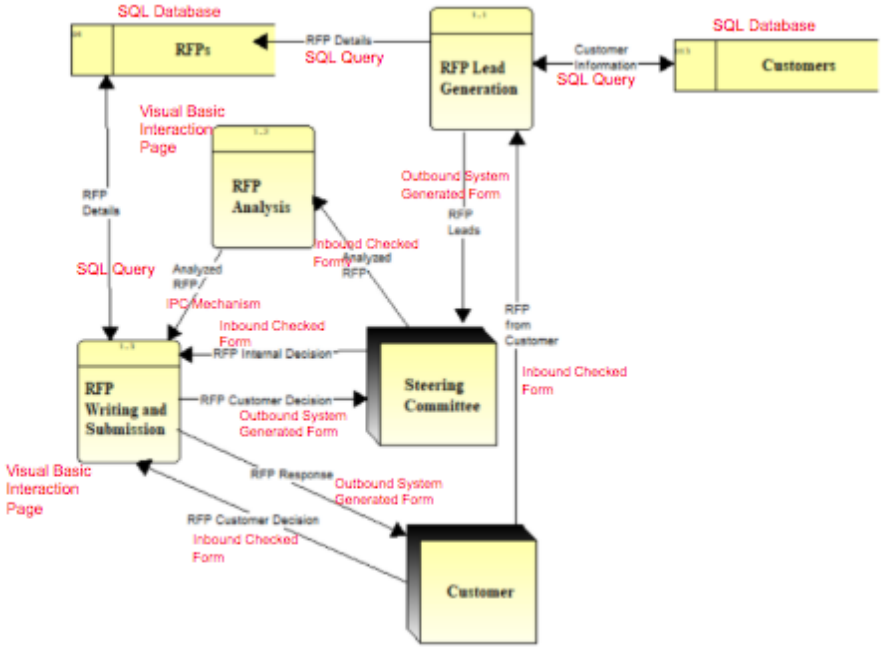
We attached 25% weight on economic feasibility. Given that the proposed solutions would help the company largely increase its long-term efficiencies and profitability, JN Bentley would be happy to provide sufficient funds for the new project. The cost should be in a reasonable range and generate appropriate benefits on client's business.

Schedule: Weight: 5%

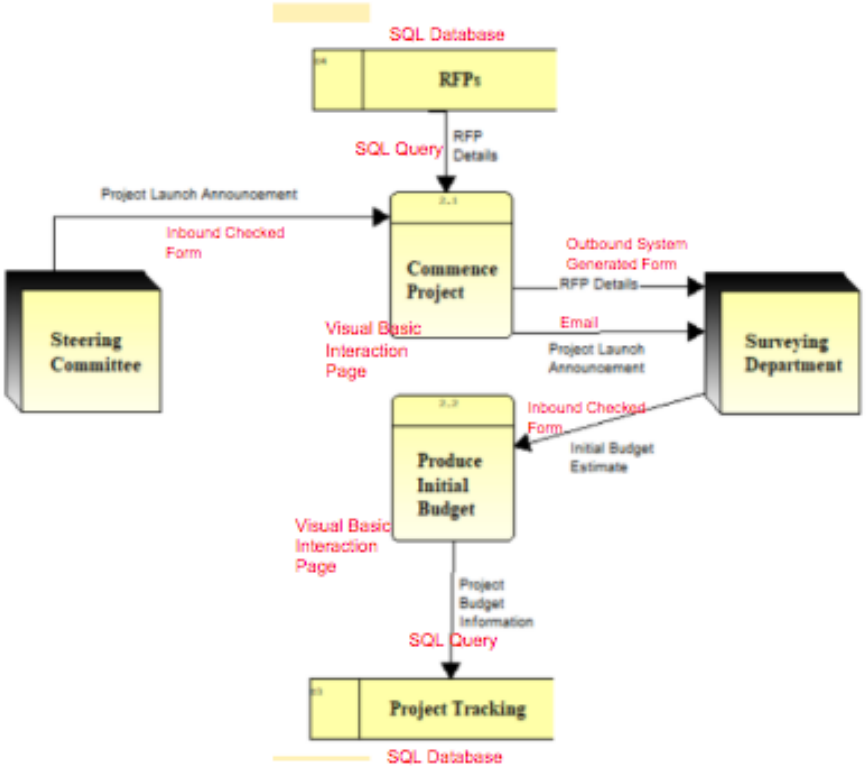
Schedule feasibility is weighted lowest as there is already a working system in place and the deadline for the project is flexible. As long as the client keeps proposed solutions progressing as scheduled, the project could be completed in a reasonable time period.

Physical Data Flow Diagrams of Proposed System:

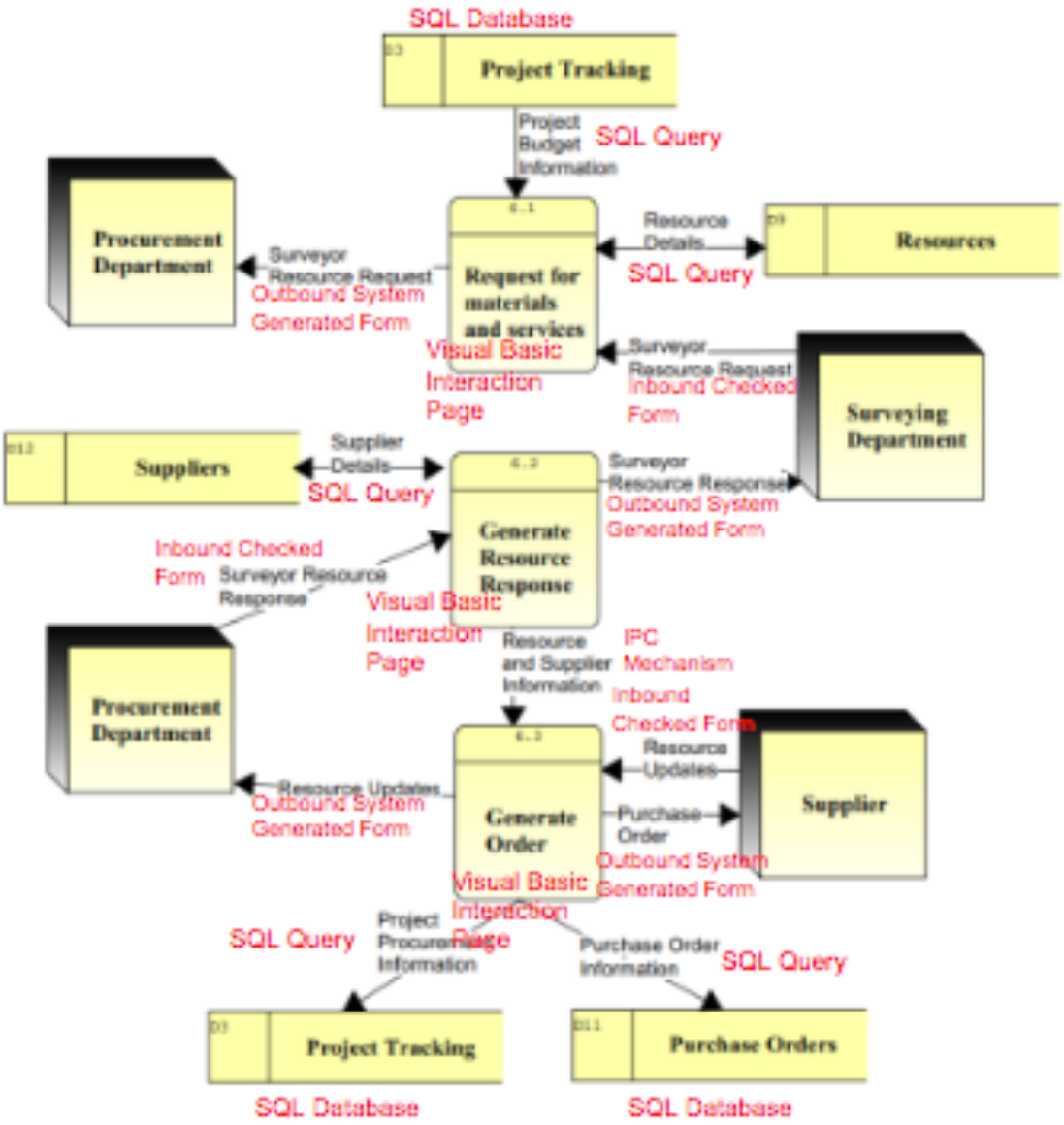
Physical DFD – Level 1(RFP Processing):



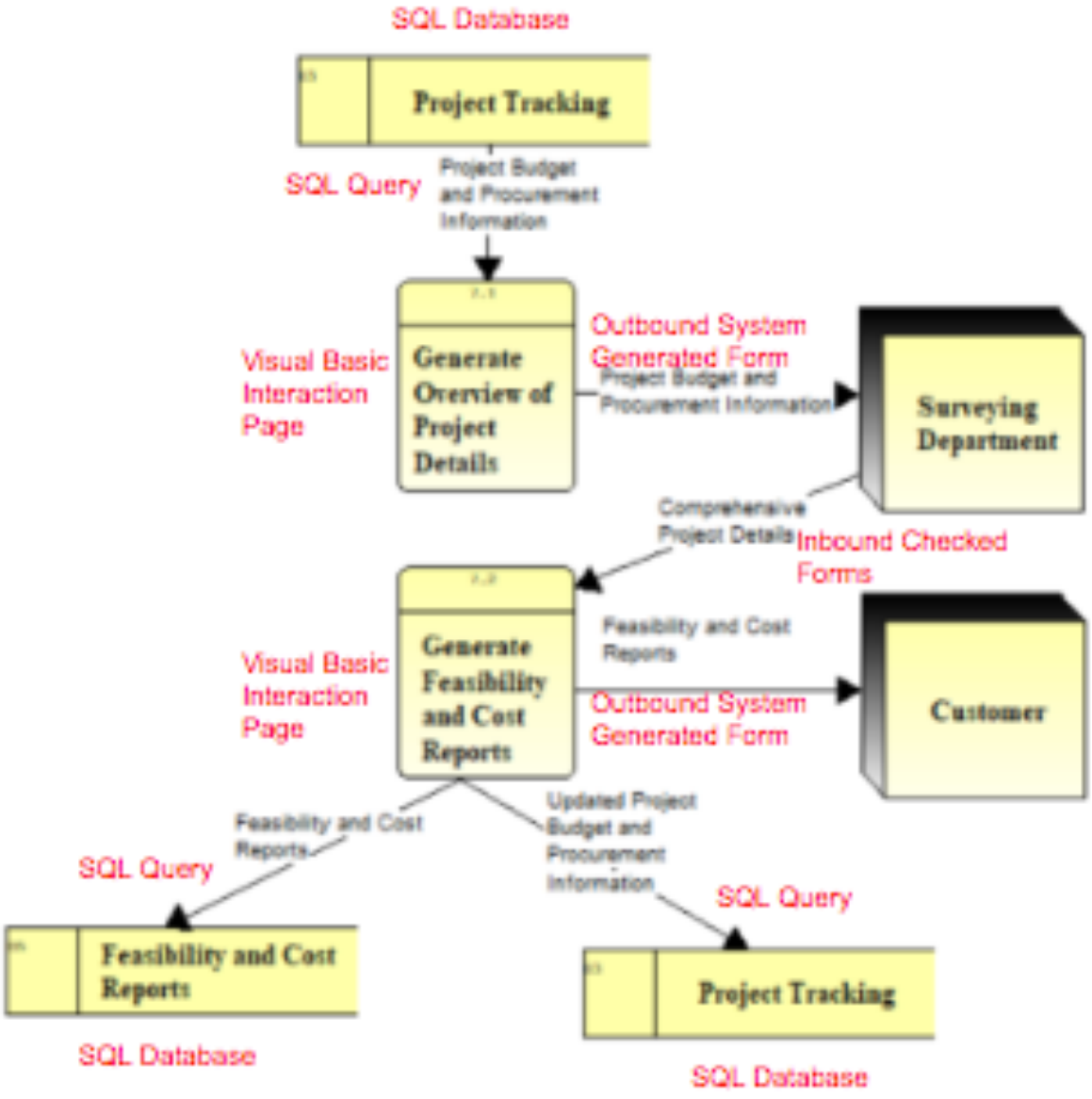
Physical DFD – Level 1(Initial Project Setup):



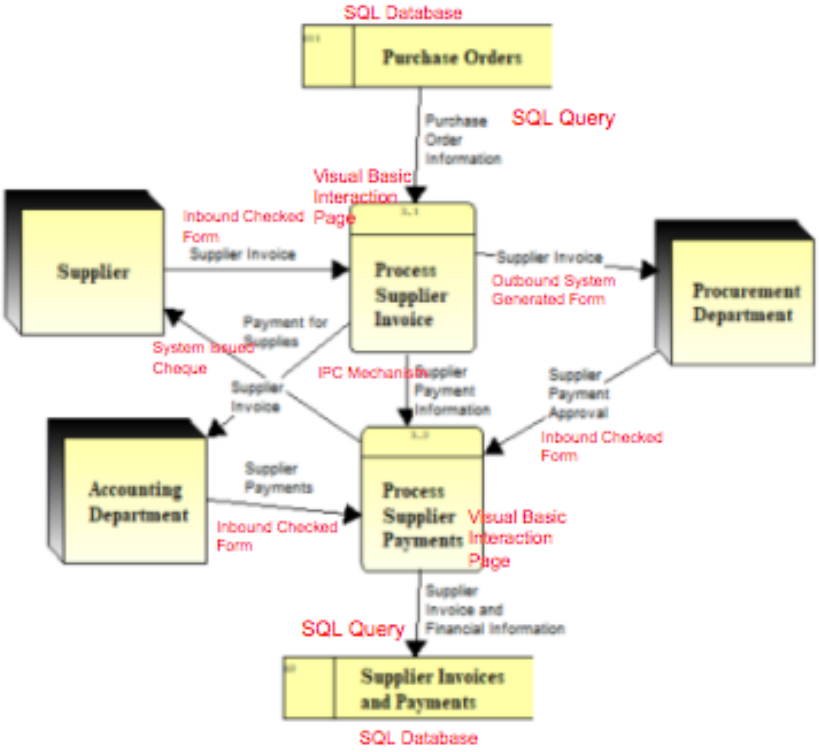
Physical DFD – Level 1(Procure Materials and Services):



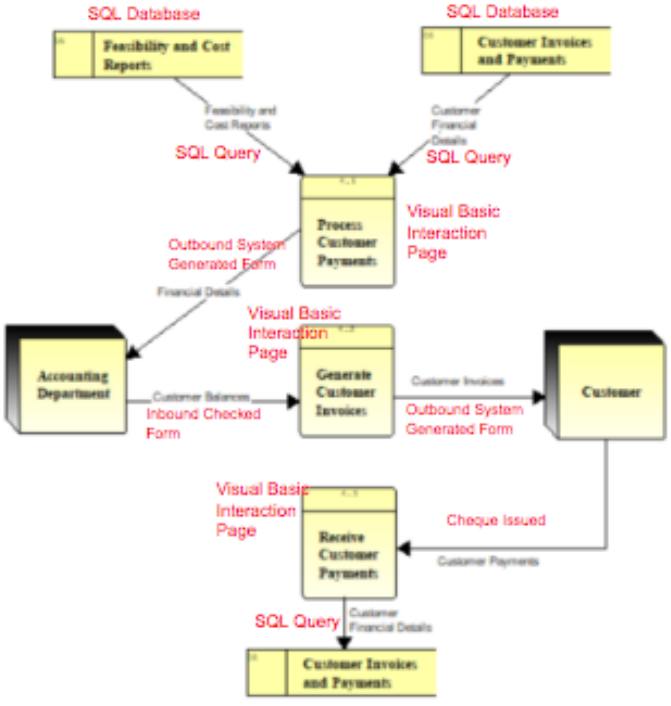
Physical DFD – Level 1(Feasibility and Cost Reporting):



Physical DFD – Level 1(Supplier Invoicing):

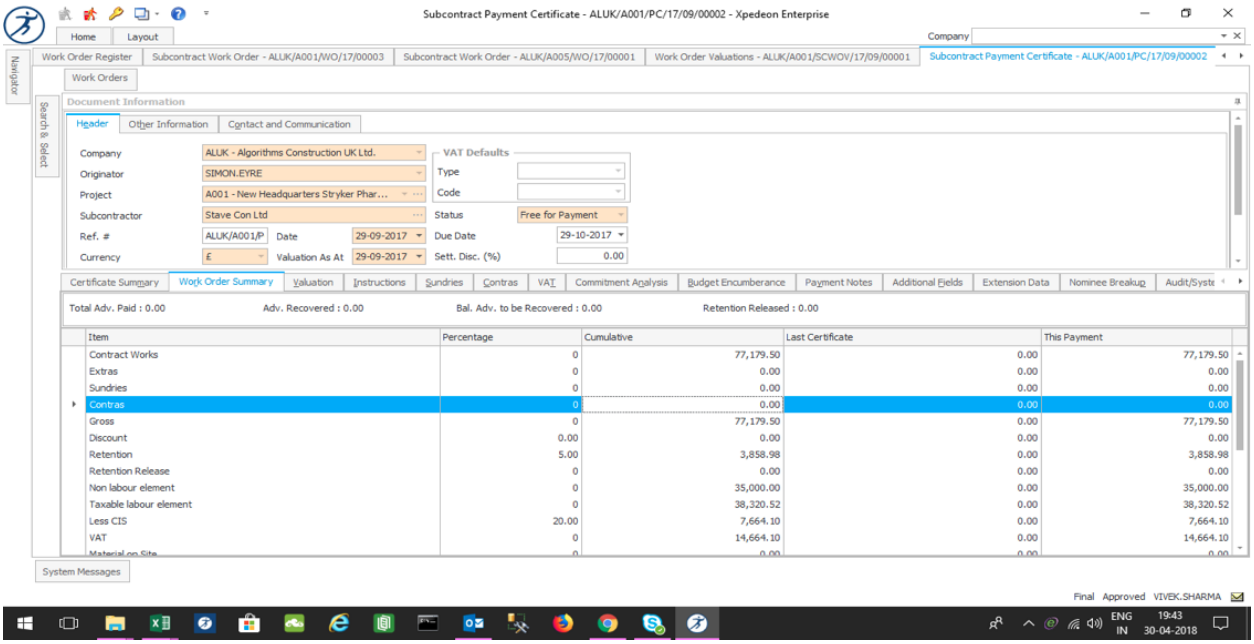


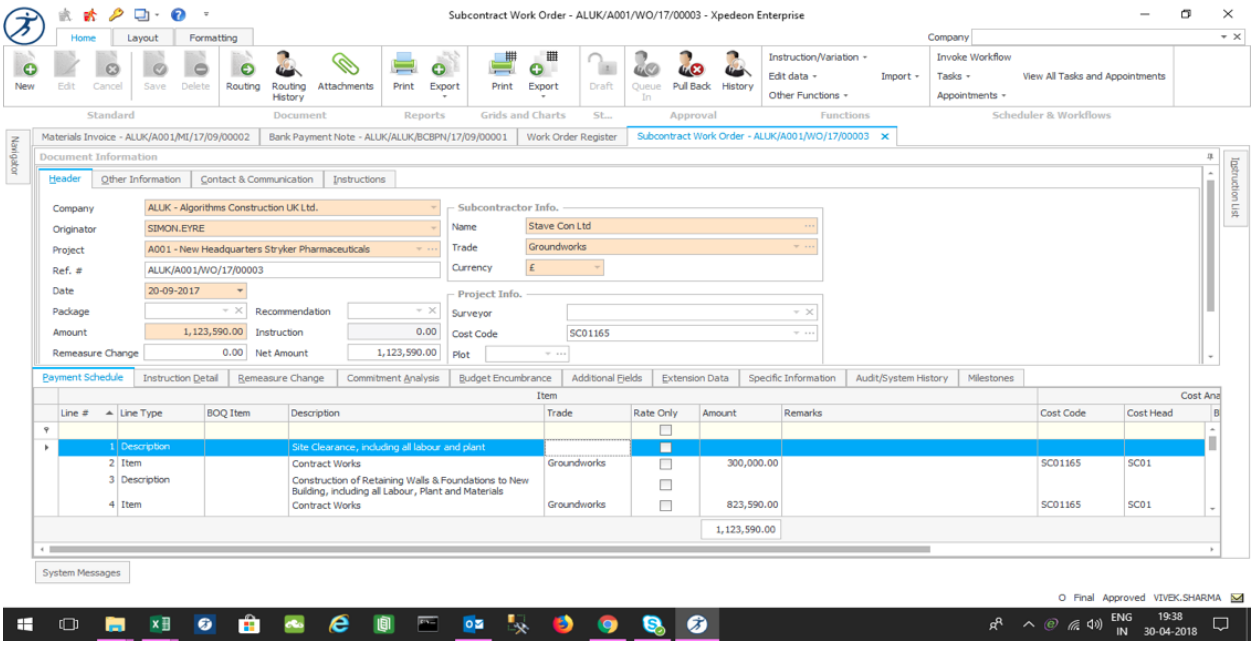
Physical DFD – Level 1(Costumer Invoicing):

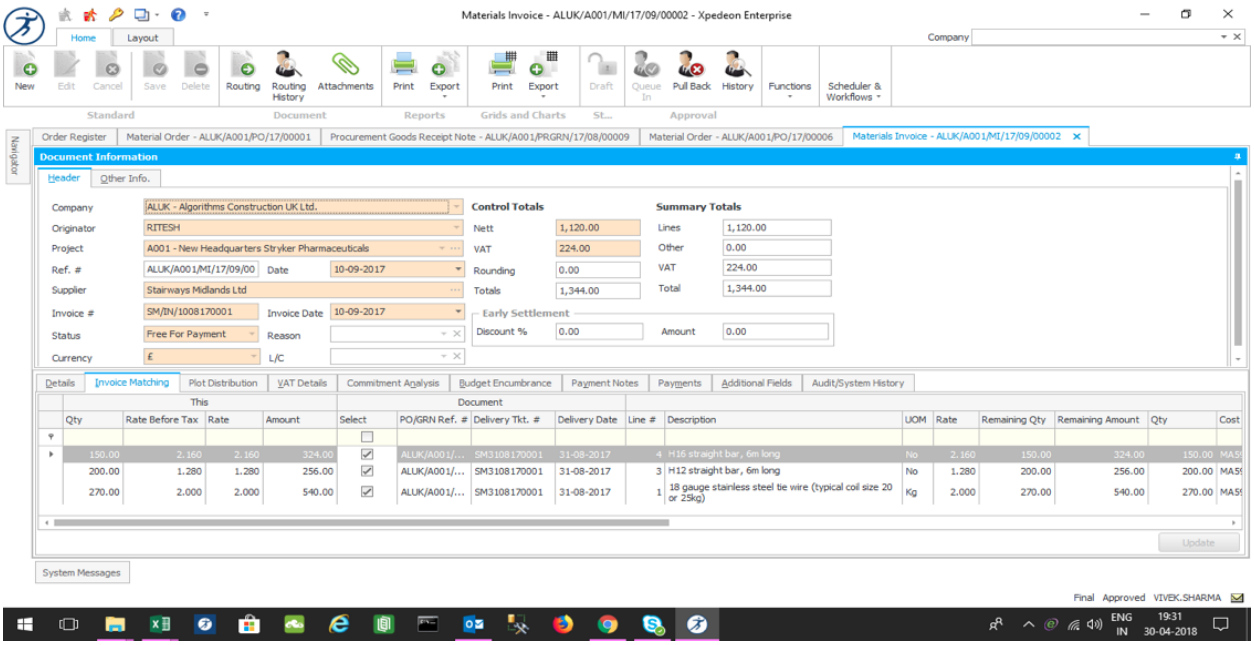


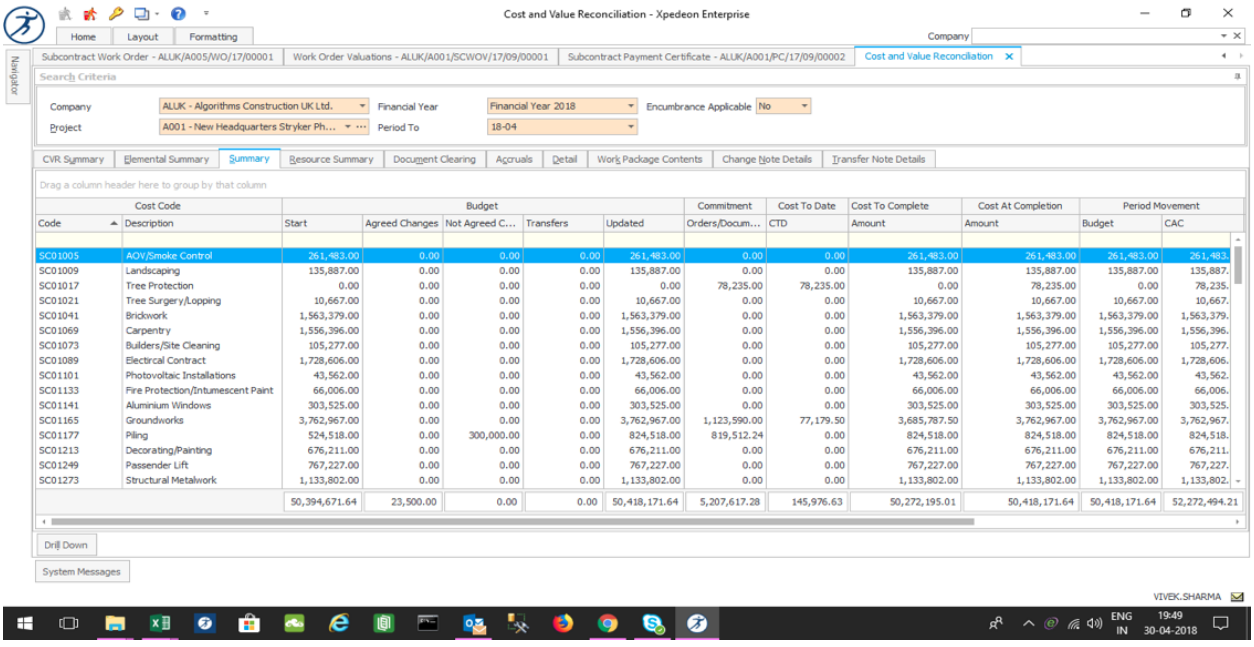
Input and Output Design Forms:

Examples of INPUT Forms:






Materials Invoice - ALUK/A001/MI/17/09/00002 - Xpedeon Enterprise
Home
Layout
Company
New
Edit
Cancel
Save
Delete
Routing
Routing History
Attachments
Print
Export
Print
Export
Draft
Queue In
Pull Back
History
Functions
Scheduler & Workflows
Standard
Document
Reports
Grids and Charts
St...
Approval
Order Register
Material Order - ALUK/A001/PO/17/00001
Procurement Goods Receipt Note - ALUK/A001/PRGRN/17/08/00009
Material Order - ALUK/A001/PO/17/00006
Materials Invoice - ALUK/A001/MI/17/09/00002
Navigator
Document Information
Header
Other Info.
Company
ALUK - Algorithms Construction UK Ltd.
Originator
RITESH
Project
A001 - New Headquarters Stryker Pharmaceuticals
Ref. #
ALUK/A001/MI/17/09/00
Date
10-09-2017
Supplier
Stairways Midlands Ltd
Invoice #
SM/IN/1008170001
Invoice Date
10-09-2017
Status
Free For Payment
Reason
Currency
£
L/C
Control Totals
Nett
1,120.00
VAT
224.00
Rounding
0.00
Totals
1,344.00
Summary Totals
Lines
1,120.00
Other
0.00
VAT
224.00
Total
1,344.00
Early Settlement
Discount %
0.00
Amount
0.00
Details
Invoice Matching
Plot Distribution
VAT Details
Commitment Analysis
Budget Encumbrance
Payment Notes
Payments
Additional Fields
Audit/System History
This
Document
Qty
Rate Before Tax
Rate
Amount
Select
PO/GRN Ref. #
Delivery Tkt. #
Delivery Date
Line #
Description
UOM
Rate
Remaining Qty
Remaining Amount
Qty
Cost
150.00 2.160 2.160 324.00 ALUK/A001/... SM3108170001 31-08-2017 4 H16 straight bar, 6m long No 2.160 150.00 324.00 150.00
200.00 1.280 1.280 256.00 ALUK/A001/... SM3108170001 31-08-2017 3 H12 straight bar, 6m long No 1.280 200.00 256.00 200.00
270.00 2.000 2.000 540.00 ALUK/A001/... SM3108170001 31-08-2017 1 18 gauge stainless steel tie wire (typical coil size 20 or 25kg) Kg 2.000 270.00 540.00 270.00
Update
System Messages
Final Approved VIVEK.SHARMA
ENG IN
19:31
30-04-2018


Cost and Value Reconciliation - Xpedeon Enterprise
Home
Layout
Formatting
Company
Subcontract Work Order - ALUK/A005/WO/17/00001
Work Order Valuations - ALUK/A001/SCWOV/17/09/00001
Subcontract Payment Certificate - ALUK/A001/PC/17/09/00002
Cost and Value Reconciliation
Navigator
Search Criteria
Company
ALUK - Algorithms Construction UK Ltd.
Financial Year
Financial Year 2018
Encumbrance Applicable
No
Project
A001 - New Headquarters Stryker Ph...
Period To
18-04
CVR Summary
Elemental Summary
Summary
Resource Summary
Document Clearing
Accruals
Detail
Work Package Contents
Change Note Details
Transfer Note Details
Drag a column header here to group by that column
Cost Code
Budget
Commitment
Cost To Date
Cost To Complete
Cost At Completion
Period Movement
Code
Description
Start
Agreed Changes
Not Agreed C...
Transfers
Updated
Orders/Docum...
CTD
Amount
Amount
Budget
CAC
SC01005 AOV/Smoke Control 261,483.00 0.00 0.00 0.00 261,483.00 0.00 0.00 261,483.00 261,483.00 261,483.00 261,483.
SC01009 Landscaping 135,887.00 0.00 0.00 0.00 135,887.00 0.00 0.00 135,887.00 135,887.00 135,887.00 135,887.
SC01017 Tree Protection 0.00 0.00 0.00 0.00 0.00 78,235.00 78,235.00 0.00 78,235.00 0.00 78,235.
SC01021 Tree Surgery/Lopping 10,667.00 0.00 0.00 0.00 10,667.00 0.00 0.00 10,667.00 10,667.00 10,667.00 10,667.
SC01041 Brickwork 1,563,379.00 0.00 0.00 0.00 1,563,379.00 0.00 0.00 1,563,379.00 1,563,379.00 1,563,379.00 1,563,379.
SC01069 Carpentry 1,556,396.00 0.00 0.00 0.00 1,556,396.00 0.00 0.00 1,556,396.00 1,556,396.00 1,556,396.00 1,556,396.
SC01073 Builders/Site Cleaning 105,277.00 0.00 0.00 0.00 105,277.00 0.00 0.00 105,277.00 105,277.00 105,277.00 105,277.
SC01089 Electircal Contract 1,728,606.00 0.00 0.00 0.00 1,728,606.00 0.00 0.00 1,728,606.00 1,728,606.00 1,728,606.00 1,728,606.
SC01101 Photovoltaic Installations 43,562.00 0.00 0.00 0.00 43,562.00 0.00 0.00 43,562.00 43,562.00 43,562.00 43,562.
SC01133 Fire Protection/Intumescent Paint 66,006.00 0.00 0.00 0.00 66,006.00 0.00 0.00 66,006.00 66,006.00 66,006.00 66,006.
SC01141 Aluminium Windows 303,525.00 0.00 0.00 0.00 303,525.00 0.00 0.00 303,525.00 303,525.00 303,525.00 303,525.
SC01165 Groundworks 3,762,967.00 0.00 0.00 0.00 3,762,967.00 1,123,590.00 77,179.50 3,685,787.50 3,762,967.00 3,762,967.00 3,762,967.
SC01177 Piling 524,518.00 0.00 300,000.00 0.00 824,518.00 819,512.24 0.00 824,518.00 824,518.00 824,518.00 824,518.
SC01213 Decorating/Painting 676,211.00 0.00 0.00 0.00 676,211.00 0.00 0.00 676,211.00 676,211.00 676,211.00 676,211.
SC01249 Passender Lift 767,227.00 0.00 0.00 0.00 767,227.00 0.00 0.00 767,227.00 767,227.00 767,227.00 767,227.
SC01273 Structural Metalwork 1,133,802.00 0.00 0.00 0.00 1,133,802.00 0.00 0.00 1,133,802.00 1,133,802.00 1,133,802.00 1,133,802.
50,394,671.64 23,500.00 0.00 0.00 50,418,171.64 5,207,617.28 145,976.63 50,272,195.01 50,418,171.64 50,418,171.64 52,272,494.21
Drill Down
System Messages
VIVEK.SHARMA
ENG IN
19:49
30-04-2018

Example of OUTPUT Forms:

Purchase Order

Algorithms Construction UK Ltd.

Contract No.	Contract Name	Order Number	Date
A001	New Headquarters Stryker Pharmaceuticals	ALUK/A001/PO/17/00007	10-08-2017

Framework Agreement **Client** **Client Ref**

Delivery Address
South Street

Newbury
Middlesex
EN3 4QB

TO : Stairways Midlands Ltd
Unit 20 North Ponypool Industrial Estate

Walsall

WS1 4ND

Site Contact
Mr Kevin Brown
01201421522
a0001@algosoftware.com

Supplier Contact

Originator Contact Details
Mr Ritesh Bahl
7448378292
ritesh.bahl@algosoftware.com

Item Description	Quantity	Units	Price	Total Price	Delivery Date
18 gauge stainless steel tie wire (typical coil size 20 or 25kg)	250.00	Kg	£2.00	£500.00	31-08-2017
H10 straight bars, 6m long	0.00	No	£0.90	£0.00	31-08-2017
H12 straight bar, 6m long	200.00	No	£1.28	£256.00	31-08-2017
H16 straight bar, 6m long	150.00	No	£2.16	£324.00	31-08-2017
			Total Order Price	**£1,080.00**	

Attachments
Algorithms Terms and Conditions.pdf
TreeProtectionPolicy.pdf
Precluded Materials.pdf
Scaffold Specification v6.pdf

This order is placed on the terms and conditions set out in:
ALGORITHMS SOFTWARE PVT LTD. – CONDITIONS FOR THE PURCHASE OF GOODS (v3.6).
Copies available on request

Work Order Register - Project-wise

Company	ALUK - Algorithms Construction UK Ltd.	**Branch**	(Multiple Branch Selection)
Project	(Multiple Project Selection)	**Subcontractor**	(Multiple Subcontractor Selection)
From	01-04-2017	**To**	
Work Order Status	All		

Line #	Ref. #	Date	Subcontractor	Trade/Title	Status	Order Value	Valuation	Net Advance	Certification	Net Retention	Work Done Paid
Project	A001 - New Headquarters Stryker Pharmaceuticals										
Order Type	WO										
1	ALUK/A001/WO/17/00004	01-08-2017	SC0337 - Kinlan Construction Ltd	Piliing Contract - Piling	Open	582,731.24	0.00	0.00	0.00	0.00	0.00
2	ALUK/A001/WO/17/00005	21-08-2017	SC0113 - E W Gee	Demolition Contract - Demolition	Open	459,454.00	5,000.00	0.00	0.00	0.00	0.00
3	ALUK/A001/WO/17/00003	20-09-2017	SC0225 - Stave Con Ltd	Groundworks	Open	1,123,590.00	77,179.50	0.00	77,179.50	3,858.98	0.00
WO Total						**2,165,775.24**	**82,179.50**	**0.00**	**77,179.50**	**3,858.98**	**0.00**
A001 - New Headquarters Stryker Pharmaceuticals Total						**2,165,775.24**	**82,179.50**	**0.00**	**77,179.50**	**3,858.98**	**0.00**
Project	A005 - Milton Keynes residual waste treatment facility										
Order Type	WO										
4	ALUK/A005/WO/17/00001	04-09-2017	SC0127 - Foundation Developments Ltd	Piliing Contract - Piling	Open	524,550.86	3,750.00	0.00	0.00	0.00	0.00
WO Total						**524,550.86**	**3,750.00**	**0.00**	**0.00**	**0.00**	**0.00**
A005 - Milton Keynes residual waste treatment facility Total						**524,550.86**	**3,750.00**	**0.00**	**0.00**	**0.00**	**0.00**

Powered by Xpedeon

30-04-2018 09:48:41 PM
1/1

Purchase Order Register(Master)

Company	ALUK - Algorithms Construction UK Ltd.		
Branch		**Project**	A001 - New Headquarters Stryker Pharmaceuticals
Supplier			
From Date	01-04-2016	**To Date**	
Order Status	All	**Report Type**	Master
Currency	£		

Ref. #	Date	Supplier Ref. #	Payment Terms	Order Value	Status	GRN Value	Invoiced	Remaining (Invoice)	Paid L/C Ref. #	Outstanding Advance
Supplier	SP0001 - A J Joinery Ltd									
Project	A001 - New Headquarters Stryker Pharmaceuticals									
ALUK/A001/PO/17/00003	29-08-2017		Invoice Date + 30 Days	1,900.00	Not Approved	0.00	0.00	1,900.00		
PO13100001	21-09-2017			25.00	Open	0.00	0.00	25.00		
PO3100043	24-08-2017			40.00	Open	0.00	0.00	40.00		
A001 - New Headquarters Stryker Pharmaceuticals				**1,965.00**		**0.00**	**0.00**	**1,965.00**	**0.00**	**0.00**
SP0001 - A J Joinery Ltd				**1,965.00**		**0.00**	**0.00**	**1,965.00**	**0.00**	**0.00**
Supplier	SP0007 - Advante Ltd									
Project	A001 - New Headquarters Stryker Pharmaceuticals									
ALUK/A001/PO/17/0000	05-08-2017		Invoice Date + 14 Days	52,022.90	Open	0.00	0.00	52,022.90		
ALUK/A001/PO/17/0000	17-10-2017		Invoice Date + 14 Days	52,022.90	Closed	52,022.90	0.00	52,022.90		
ALUK/A001/PO/17/0001	18-10-2017		Invoice Date + 14 Days	12,574.40	Closed	12,574.40	0.00	12,574.40		
ALUK/A001/PO/17/0001	18-10-2017		Invoice Date + 14 Days	12,574.40	Closed	12,574.40	0.00	12,574.40		
A001 - New Headquarters Stryker Pharmaceuticals				**129,194.60**		**77,171.70**	**0.00**	**129,194.60**	**0.00**	**0.00**
SP0007 - Advante Ltd				**129,194.60**		**77,171.70**	**0.00**	**129,194.60**	**0.00**	**0.00**
Supplier	SP0011 - All About Bricks Ltd									
Project	A001 - New Headquarters Stryker Pharmaceuticals									

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Bank Payment Note - Accounts Payable

Company	ALUK-Algorithms Construction UK Ltd.	**Currency**	£
Ref. #	ALUK/ALUK/BCBPN/17/09/00001	**Date**	20-09-2017
Bank		**Bank A/C #**	30601524
Entity	SP0181-Stairways Midlands Ltd	**A/C No.**	105100
Payment Mode	BACS	**Payment Mode Number**	
Paid To	Stairways Midlands Ltd	**Payment Mode Date**	20-09-2017
Remarks			

Project	Ref. #	Doc. Date	Entity Ref. #	Amount	Part Paid	Balance	This
A001	ALUK/A001/MI/17/09/00002	10-09-2017	SM/IN/1008170001	1,344.00	0.00	1,344.00	1,344.00
A001	ALUK/A001/APPSC/17/08/00001	31-08-2017		21.60	0.00	21.60	21.60
Total				**1,365.60**	**0.00**	**1,365.60**	**1,365.60**

£ One Thousand Three Hundred Sixty Five and Pence Sixty Only

Vivek Sharma
Prepared By

Vivek Sharma
Approved By

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Implementation Plan:

Our implementation plan will consist of development of a custom software solution, to be developed over the course of two years by Xpedeon. The new system will be more capable, tailored to JN Bentley's business needs, and capable of scaling with JN Bentley's client/project growth. We've provided a more detailed implementation overview below.

1. Procurement

a) Finalize the technical criteria, options, and specifications of the software that will fulfill the requirements we've established in the configuration phase.
   i. This should include delving into the details, functionality, features, and critical performance parameters.
   ii. We would like to employ an Agile development model that allows our users to begin to take advantage of system modules as they are developed and tested.

b) Analyze Xpedeons responses, and validate their past performance claims.

c) Draw up a contract with Xpedeon for development of the software, ongoing/continued support, and a buffer for additional ongoing development.
   i. At a minimum, the contract should detail costs/payments, performance criteria, and how changes will be handled.

2. Construction

a) Programmers will develop the new system modules.

b) System analysts will design the tests, evaluate performance, and finalize the system/user documentation for each module.

c) Build and test the new database schema and consider data migration.

3. Delivery (ongoing as modules are developed)

a) Install the databases used by the new system modules.

b) Conduct system acceptance tests that ensure the system works and meets user's expectations.

c) Prepare a conversion plan to provide a smooth transition to the new system.

d) Provide documentation for individuals that will be using the new system.

e) Train users on the new system modules.

f) Once the new system has been fully developed we will drop the old implementation.

g) Evaluate the project and final system by way of an safter-action report.

Appendix:

Net Present Value Calculation:

Candidate	Year	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Xpedeon	Cash Outlays	$ (1,120,000.00)	$ (2,120,000.00)	$ (120,000.00)	$ (120,000.00)	$ (120,000.00)	$ (120,000.00)
	Present Value	$ (1,120,000.00)	$ (2,038,461.54)	$ (110,946.75)	$ (106,679.56)	$ (102,576.50)	$ (98,631.25)
	NPV	$ (3,577,295.60)	Discount rate=4%				

Candidate	Year	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
SAP Oracle	Cash Outlays	$ (30,000.00)	$ (4,895,000.00)	$ (4,000,000.00)	$ (4,000,000.00)	$ (4,000,000.00)	$ (4,000,000.00)
	Present Value	$ (30,000.00)	$ (4,706,730.77)	$ (3,698,224.85)	$ (3,555,985.44)	$ (3,419,216.76)	$ (3,287,708.43)
	NPV	$ (18,697,866.25)	Discount rate=4%				

Candidate	Year	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
IBM Lotus Notes	Cash Outlays	$ -	$ (895,000.00)	$ (895,000.00)	$ (895,000.00)	$ (895,000.00)	$ (895,000.00)
	Present Value	$ -	$ (860,576.92)	$ (827,477.81)	$ (795,651.74)	$ (765,049.75)	$ (735,624.76)
	NPV	$ (3,984,380.99)	Discount rate=4%				