



## SYSTEM PROPOSAL

R.H SMITH SCHOOL OF BUSINESS



ROBERT H. SMITH  
SCHOOL OF BUSINESS



# Systems Analysis and Design

Designing Information Technology  
Solutions For Your Business

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# Executive Summary

## Crescent Printing and Copying

# Executive Summary

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This report contains the complete systems analysis and design proposal for Crescent Printing and Copying. The project was completed by our team of information systems students from the R.H. Smith School of Business, University of Maryland, over the course of the 2011 spring semester.

Included in the following document are the detailed reports resulting from three project phases: the survey phase, the system analysis phase, and the final system solution phase.

## Summary of Survey Phase

During the survey phase our team conducted preliminary research on the client, and the industry in which it operates. Industry evaluation was structured as a Porter's Five Forces of Competition analysis. The initial review of the business led to several suggested opportunities and areas for improvement. Under current operations, very little data regarding customers, customer orders, and inventory is stored or stored in a manner that is useful to management. The current point-of-sale system does not facilitate inventory management, nor is it linked to any financial software or other database software. There are pricing consistency issues due to the fact that the point-of-sale system must have sale information manually entered for each in-store sale made. These are among the major issues addressed by the project system solution. This portion of the project also contains the scope definition, which is simply that we would research,

design, and recommend a solution that would address the above-mentioned issues, falling short of actually building the system during this semester's course.

## Summary of System Analysis Phase

The system analysis phase involved industry standard fact-finding techniques to derive logical system models of Crescent's current business regarding the following business functions: customer order placement (irrespective of method), request for courier shipment, and inventory management. These business functions were modeled using the data-flow diagramming techniques presented in "*Systems Analysis and Design*," by Whitten and Bentley. The data stored in the current system (regardless of storage method) can be seen in the entity relationship diagram produced during this phase. It should be noted that the data-flow models constructed are technology independent, and only vary from the analysis phase to the proposal with respect to business process improvements.

## Summary of System Proposal Phase

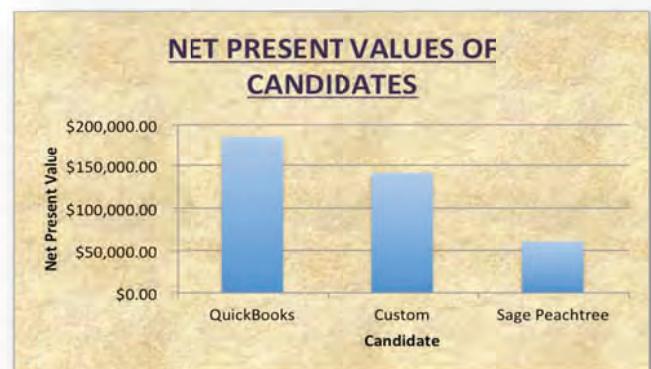
The main result of this phase is the proposed system solution, which is primarily determined as a result of the feasibility analysis matrix. Selecting a solution means choosing technology that will facilitate the logical

processes modeled in our business process diagrams. Our three candidate systems included two commercial off-the-shelf (COTS) package solutions, and one custom solution. The COTS candidates were QuickBooks Premier Edition software coupled with QuickBooks Point-of-Sale system, and Sage Peachtree Premium, with integrated point-of-sale hardware and software. The custom candidate involved an implementation of a Filemaker Server database management system on an Apple Mac mini server running Mac OSX Server software. Database interface would be facilitated by I-pads, which run forms for customers and gives the business owner remote access for reporting and administrative purposes. Details regarding the system proposal are found in the accompanying physical data-flow diagrams, and

sample input/output screens are included in this portion of the project, as well as an implementation plan. Improvements were made to the data-flow diagrams to reflect the fact that an employer entity was added to the business in-between the analysis phase and the proposal phase, and a few manual processes were automated by the computerization of certain system components. The ultimate outcome follows in the "Conclusions and Recommendations."

## Conclusions and Recommendations

Although the custom solution offers the highest potential for improvement in customer satisfaction and repeat business, benefits of the QuickBooks solution ultimately surpass all other candidate solutions, and therefore it is our recommended



solution to the Crescent Printing and Copying. As stated before, the current QuickBooks system is inadequate, and it cannot be altered to support the business requirements. But our recommended solution meets all business requirements, and is quite well suited for the client in all areas of evaluation that can be seen on the feasibility analysis matrix. Furthermore, it is our highest net present value candidate, with an NPV of \$185,585.70 realized over a useful life of 5 years. Details of other candidates can be found in the candidate system solutions table and the feasibility analysis matrix. An implementation plan is also included in this report.

# Survey Phase Report

## Crescent Printing and Copying

# Survey Phase Report

## Client Background

Crescent Printing and Copying has its genesis twelve years ago when Mr. Brad Vali's father opened up a small business in Bethesda. As this business grew, there was an opportunity to open another printing and copying store a few miles away. So they did just that, and Brad Vali became owner and manager of Crescent Printing and Copying, a strategically located business in the heart of downtown Bethesda, MD. Although the initial business goal was to simply "make money," the business now differentiates itself from nearby competitors by continually providing the best quality service to its customers. Even in the midst of hard economic times, Mr. Vali has done quite well, and is considering opening a third business at a location in Northern Virginia.



## Industry Analysis

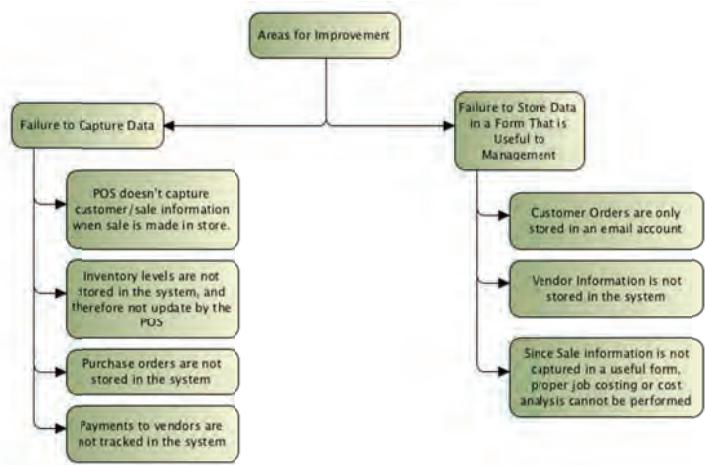
A look at the printing and copying industry through the lens of a Porter's Five Forces analysis gives us an indication of the type of market Crescent is competing in. Due to the following factors, we have determined that the market is highly competitive, and companies may find it challenging to differentiate their products and services to gain a competitive advantage. The market is *relatively* inexpensive to enter, and barriers to entry are often low. Buyers have low bargaining power due to high price sensitivity in the general customer base, and few options exist for differentiation in product quality, although some room exists for differentiation through service quality. Supplier power happens to be quite high due to the number of copying businesses that often exists within a few square miles of each other. From the image in the lower left, you can see the number of copying and printing businesses within a small radius of each other. From business "E" to business "H" is only about one-half of a mile. Threat of substitute services is also growing due to many companies (and individuals, for that matter) simply distributing and/or reading documents online and electronically. These contributing factors result in a highly competitive market for the printing and copying industry.



## Areas for Improvement, Opportunities, and Directives

After an initial examination of Crescent, and a brief interview with Mr. Vali, we determined that a few areas for improvement and opportunities exist in the business. We will categorize these areas for improvement into two sectors: failure to capture useful information, and failure to store information in a form that is useful to management. Elements of these two categories can be seen in the diagram on the right.

Failure to capture information occurs in several ways, and we list a few of them here. First, the point of sale system does not capture either customer information or sales information when a sale is made in store. Only the transaction is processed and money sent from the customer account to the company account. Second, since sale information is not captured, inventory levels cannot be updated by the POS system. Third, purchase orders made to vendors are not stored in the system. And fourth, payments to vendors are not tracked in the system.



Failure to store data in a form that is useful to management occurs in some of the following ways, but certainly is not limited to what is listed here. First, customer orders are only stored in an email account, and this does not necessarily lend itself to data analysis. Second, vendor information is not stored in the system, and therefore purchase orders cannot be made directly via the system to the vendor. Third, since sale information is not captured in a useful form, proper job costing or cost analysis cannot be performed, which ultimately translates in to lost profits due to lack of optimality analysis.

One of the opportunities that currently exists, is that there is no web-store integrated into the website. It is often inexpensive to outsource the design and maintenance of an integrated web-store, and the potential profits from such an option are abundant.

An additional directive from management is to propose a point of sale system that would reduce clerical errors via a more accurate data-capture process, and increase efficiency in processing an in-store customer payment.

## Project Scope

We will recommend or design a solution that addresses all of the above listed areas for improvement, opportunities, and objectives. Our solution will be fully analyzed and planned. However, we will *not* be building the recommended solution due to time constraints in the academic semester. A preliminary cost analysis for the feasibility of each candidate will be performed and included in the appendix to this report. However, this cost analysis will need further research before it is relied upon in its entirety for purchasing decisions. The web-store remains an opportunity addressed in our solution only due to the fact that it is easily outsourced, and of great potential benefit to the organization. We will neither design nor build the web-store as part of our recommended solution.



## Measurements of Success

Measurements by means of financial and sales performance comparison may be difficult, mainly due to our client currently being unable to quantify sales volume and sales frequency with exact figures. Success will most likely be observed through noticeably reduced time in processing in-store customer payments, greater ability to make wise management decisions due to a higher volume of data-collection and increased data-collection capabilities which are structured into management reports, increased sales due to web store orders, and vastly reduced time demands on the business owner, Mr. Brad Vali. When the DBMS is in place, trend analysis can be conducted to detect business gains due to the implementation of a more efficient, decision-enhancing system.



## Constraints and Limitations

The main constraint is our timetable for completion (although it is not very constricting). The project has three phases, which will be completed throughout the course of the spring semester, and each with a corresponding deadline. The project proposal must be completed by May 3, 2011. Limitations faced are lack of information on past data that is stored in the system, which will make true benefits of the new system difficult to quantify in comparison to previous figures. This lack of available information will also make analysis of the current system slightly more difficult, although it is not entirely constricting in nature.



*The road to success is not always straight, but information technology solutions can help you navigate even the most dangerous curves.*

## Conclusion of Survey Phase Report

After our initial review of the client's history and competitive market, and a brief overview of the client's business processes, we believe that an information technology solution will be a valuable asset for the client to invest in, and we are confident our recommended solution will be an improvement to the client's overall business position.



# System Analysis Phase Report

## Crescent Printing and Copying

# Fact Finding Methods

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## Document sampling

One of the fact-finding techniques our group relied on was document sampling. This technique was quite viable since many documents our client works with were made readily available to us. Examples of such documents included invoices, website order forms, formatted order emails, unformatted order emails and customer records in QuickBooks. With these documents we were able to generate enough data and determine what exactly happens in the system. This information in turn helped us gain more insight to the requirements for our system. In addition, it helped us effectively describe the system problems and pointed out questions to be covered in a personal interview in order to gain better understanding.



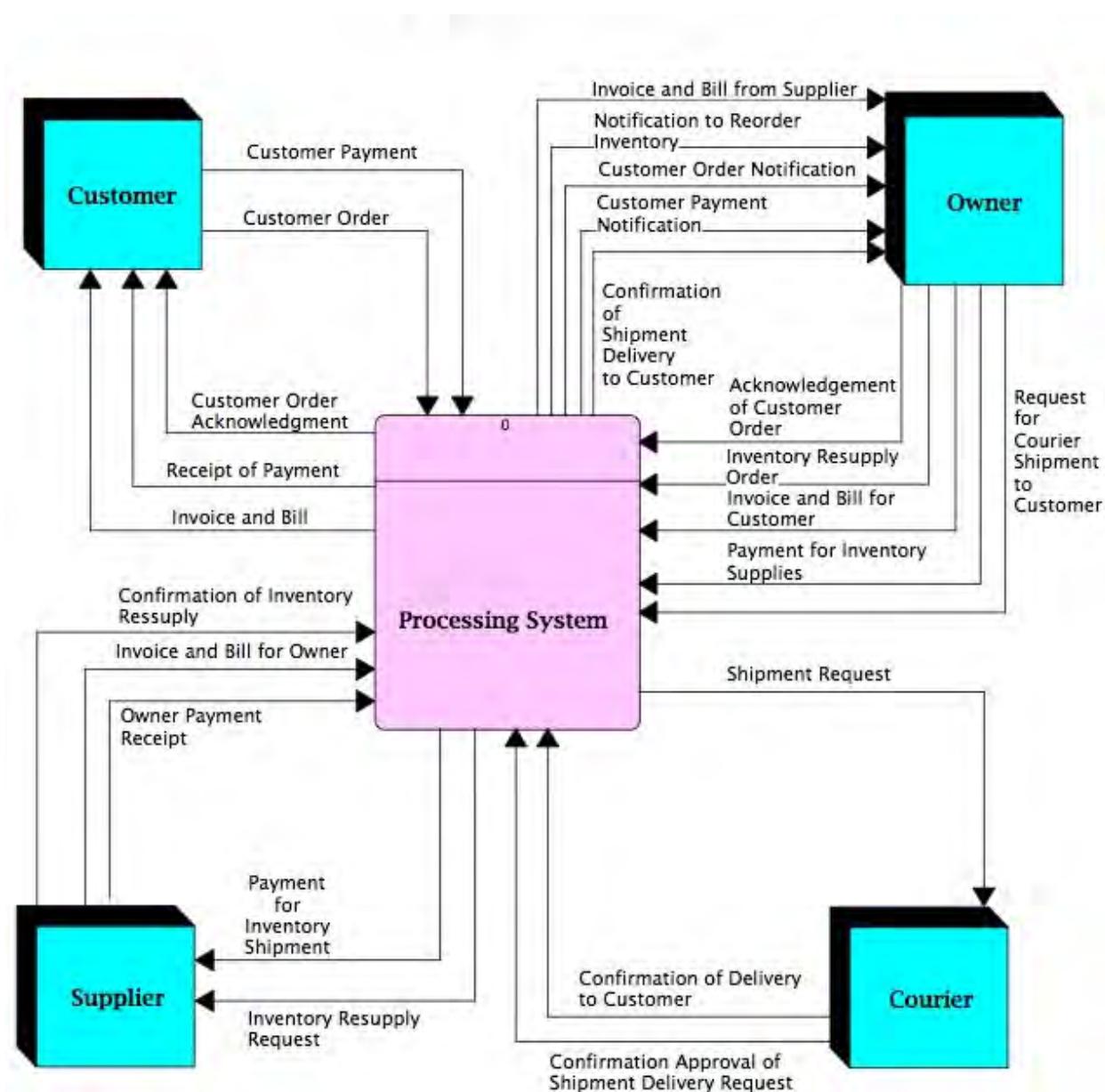
## Personal Interview

The second fact-finding method we used, personal interview, was by far the most useful technique. We used this method to directly gather all the information we needed from the system owner (who also happens to be the only system user). The personal interview enabled us not only to identify facts (system requirements), but also to verify and clarify them at the same time while keeping the end-user involved. As with other fact-finding techniques interviewing may have certain drawbacks; however, the system owner's willingness to take part in the interview and our group's good communications skill helped us deal effectively with all aspects of the system analysis in one interview.



# SYSTEM MODELS OF THE CURRENT SYSTEM

## THE CONTEXT DIAGRAM



## Crescent P&C (Current): Context Diagram

In the Context Diagram, there are four external entities in the current system for Crescent Printing & Copying.

External entities are:

- **Customer:** This external entity represents a customer making any kind of purchase from Crescent Printing and Copying. Customers include companies, individuals, etc.
- **Supplier:** This external entity represents any supplier carrying any items (printing paper, ink cartridges, etc.) used in the course of business for Crescent Printing and Copying.
- **Owner:** This external entity represents the singular instance of the owner of Crescent P&C. Currently the owner is also the sole operator of the equipment (printing/copying machines, etc.) in the business.
- **Courier:** This external entity represents any shipping service (such as Fed Ex, UPS, etc.) that Crescent P&C can contract with for the shipment of finished customer orders. Couriers also include employees of the business delivering finished orders to clients in the vicinity of the business.

*Crescent P&C Processing System is the logical processing system for all data used in operations of Crescent P&C. Below are system inputs and outputs:*

### System Inputs:

*From Customer:*

- Customer Order (an order can be placed in store, via email, or through the form on the company webpage)
- Customer Payment (in the form of cash, checks, etc. and for large orders payment plans can be arranged)

*From Supplier:*

- Confirmation for Inventory Resupply
- Invoice and Bill for Owner
- Owner Payment Receipt

*From Owner:*

- Acknowledgement of Customer Order
- Inventory Resupply Order (owner sending a purchase order to a supplier to replenish inventory; eyeballing is the method used to evaluate current inventory levels)
- Invoice and Bill for Customer
- Payment for Inventory Supplies
- Request for Courier Shipment to Customer (owner can arrange delivery of finish orders to customers through a delivery service such as Fed Ex or by having an employee deliver it personally)

*From Courier:*

- Confirmation/Approval of Shipment Delivery Request
- Confirmation of Delivery to Customer

## **System Outputs**

### *To Customer:*

- Customer Order Acknowledgement
- Invoice and Bill
- Receipt of Payment

### *To Supplier:*

- Payment for Inventory Shipment (payment sent by the owner to the supplier for shipping the supplies, inventory, etc.)
- Inventory Resupply Request (this data flow is originally sent by the owner to the system and from the system to the supplier; resupply requests are made by the owner through phone calls)

### *To Owner:*

- Invoice and Bill from Supplier
- Notification to Reorder Inventory
- Customer Order Notification (customer orders are received by the system and forwarded to the owner; this notification only occurs when customers place orders via email or via the form on the company webpage)
- Customer Payment Notification (because the system is not automated, payment notifications occur when customers make payments)
- Confirmation of Shipment Delivery to Customer

### *To Courier:*

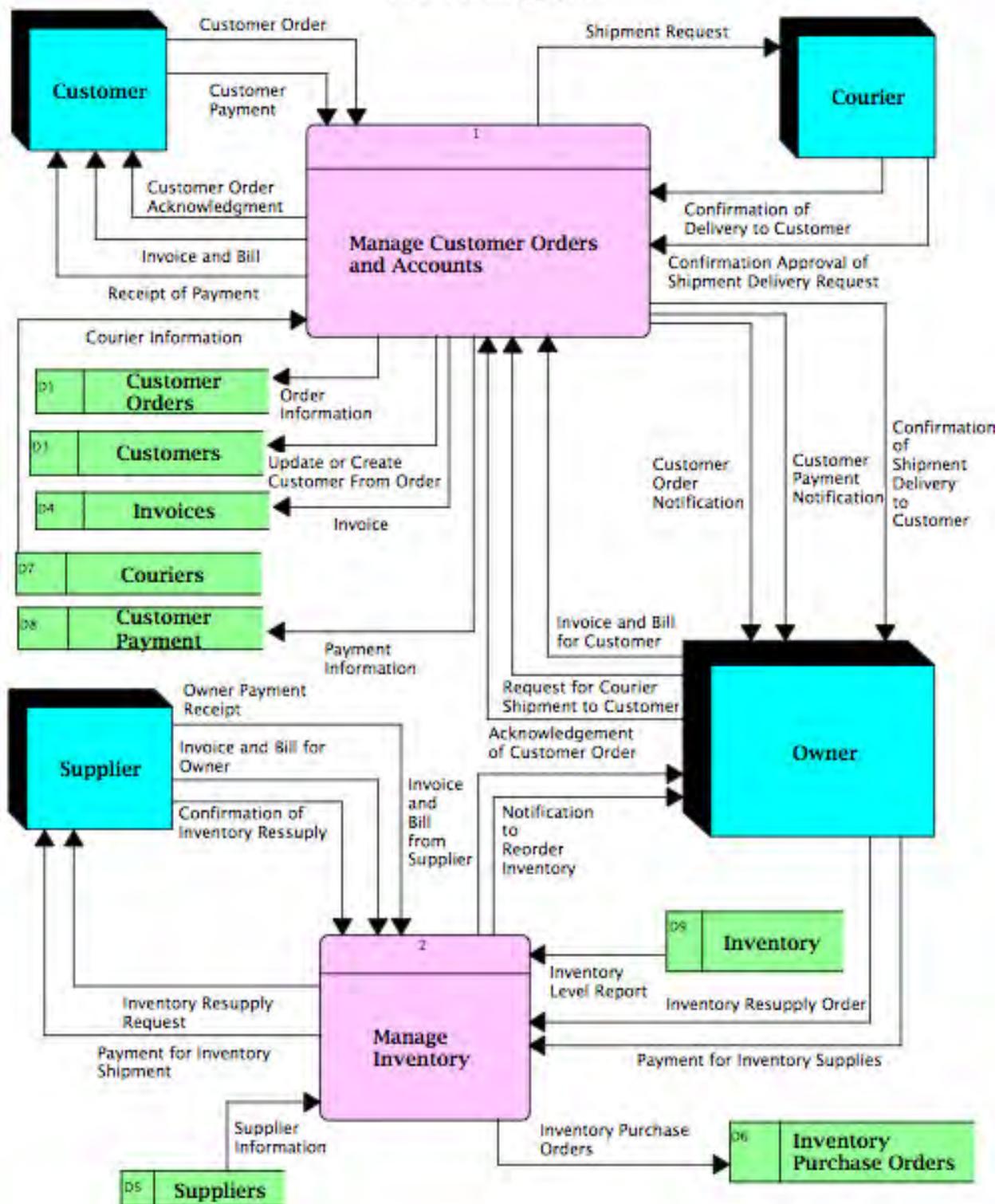
- Shipment Request



*Office in Bethesda: Crescent Printing And Copying*

## LEVEL 0 DIAGRAM

Level 0 Diagram



## Crescent P&C (Current): Level Zero Diagram

*For Level Zero Diagram, we retain the same external entities but expanded the original system (Crescent P&C Processing System) into two processes and seven data stores.*

### Data Stores:

- **Customer Orders (D1):** This data store is a record of all customer orders via email and via the online form (through company webpage). Currently, this information is stored in Gmail account of the owner.
- **Customers (D2):** This data store stores information about customers (including contact information and history of all transactions) who have accounts at Crescent P&C. Currently this information is stored on QuickBooks.
- **Invoices (D3):** This data store contains a record of all invoices issued to customers.
- **Suppliers (D4):** This data store contains a record of all information about suppliers for Crescent P&C. This information is stored on QuickBooks.
- **Couriers (D5):** This data store maintains all relevant information about couriers (such as name, office locations, rates, etc.).

- **Customer Payments (D6):** This data store maintains a record of the amount of money customers owe.
- **Inventory Purchase Orders (D7):** This data store maintains a record of all information on inventory purchases. Currently, this information is only being stored on receipts. This account DOES NOT reflect current inventory; only inventory purchased during the life of the business.

### Processes:

1. **Manage Customer Orders and Accounts:** This process manages the front-end of the business. To be more specific, this process is responsible for taking/processing customer orders and payments, managing/updating any customer-related accounts and information, shipping finished orders to customers, etc. In other words, activities undertaken by this process are those that involve the business and the customers.

### Process Inputs

#### *From Customer*

- Customer Order
- Customer Payment

#### *From Owner*

- Customer Order Notification
- Customer Payment Notification
- Confirmation of Shipment Delivery to Customer

*From Courier*

- Confirmation/Approval of Shipment Delivery Request
- Confirmation of Delivery to Customer

*From Couriers (data store)*

- Courier Information

The process of purchasing inventory and other supplies necessary to keep the business operational are responsibilities of this process. To be specific, activities undertaken by this process are those that involve the business and the supplier.

## Process Outputs

*To Customer*

- Customer Order Acknowledgement
- Invoice and Bill
- Receipt of Payment

*To Courier*

- Shipment Request

*To Owner*

- Customer Order Notification
- Customer Payment Notification
- Confirmation of Shipment Delivery to Customer

*To Customer Orders (date store)*

- Order Information

*To Customers (date store)*

- Updated or Created Customer from Order

*To Customer Payments (data store)*

- Payment Information

*To Invoices (date store)*

- Invoice

- 2. Manage Inventory:** This process is responsible for managing the back-end aspect of the business.

## Process Inputs

*From Owner*

- Inventory Resupply Order
- Payment for Inventory Supplies

*From Supplier:*

- Confirmation for Inventory Resupply
- Invoice and Bill for Owner
- Owner Payment Receipt

*From Suppliers (data store)*

- Supplier Information

## Process Outputs

*To Supplier*

- Inventory Resupply Request
- Payment for Inventory Shipment

*To Owner*

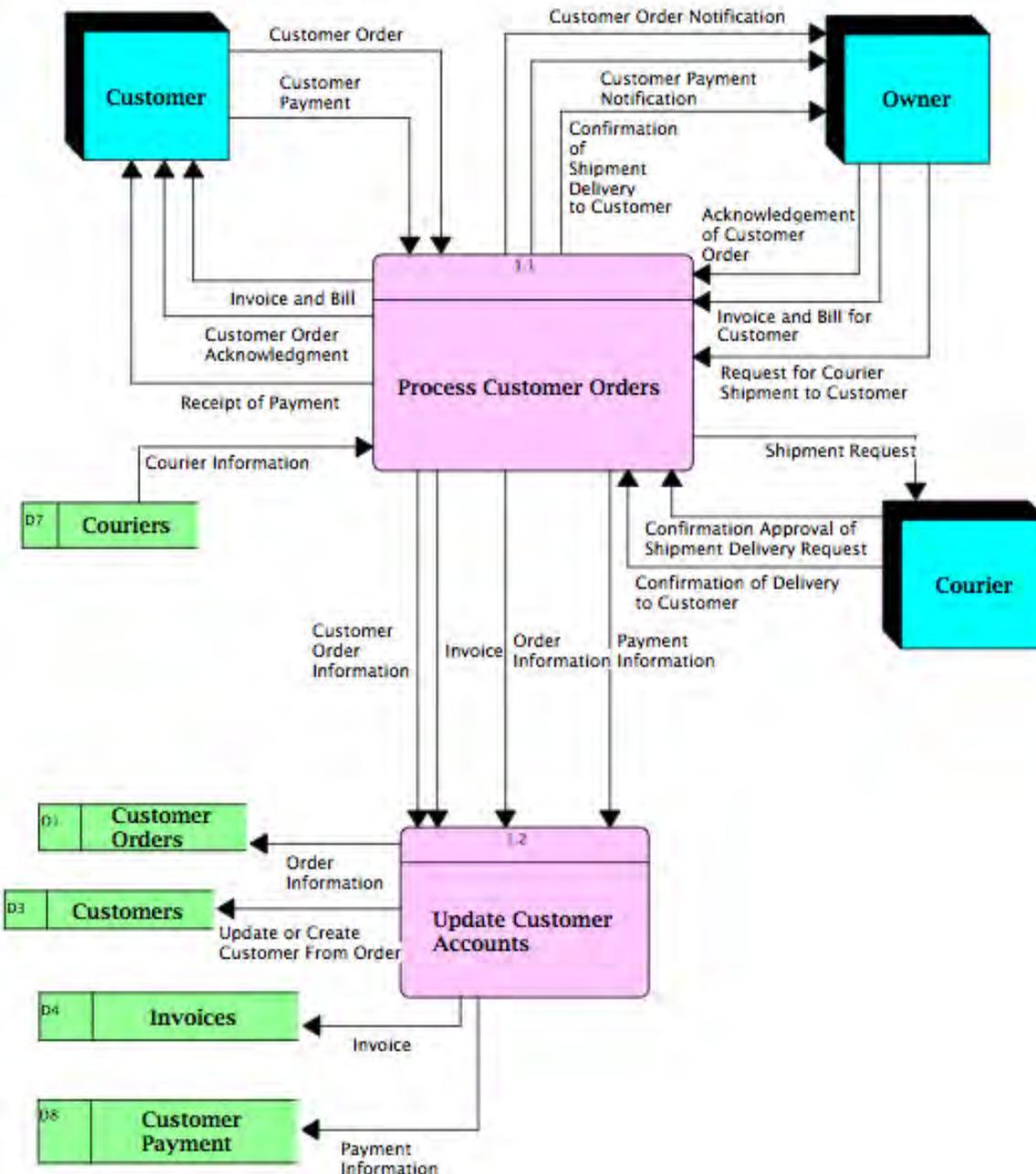
- Notification to Reorder Inventory
- Invoice and Bill From Supplier

*To Inventory Purchase Orders (date store)*

- Inventory Purchase Orders

## LEVEL 1 DIAGRAMS

Level 1: Manage Customer Orders and Accounts



## Crescent P&C (Current): Level One Diagram for Manage Customers Orders and Accounts

This diagram explores the Manage Customer Orders and Accounts Process. This process is responsible for managing activities that involve the business and its customers. This process can be divided into two processes. These processes are:

### Process 1.1 Process Customer Orders:

This process is responsible for processing customer orders. In other words, this process is only responsible for processing current transactions.

#### Process Inputs:

##### From Customer

- Customer Order
- Customer Payment

##### From Owner

- Acknowledgement of Customer Order
- Invoice and Bill for Customer
- Request for Courier Shipment to Customer

##### From Courier

- Confirmation/Approval of Shipment Delivery Request
- Confirmation of Delivery to Customer

##### From Couriers (data store)

- Courier Information

#### Process Outputs:

##### To Customer

- Customer Order Acknowledgement
- Receipt of Payment
- Invoice and Bill

##### To Owner

- Customer Order Notification
- Customer Payment Notification
- Confirmation of Shipment Delivery to Customer

##### To Courier

- Shipment Request

### Process 1.2 Update Customer Accounts:

This process is responsible for updating customer accounts. It takes information from Process 1.1 after a transaction occurs and updates all the necessary data stores to keep customer-related information up-to-date.

#### Process Inputs:

##### From Process 1.1

- Customer Order Information
- Invoice
- Customer Information
- Payment Information

#### Process Outputs:

##### To Customer Orders

- Order Information

##### To Customers

- Updated or Created Customer from Order

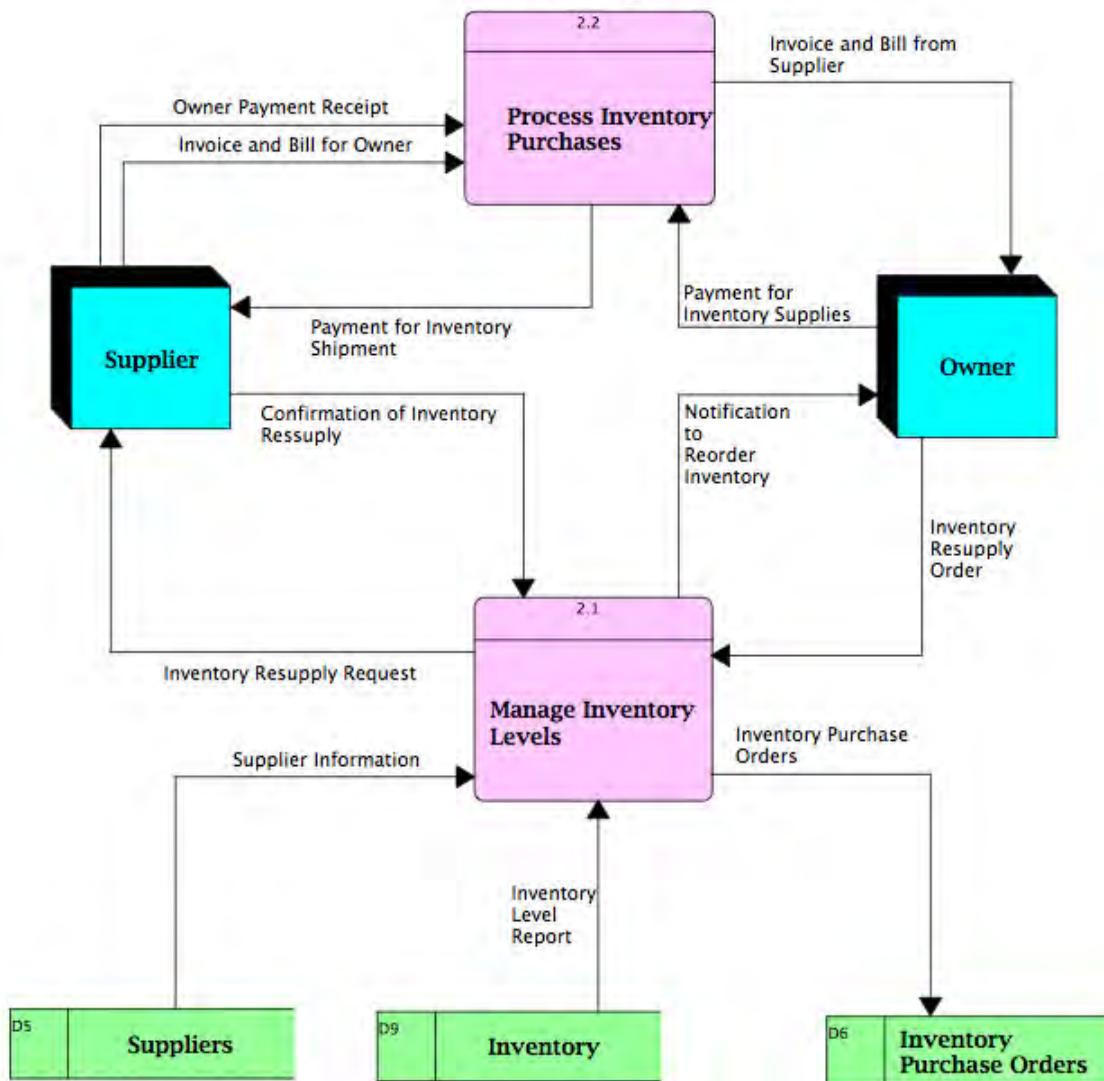
##### To Invoices

- Invoice

##### To Customer Payments

- Payment Information

## Level 1: Manage Inventory



## Crescent P&C (Current): Level One Manage Inventory

This diagram explores the Manage Inventory Process. The Manage Inventory Process can be divided into two processes. These processes are:

### Process 2.1 Manage Inventory Levels:

This process is responsible for managing and ordering inventory. Processing payments IS NOT a responsibility of this process.

#### Process Inputs:

##### From Owner

- Inventory Resupply Order

##### From Supplier

- Confirmation of Inventory Resupply

##### From Suppliers (data structure)

- Supplier Information

#### Process Outputs:

##### To Supplier

- Inventory Resupply Request

##### To Owner

- Notification to Reorder Inventory

*To Inventory Purchase Orders (data structure)*

- Inventory Purchase Orders

## Process 2.2 Process Inventory

**Purchases:** This process is responsible for processing payments that occur when the business purchases new inventory from the supplier.

#### Process Inputs:

##### From Owner

- Payment for Inventory Supplies

##### From Supplier

- Owner Payment Receipt
- Invoice and Bill for Owner

#### Process Outputs:

##### To Owner

- Invoice and Bill from Supplier

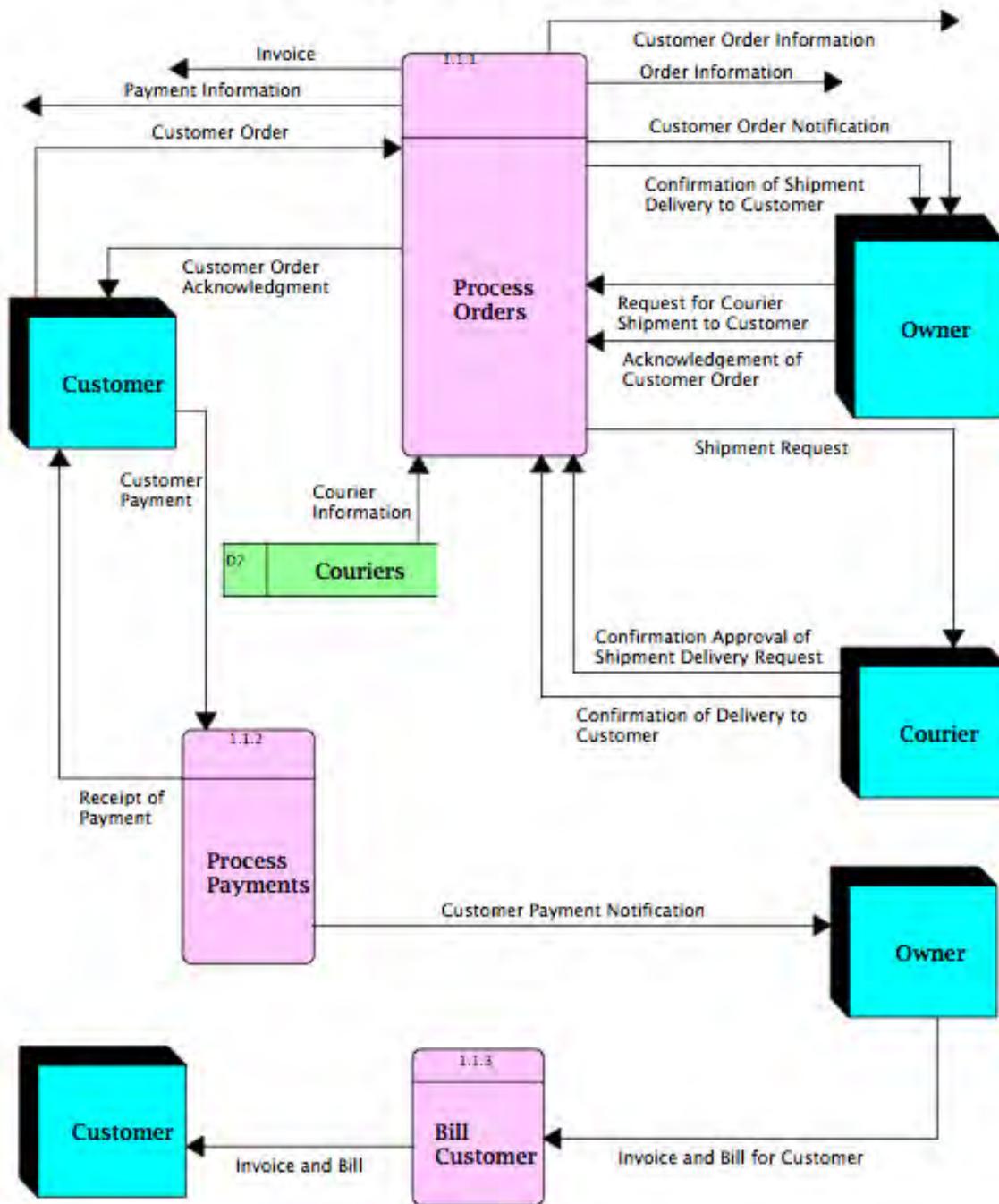
##### To Supplier

- Payment for Inventory Shipment



## LEVEL 2 DIAGRAM

Level 2 Diagram: Process Customer Orders



## Crescent P&C (Current): Level Two Diagram for Process Customer Orders

### Process 1.1.1 Process Orders:

*This process is responsible for processing customer orders. It receives customer orders, gets acknowledgement of owner, completes orders, and ensures the customer is delivered the final product through a courier service (if necessary).*

#### Process Inputs:

##### *From Customer*

- Customer Order

##### *From Owner*

- Acknowledgement of Customer Order
- Request for Courier Shipment to Customer

##### *From Courier*

- Confirmation/Approval of Shipment Delivery Request
- Confirmation of Delivery to Customer

##### *From Couriers (data store)*

- Confirmation of Delivery to Customer

#### Process Outputs:

##### *To Customer*

- Customer Order
- Acknowledgement

##### *To Owner*

- Customer Order
- Notification
- Confirmation of Shipment Delivery to Customer

##### *To Courier*

- Shipment Request

### Process 1.1.2 Process Payments:

*This process is responsible for processing customer payments on completed orders.*

#### Process Inputs:

##### *From Customer*

- Customer Payment

#### Process Outputs:

##### *To Customer*

- Receipt for Payment

##### *To Owner*

- Customer Payment
- Notification

### Process 1.1.3 Bill Customers:

*This process takes invoice and billing information from the owner and sends it to the customer*

#### Process Inputs:

##### *From Owner*

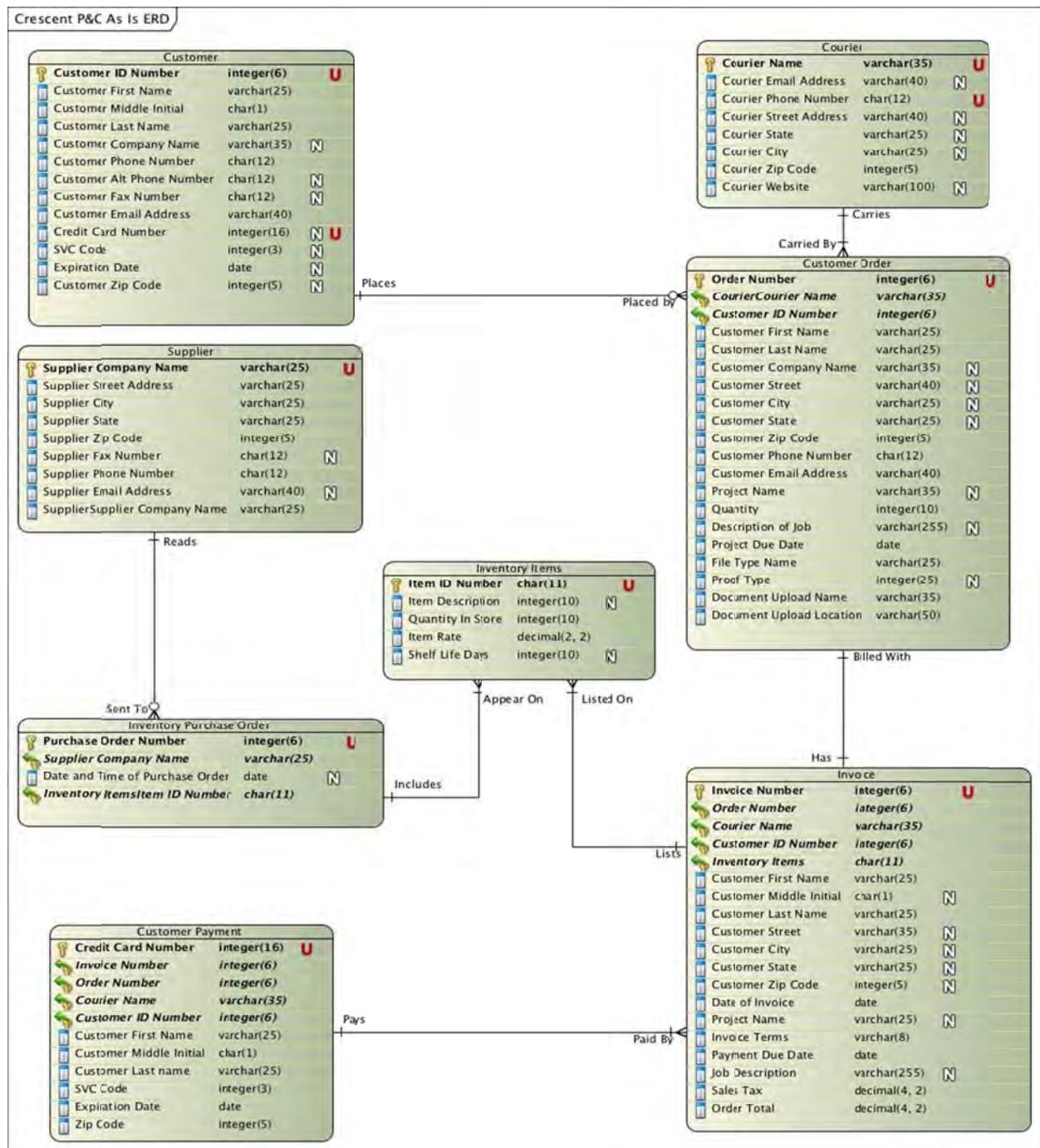
- Invoice and Bill for Customer

#### Process Outputs:

##### *To Customer*

- Invoice and Bill

## ENTITY RELATIONSHIP DIAGRAM



This is the current entity relationship diagram for Crescent Printing and Copying. It represents all informational attributes stored for each instance of the entities represented above. Though it is not normalized, it represents how information is currently stored in the Crescent Printing and Copying System.

# Project Proposal Report

## Crescent Printing and Copying

# Diagrams for the Proposed System

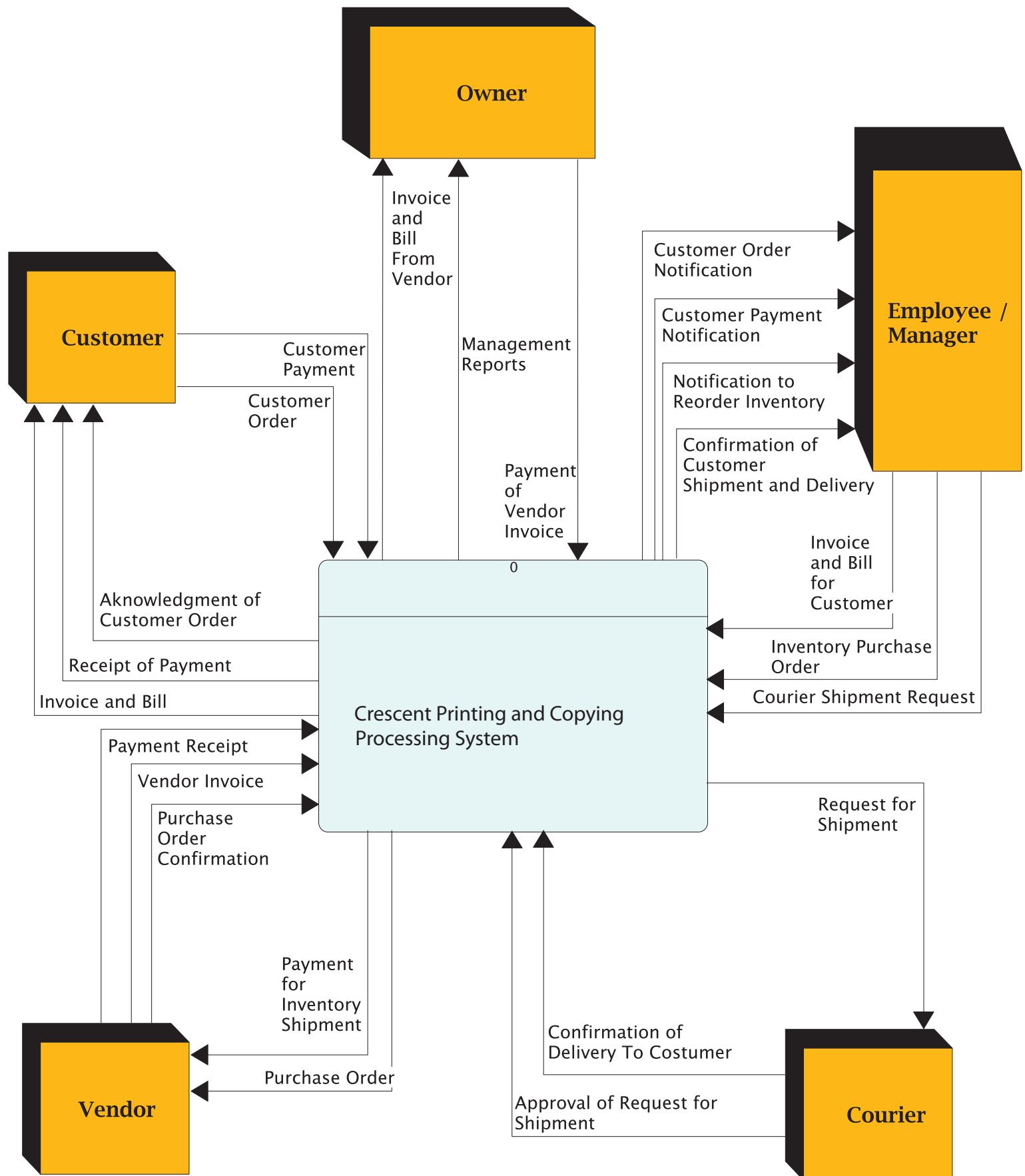
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There are two sets of data-flow diagrams for the proposed system. The first set, with accompanying narrative, are the logical diagrams, which are technology independent, and similar to the diagrams presented in the analysis phase report but altered to reflected improvements in the business processes. The physical data-flow diagrams, on the other hand, are not technology independent, and represent the implementation of our proposed solution integrated with the logical processes. These diagrams will serve as the technical blueprint to the development of the proposed solution.

The entity relationship diagram follows the logical data-flow diagrams, and it has been normalized to at least third normal form. It will be synchronized with the logical data-flow diagrams in a matrix called the CRUD matrix (Create, Read, Update, Delete). All information attributes that are stored in the proposed system solution can be found on the entity relationship diagram.



# Context Diagram



## Crescent P&C: Context Diagram

In the Context Diagram, there are five external entities that are going to be present in our solution of the system for Crescent Printing & Copying.

### External entities are:

- **Customer:** This external entity represents a customer making any kind of purchase from Crescent Printing and Copying. Customers include companies, individuals, etc.
- **Vendor:** This external entity represents any vendor carrying any items (printing paper, ink cartridges, etc.) used in the course of business for Crescent Printing and Copying.
- **Owner:** This external entity represents the singular instance of the owner of Crescent P&C.
- **Employee / Manager:** This external entity represents personnel who are hired by the owner to operate the business.
- **Courier:** This external entity represents any shipping service (such as Fed Ex, UPS, etc.) that Crescent P&C can contract with for the shipment of finished customer orders. Couriers also include employees of the business delivering finished orders to clients in the vicinity of the business.

*Crescent P&C Processing System is the logical processing system for all data used in operations of Crescent P&C. Below are system inputs and outputs:*

### System Inputs:

#### From Customer:

- Customer Order (an order can be placed in store, via email, or through the form on the company webpage)
- Customer Payment (in the form of cash, checks, etc. and for large orders payment plans can be arranged)

#### From Vendor:

- Purchase Order Confirmation (vendor sends confirmation when inventory purchase order is received)
- Vendor Invoice (invoice is sent to the owner after order fulfillment)
- Payment Receipt (sent to the owner after owner pays for the inventory purchase order)

#### From Owner:

- Payment of Vendor Invoice (owner pays for inventory purchases after receiving the invoice from vendor)

#### From Employee/Manager:

- Inventory Purchase Order (owner sending a purchase order to a Vendor to replenish inventory)
- Invoice and Bill for Customer
- Courier Shipment Request (employee/manager can arrange delivery of finish orders to customers through a delivery service such as Fed Ex or by having an employee deliver it personally)

#### From Courier:

- Approval of Request for Shipment

- Confirmation of Delivery to Customer (courier service sends confirmation to the employee/manager that the requested order is delivered) to keep him updated about business processes and functions)
- Invoice and Bill from Vendor (sent to the owner after inventory purchase orders are completed by the vendors)

## **System Outputs**

### *To Customer:*

- Acknowledgement of Customer Order (happens when a customer makes an order)
- Invoice and Bill (sent to customer after completion of the order)
- Receipt of Payment (sent to customer after payment for the completed order is made)

### *To Vendor:*

- Payment for Inventory Shipment (payment sent by the owner to the Vendor for shipping the supplies, inventory, etc.)
- Purchase Order (this data flow is originally sent by the employee/manager to the system and from the system to the vendor; resupply requests are made by the employee/manager through QuickBooks)

### *To Owner:*

- Management Reports (periodic reports generated through QuickBooks are given to the owner

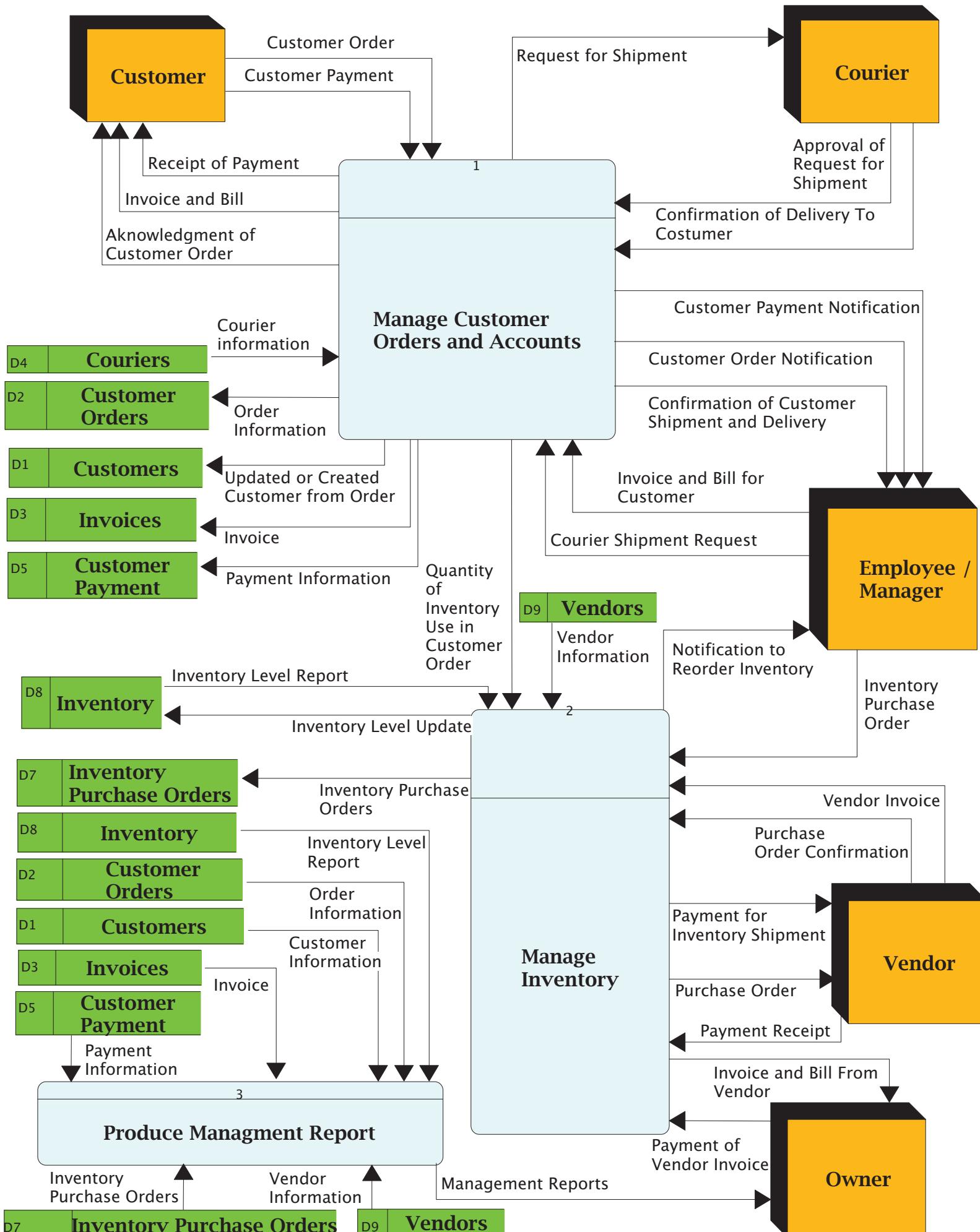
### *To Employee/Manager:*

- Notification to Reorder Inventory (QuickBooks provides inventory management functionality and will notify the employee/manager of the store when inventory is low; the need for eyeballing inventory is eliminated)
- Customer Order Notification (customer orders are received by the system and forwarded to the owner; this notification only occurs when customers place orders via email or via the form on the company webpage)
- Customer Payment Notification (because the system is automated, payment notifications will occur when customers make payments)
- Confirmation of Customer Shipment and Delivery (sent to employee/manager after an order is shipped to the customer by a courier service)

### *To Courier:*

- Request for Shipment

# Level 0 Diagram



## Crescent P&C: Level Zero Diagram

*For Level Zero Diagram, we retain the same external entities but expanded the original system (Crescent P&C Processing System) into two processes and eight data stores.*

### Data Stores:

- **Customers:** This data store stores information about customers (including contact information and history of all transactions) who have accounts at Pendguin P&C.
- **Customer Orders:** This data store is a record of all customer orders including those via email, online form, in the store, etc.
- **Invoices:** This data store contains a record of all invoices issued to customers.
- **Couriers:** This data store maintains all relevant information about couriers (such as name, office locations, rates, etc.).
- **Customer Payments:** This data store maintains a record of the amount of money customers owe.
- **Vendors:** This data store contains a record of all information about vendors for Crescent P&C. This information is stored on QuickBooks.
- **Inventory Purchase Orders:** This data store maintains a record of all information on inventory purchases. This account DOES NOT reflect current inventory; only

inventory purchased during the life of the business.

- **Inventory:** This data store reflects the current inventory available for use in the business. This information is dynamically changing with every transaction to show most up-to-date information.

### Processes:

1. **Manage Customer Orders and Accounts:** This process manages the front-end of the business. To be more specific, this process is responsible for taking/processing customer orders and payments, managing/updating any customer-related accounts and information, shipping finished orders to customers, etc. In other words, activities undertaken by this process are those that involve the business and the customers.

### Process Inputs

#### *From Customer*

- Customer Order
- Customer Payment

#### *From Employee/Manager*

- Invoice and Bill for Customer
- Courier Shipment Request

#### *From Courier*

- Approval of Request for Shipment
- Confirmation of Delivery to Customer

#### *From Couriers (data store)*

- Courier Information

## Process Outputs

### To Customer

- Acknowledgement of Customer Order
- Invoice and Bill
- Receipt of Payment

### To Courier

- Request for Shipment

### To Employee/Manager

- Customer Order Notification
- Customer Payment Notification
- Confirmation of Customer Shipment and Delivery

### To Manage Inventory (process)

- Quantity of Inventory Use in Customer Order (inventory is tracked automatically by the system and as such must be updated after each customer transaction)

### To Customer Orders (date store)

- Order Information (data store contains a history of all customer orders)

### To Customers (date store)

- Updated or Created Customer from Order (data store contains accounts for customers; if a customer does not have an account it is created)

### To Customer Payments (data store)

- Payment Information (data store tracks payments from individual customers)

### To Invoices (date store)

- Invoice (all invoices issued by the business have a copy stored in Invoices data store)

## 2. **Manage Inventory:** This process

is responsible for managing the back-end aspect of the business. The process of purchasing inventory and other supplies necessary to keep the business operational are responsibilities of this process. To be specific, activities undertaken by this process are those that involve the business and its Vendors.

## Process Inputs

### From Process Manage Customer Orders and Accounts (process)

- Quantity of Inventory Use in Customer Order

### From Employee/Manager

- Inventory Purchase Order

### From Owner

- Payment of Vendor Invoice

### From Vendor:

- Purchase Order Confirmation
- Vendor Invoice
- Payment Receipt

### From Inventory (data store)

- Inventory Level Report

### From Vendors (data store)

- Vendor Information (data flows a particular vendor's account information)

### **Process Outputs**

*To Employee/Manager*

- Notification to Reorder Inventory

*To Owner*

- Invoice and Bill from Vendor

*To Vendor*

- Purchase Order
- Payment for Inventory Shipment

*To Inventory (data store)*

- Inventory Level Update

*To Inventory Purchase Orders (data store)*

- Inventory Purchase Orders

- 3. Produce Management Reports:** *This process is responsible for producing management reports to be delivered to the owner of the business.*

### **Process Inputs:**

*From Vendor*

- Vendor Information

*From Inventory*

- Inventory Level Report

*From Inventory Purchase Orders*

- Inventory Purchase Orders

*From Invoices (data store)*

- Invoice

*From Customers (data store)*

- Customer Information

*From Customer Payments (data store)*

- Payment Information

*From Customer Orders (data store)*

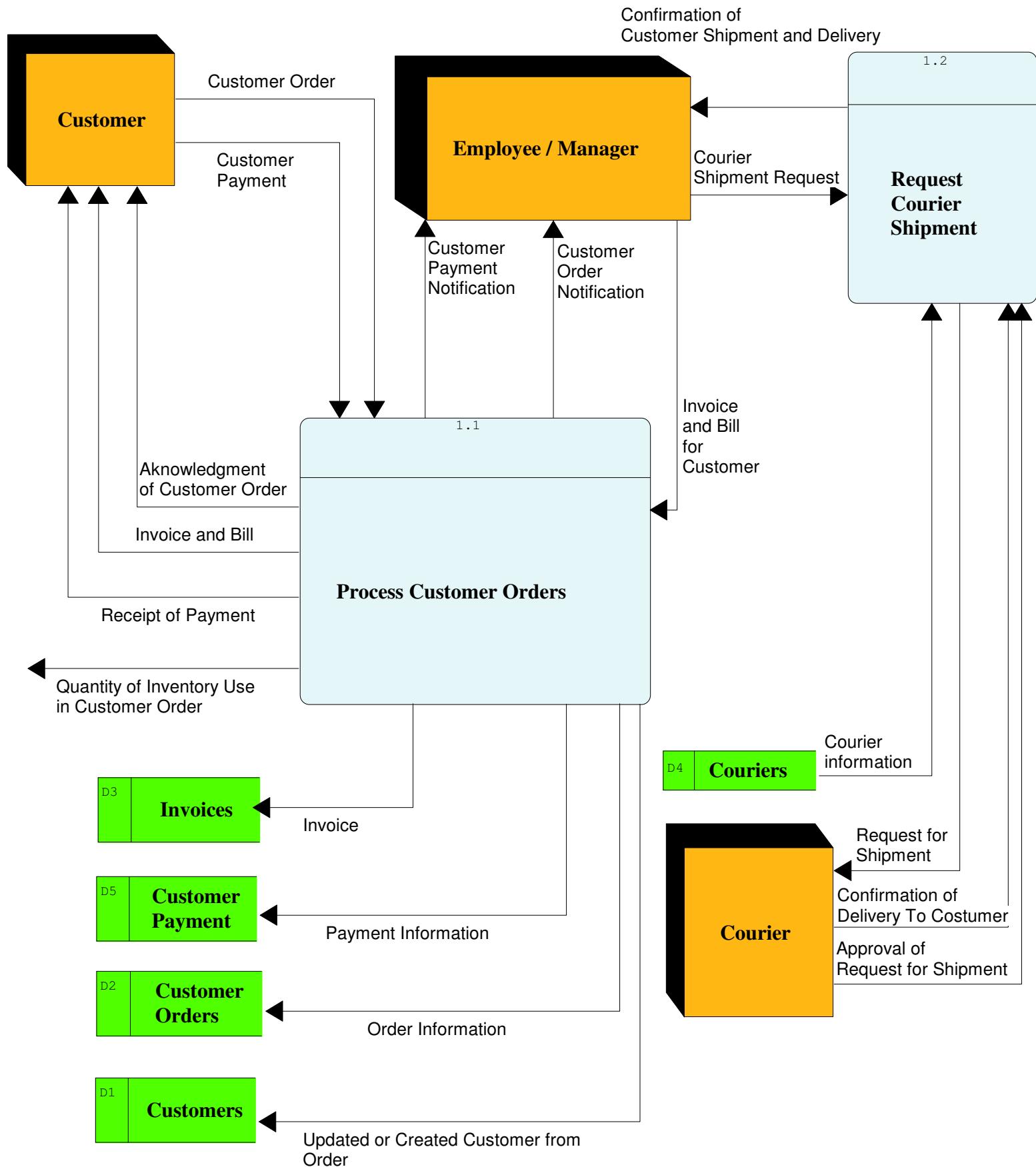
- Order Information

### **Process Outputs:**

*To Owner*

- Management Reports

# Level 1 Diagram: Manage Customer Orders and Accounts



## Crescent P&C: Level One Diagram for Manage Customers Orders and Accounts

*This diagram explores the Manage Customer Orders and Accounts Process.*

*This process is responsible for managing activities that involve the business and its customers. This process can be divided into three processes. These processes are:*

### Process 1.1 Process Customer Orders:

*This process is responsible for processing customer orders. In other words, this process is only responsible for processing current transactions.*

#### Process Inputs:

##### *From Customer*

- Customer Order
- Customer Payment

##### *From Employee/Manager*

- Invoice and Bill for Customer

#### Process Outputs:

##### *To Process Inventory Purchases (process)*

- Quantity of Inventory Use in Customer Order

##### *To Customer*

- Acknowledgement of Customer Order
- Receipt of Payment
- Invoice and Bill

##### *To Employee/Manager*

- Customer Order Notification

- Customer Payment Notification

##### *To Customer Orders (data store)*

- Order Information

##### *To Customers (data store)*

- Updated or Created Customer from Order

##### *To Invoices (data store)*

- Invoice

##### *To Customer Payments (data store)*

- Payment Information

### Process 1.2 Request Courier Shipment:

*This process is responsible for processing shipments to customers.*

#### Process Inputs:

##### *From Employee/Manager*

- Courier Shipment Request

##### *From Courier*

- Approval of Request for Shipment
- Confirmation of Delivery to Customer

##### *From Couriers (data store)*

- Courier Information

#### Process Outputs:

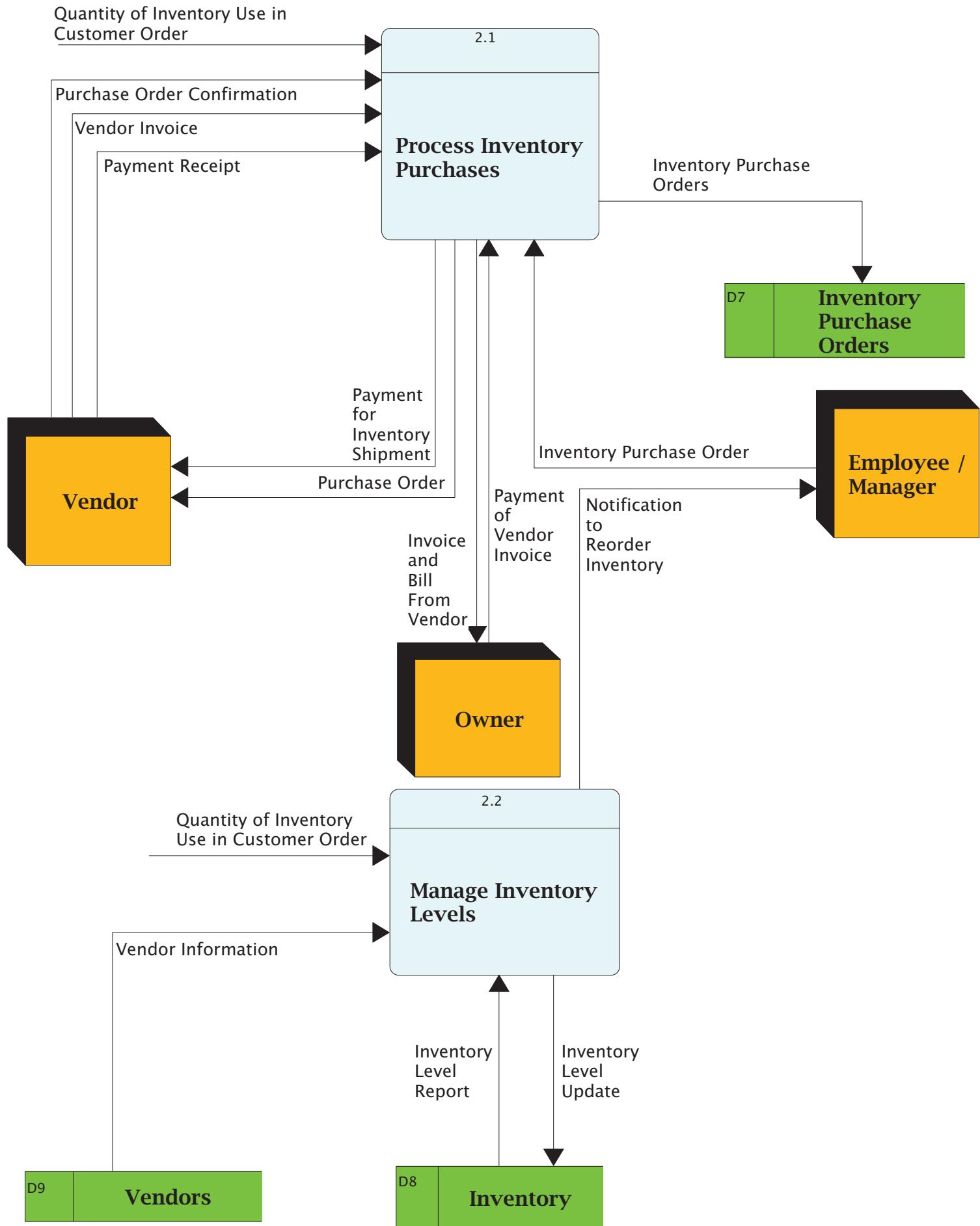
##### *To Courier*

- Request for Shipment

##### *To Employee/Manager*

- Confirmation of Customer Shipment and Delivery

# Level 1: Manage Inventory



## Crescent P&C: Level One

### Manage Inventory

This diagram explores the Manage Inventory Process. The Manage Inventory Process can be divided into two processes. These processes are:

#### Process 2.1 Process Inventory

**Purchases:** This process is responsible for processing payments that occur when the business purchases new inventory from its Vendors.

##### Process Inputs:

*From Process Customer Orders (process)*

- Quantity of Inventory Use in Customer Order

*From Owner*

- Payment of Vendor Invoice

*From Employee/Manager*

- Inventory Purchase Order

*From Vendor*

- Purchase Order Confirmation
- Vendor Invoice
- Payment Receipt

##### Process Outputs:

*To Owner*

- Invoice and Bill from Vendor

*To Inventory Purchase Orders (data store)*

- Inventory Purchase Order

*To Vendor*

- Purchase Order
- Payment for Inventory Shipment

#### Process 2.2 Manage Inventory Levels:

This process is responsible for managing and ordering inventory. Processing payments IS NOT a responsibility of this process.

##### Process Inputs:

*From Process Inventory Purchases (process)*

- Quantity of Inventory Use in Customer Order

*From Inventory (data store)*

- Inventory Level Report

*From Vendors (data store)*

- Vendor Information

##### Process Outputs:

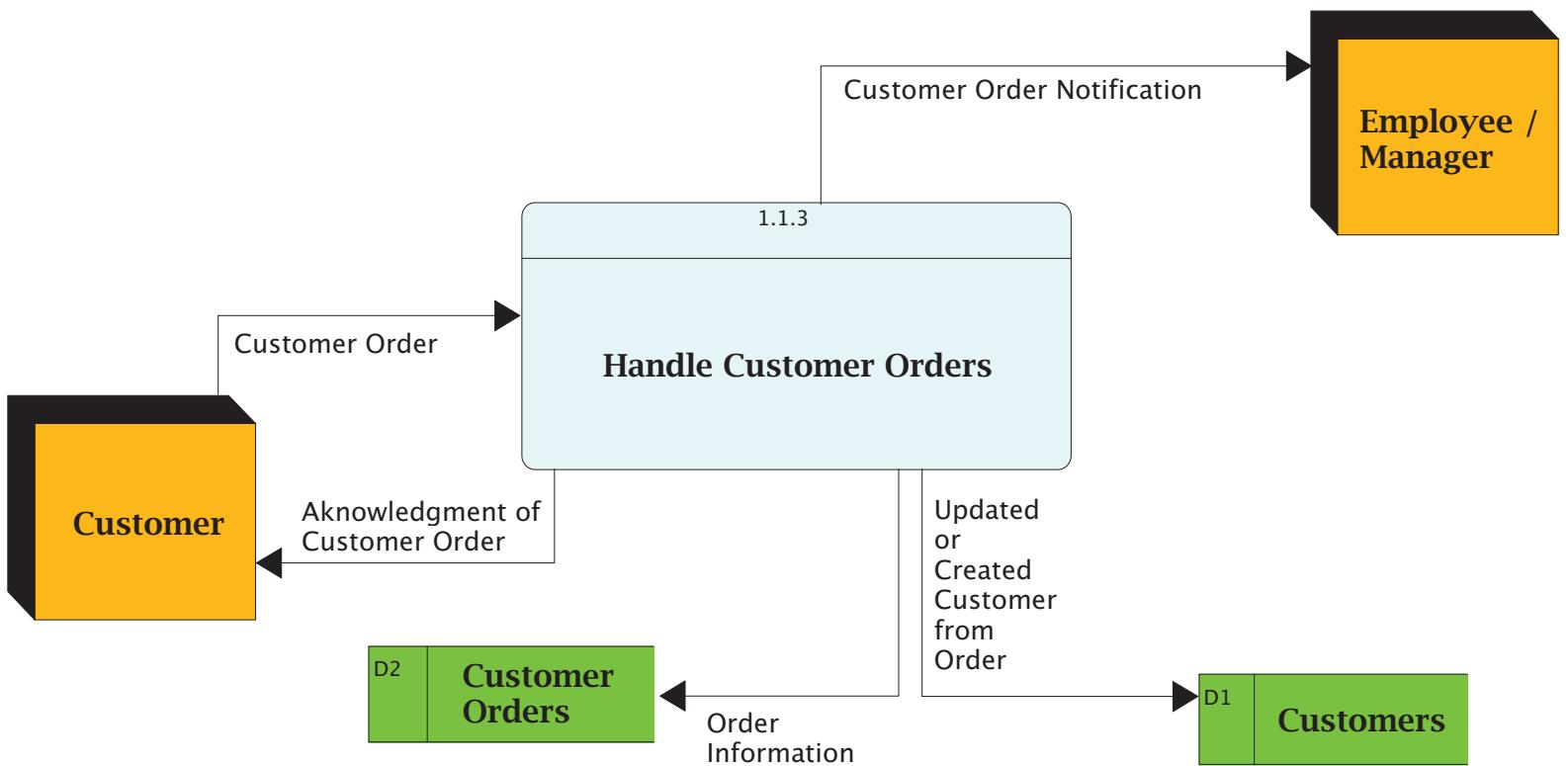
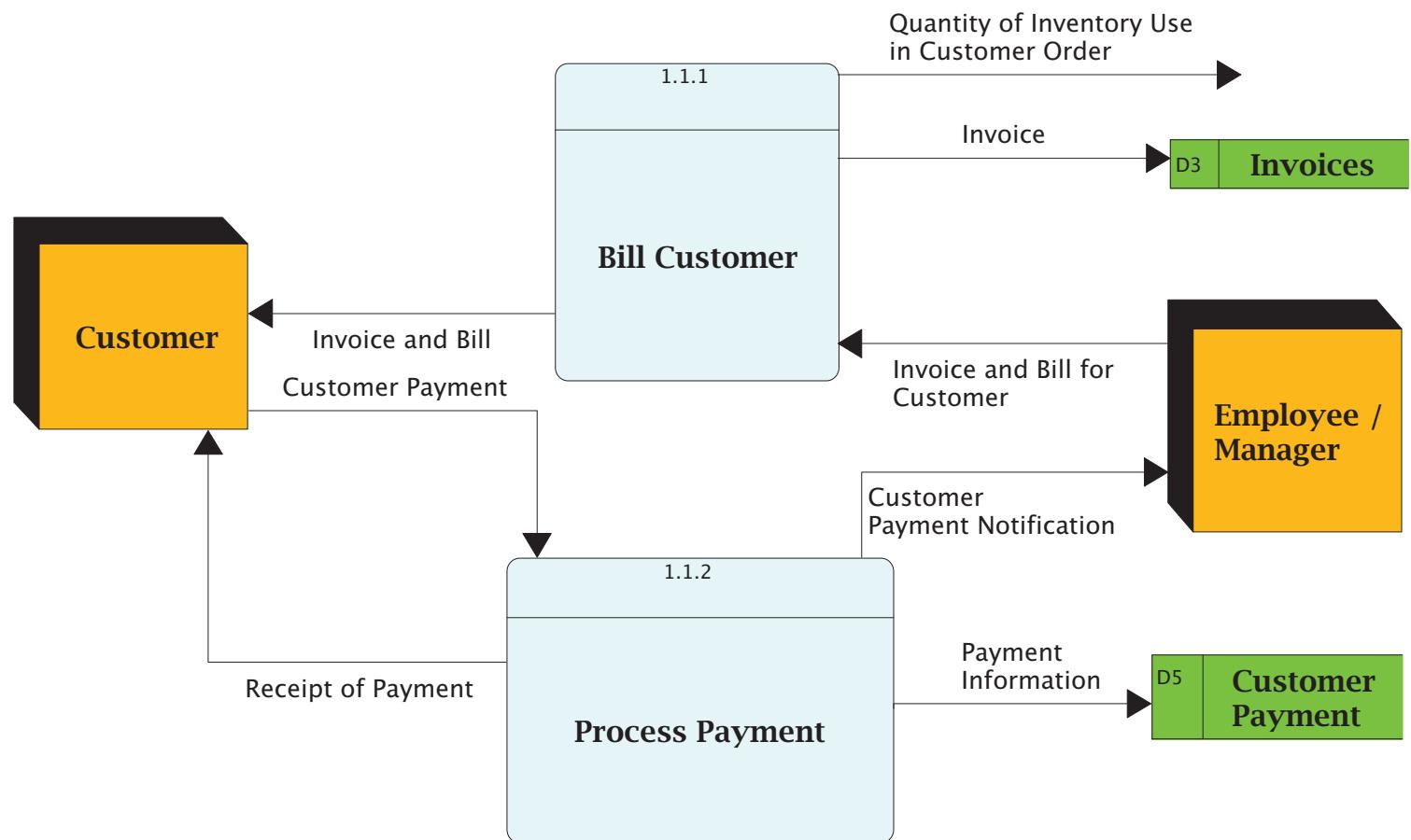
*To Employee/Manager*

- Notification to Reorder Inventory

*To Inventory (data store)*

- Inventory Level Update

# Level 2: Process Customer Orders



## Crescent P&C: Level Two Diagram for Process Customer Orders

### Process 1.1.1 Bill Customers:

*This process takes invoice and billing information from the owner and sends it to the customer*

#### Process Inputs:

- From Employee/Manager*
- Invoice and Bill for Customer

#### Process Outputs:

- To Process Inventory Purchases (process)*
- Quantity of Inventory Use in Customer Order
- To Invoices (data store)*
- Invoice
- To Customer*
- Invoice and Bill

### Process 1.1.2 Process Payments:

*This process is responsible for processing customer payments on completed orders.*

#### Process Inputs:

- From Customer*
- Customer Payment

#### Process Outputs:

- To Customer*
- Receipt of Payment

*To Customer Payments (data store)*

- Payment Information

*To Employee/Manager*

- Customer Payment Notification

### Process 1.1.3 Handle Customer Orders:

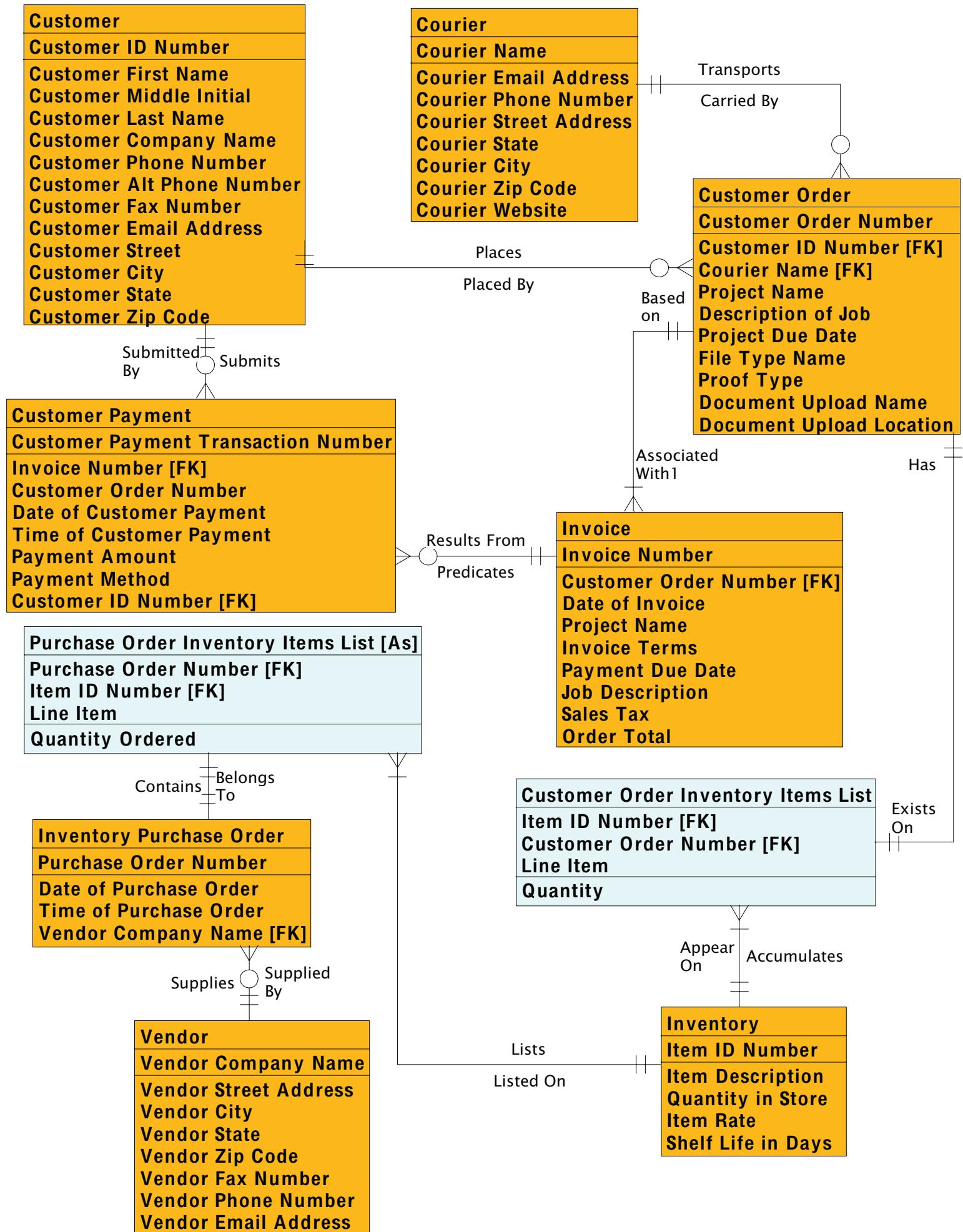
*This process is responsible for processing customer orders. It receives customer orders, gets acknowledgement of owner, completes orders, and ensures the customer is delivered the final product through a courier service (if necessary).*

#### Process Inputs:

- From Customer*
- Customer Order

#### Process Outputs:

- To Customer*
- Acknowledgement of Customer Order
- To Customers (data store)*
- Update or Create Customer from Order
- To Employee/Manager*
- Customer Order Notification
- To Customer Orders (data store)*
- Order Information



# Synchronized System Models

# Synchronized System Models

The above diagram simply displays the synchronization between the entity relationship diagram and the data flow diagrams. Each element of data can either be created, read, updated, or deleted by any given process; this diagram shows what process performs what operation on each data element.

# Candidate Systems Solutions Matrix

Characteristics	Candidate 1 (QuickBooks Premier and POS)	Candidate 2 (Custom Solution)	Candidate 3 (Sage Solutions)
<b>Portion of System Computerized</b> Brief Description of that portion of the system that would be computerized.	Customer order management and inventory management will be computerized with a *COTS package from QuickBooks.	Same portion of system as candidate 1, but with a custom solution.	Same as candidate 1, with COTS system from Sage North America.
<b>Benefits</b> Description of the business benefits that would be realized for this candidate.	Ease of Implementation, Inventory tracking and management, Purchase Order Management, Improved Customer Order Process.	Complete revision for efficiency in the business processes, simplification of user interfaces.	Same as candidate 1.
<b>Servers and Workstations</b> Description of the server and workstations needed to support this candidate.	Local office computers will run the software. QuickBooks Premier minimum requirements: MS Windows XPSP2(Minimum), 2.4 GHz processor, 2GB Ram, Standard Hard Drive with at least 10GB available space.	Server: Mac Mini Snow Leopard Server, or Mac Pro with Snow Leopard Server. Workstations: Three Apple I-pads: One for owner, one for store, and one for customer forms.	Local office computer will run Sage Peachtree software: Requirements: 1GB RAM, a 2.4GHz Pentium III Processor, 10GB Available disk space.
<b>Software Tools Needed</b> Software tools needed to design and build the candidate.	Not Applicable.	XAMPP =>for forms and programming development FileMaker Server=>To build the database	Not Applicable
<b>Application Software</b> Description of the software to be purchased, built, accessed, or some combination of these techniques.	QuickBooks Premier 2011, QuickBooks POS Pro v10.0, Intuit Merchant Service for Web Stores.	Mac Snow Leopard Server, and all other operating systems will come preinstalled on the hardware purchased. Database software to be purchased is Filemaker Server.	Sage Peachtree Premium Edition, 2GB Online Backup, Online BillPay, Remote Access Pro Plan, and Sage Virtual Terminal.
<b>Method of Data Processing</b> Generally some combination of online, batch, deferred batch, remote batch, and real time.	POS: Batch Processing, Inventory Management: Real Time.	Customer orders will be processed real time, inventory will be managed real time, and customer payments will be processed with the bank by batch.	Customer Orders and Inventory are managed real time. Client/Server: Batch Processing.
<b>Output Devices and Implications</b> Description of output devices that would be used, special output requirements, and output considerations.	For POS: Standard Flat Screen Monitor, Receipt Printer. Client already has required printer to print management reports, etc...	Manager I-Pad: Reports and notifications. Employee I-Pad: Job order queue and notifications. Customer Terminal I-Pad: Order confirmation.	Standard Monitor, remote access via compatible device.
<b>Input Devices and Implications</b> Description of input methods to be used, input devices, special input requirements, and input considerations.	Keyboard and Mouse, Credit Card/pin Pad with Signature Capture, Cash Drawer, Bar Code Scanner.	Manager I-Pad: Database management/email. Employee I-Pad: Job order completion notification, purchase orders/etc... Customer Terminal I-Pad: Job Order Details	Keyboard and Mouse.
<b>Storage Devices and Implications</b> Description of what data would be stored, what data would be accessed from existing stores, what storage media would be used, how much storage capacity would be needed, and how data would be organized.	All data from customer orders, inventory, and purchase orders would be stored on the local office computer that runs the QuickBooks financial software. All of this information will be periodically backed up using QuickBooks Online Backup.	All data will be stored on the Mac Server via Relational Tables in FileMaker Pro. The Mac server has storage capacity of 1TB.	Same as one, but with Sage Peachtree software and using Sage online Backup.

\*COTS stands for Commercial Off The Self

# Feasibility Analysis Matrix

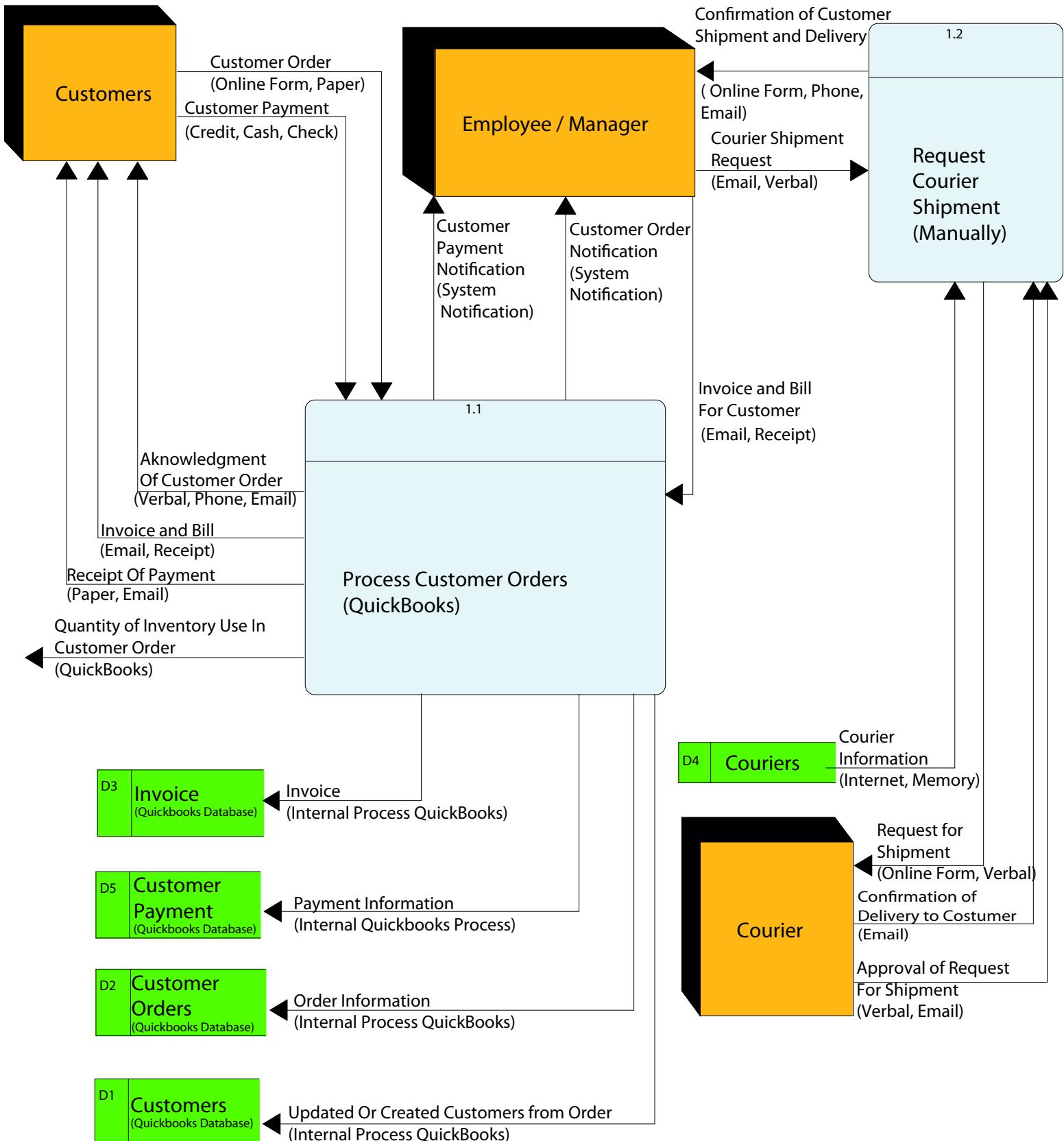
Feasibility Criteria	Wt.	Candidate 1 (QuickBooks Premier and POS)	Candidate 2 (Custom)	Candidate 3 (Sage Solutions)
<b>Operational Feasibility</b> <b>Functionality.</b> A description of to what degree the candidate would benefit the organization and how well the system would work.	32%	QuickBooks supports Customer Order Management, Inventory Management, and provides great reporting capabilities. However, QuickBooks currently is unable to support the level of mobility and remote access that is truly desired by the business owner.  The business owner's goal is to set up a "turning key" business. This solution facilitates the business functions better than all others. Although QuickBooks currently fails to meet mobility requirements of the business owner, it is likely that they will develop the necessary means to do so in the near future. Specifically, linking QuickBooks POS to QuickBooks Online.	This solution provides simplified and customized graphical user interface, and meets all necessary mobility requirements.  It is likely that this custom solution would be well received by both users and management, and this solution is the most likely to have an impact increasing number or return customers.	Offers only a few benefits over the current system, except maybe price differentials. There are no mobility features with this option, and inventory may not be tracked as accurately in this solution.  It is unlikely the Owner would favor this solution over the current system, due to the fact that it offers few significant benefits over the current system, and leaves little room for future expansion.
<b>Political.</b> A description of how well received this solution would be from the business owner, business employees, and the entire organizations perspective.		<b>Score: 95</b>	<b>Score: 95</b>	<b>Score: 50</b>
<b>Technical Feasibility</b> <b>Technology.</b> An assessment of the maturity, availability (or ability to acquire), and desirability of the computer technology needed to support this candidate.	20%	QuickBooks provides users with a tremendous amount of support in setting up the system and getting it fully operational. In addition, it provides user-friendly interfaces and forms that are easy to comprehend. It is likely that a marriage between QuickBooks Online and QuickBooks Point of Sale would be the most optimal solution. Although this is not currently available, it is probable that it will be possible within the next few years.  The owner has been using a version of QuickBooks and as such he has some familiarity. A QuickBooks representative will need to be hired to spend some time at the local office setting up the system and training the store manager and business owner to take full advantage of QuickBooks' features.	All necessary technology is readily available, and mature enough to support the needs of this system.  Programmer is required who has experience with HTML, PHP, and MYSQL to implement the solution, integrate it into current system and provide detailed documentation for future maintenance of the system.  HTML, PHP, and MYSQL are all mature technology.  Troubleshooting problems in the long run will be costly and may be quite difficult depending on who contracts to set up the system.	Peachtree is an alternative to QuickBooks. It has great interfaces, more accurate accounting functions such as period segmentation and better structured reports all of which add complexity and require more end user time and training.  Peachtree does not have an online version, which makes remote access impossible.
<b>Expertise.</b> An assessment of the technical expertise needed to develop, operate, and maintain the candidate system.		<b>Score: 95</b>	<b>Score: 85</b>	<b>Score: 75</b>
<b>Economic Feasibility</b> Cost to develop (Or Buy): Payback period (discounted): Net present value: Detailed calculations:	38%	\$2,904.80 <1 Year \$185,525.70 See Appendix A.  <b>Score: 100</b>	\$20,411.00 <1 Year \$140,989.82 See Appendix A.  <b>Score: 76</b>	\$1723.90 <1 Year \$67,178.00 See Appendix A.  <b>Score: 33</b>
<b>Schedule Feasibility</b> An assessment of how long the solution will take to design and implement.	10%	Less than 2 Weeks.  <b>Score: 100</b>	Around 2 Months.  <b>Score: 90</b>	Same as Candidate 1.  <b>Score: 100</b>
<b>Ranking</b>	100%	<b>97.4</b>	<b>85.28</b>	<b>53.54</b>

## Rationale for Weights:

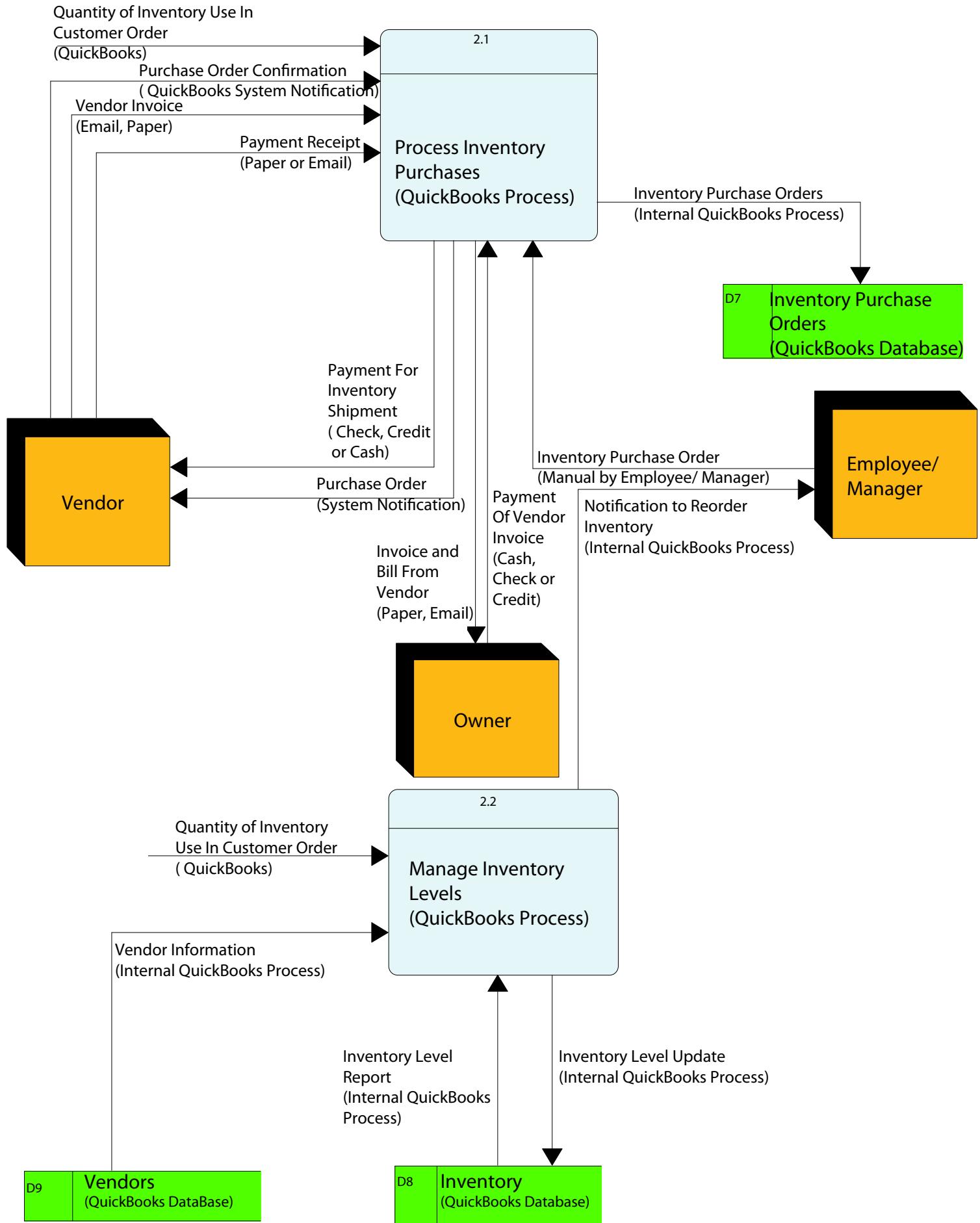
We rank the elements of feasibility in the following order, and list their associated weights and justifications:

1. Economic Feasibility
  - a. Weight: 38%
    - b. This category is weighted the highest because ultimately, our solution will require a certain amount of investment, which the business owner should expect to see high returns on. The business owner is not as concerned with system functionality as he is concerned with profit potential. However, two are not necessarily mutually exclusive, and greater system functionality can lead to great efficiency gains, and increased profits. The highest NPV project, given it is not offset in other categories, should win the proposal.
2. Operational Feasibility
  - a. Weight: 32%
    - b. This category is second on the list of importance the degree to which the candidate would benefit the organization as well as the degree to which the candidate will be accepted by the organization, is almost as important as the profit potential of the candidate itself. If we succeed in the first category, but fail in this one, the project is lost. That is the reason these two weights are not only similar, but great in magnitude.
3. Technical Feasibility
  - a. Weight: 20%
    - b. Technical feasibility will have significant influence over the system proposal due to the fact that it is important that the technology be mature enough to handle what we need it to. If it is not, or is not designed for our proposal, it will pose serious problems as a candidate.
4. Schedule Feasibility
  - a. Weight: 10%
    - b. The client's business did not impose any time constraints on the system proposal, and is not concerned about whether the new system is installed tomorrow, or next year. That is why this category is only weighted 10%.

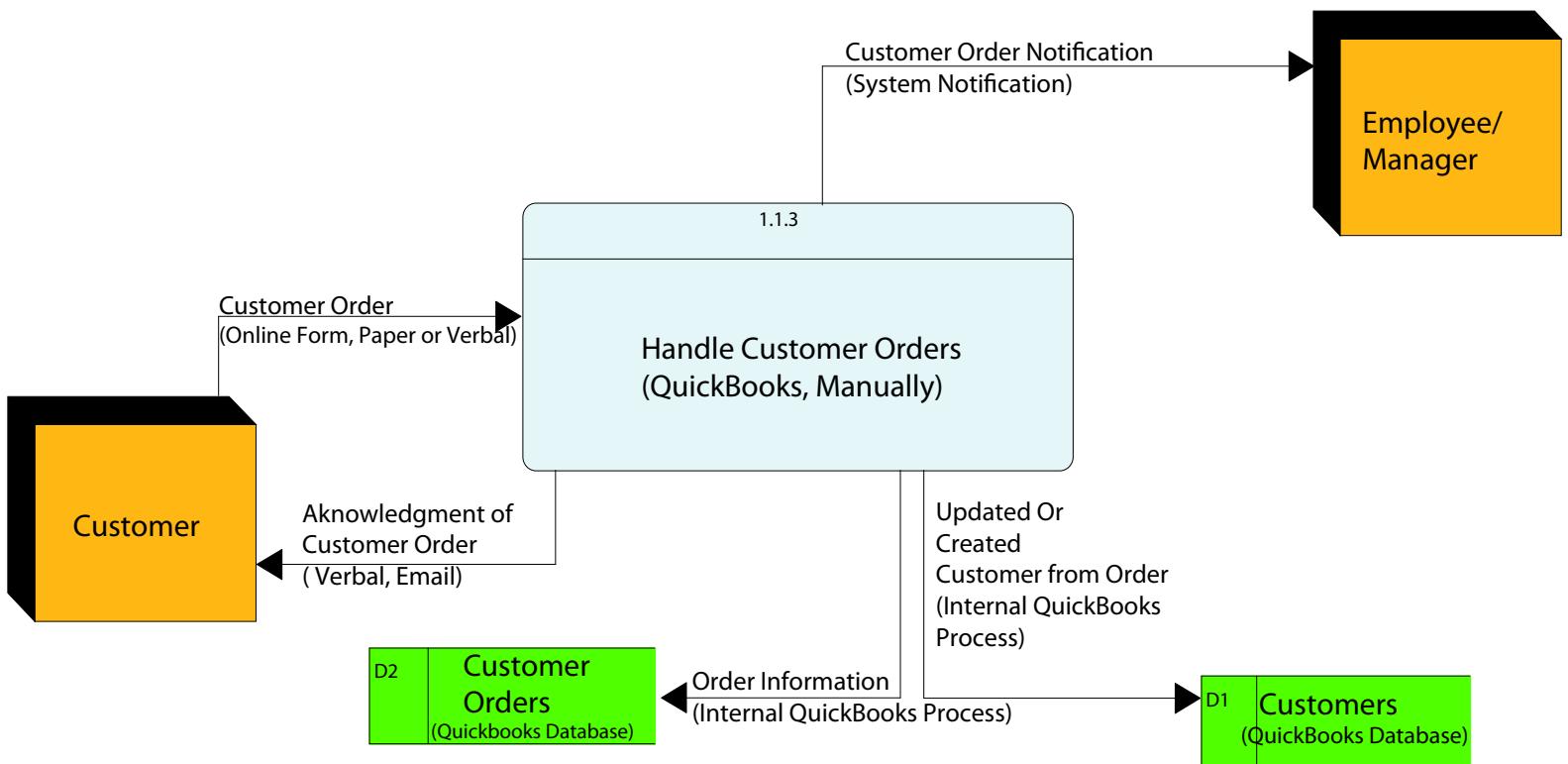
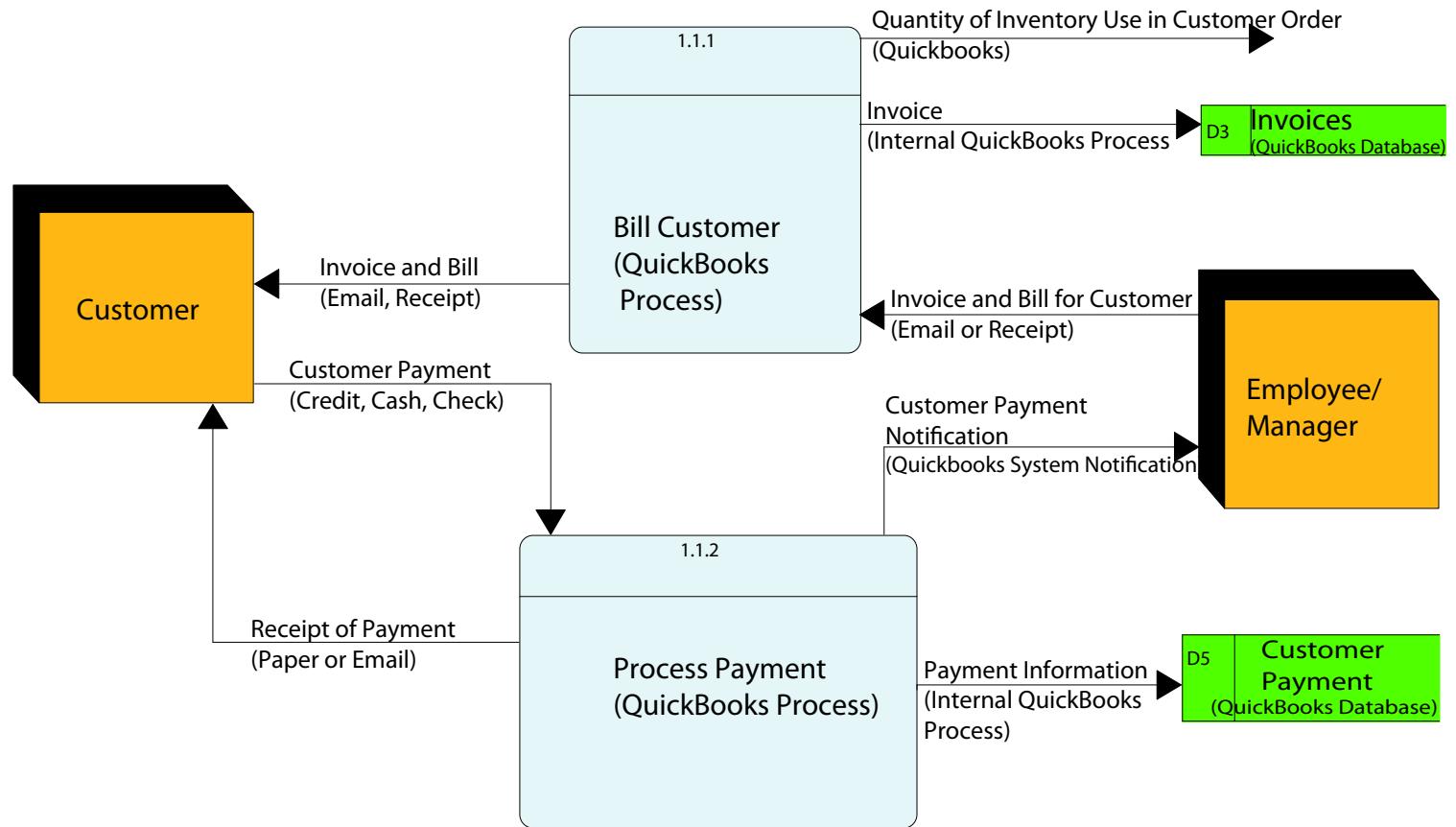
# Level 1 Diagram: Manage Customer Orders and Accounts



# Level 1: Manage Inventory



## Level 2: Process Customer Orders



# Sample Interface Screens

<p><b>New Vendor</b></p> <p>Vendor Name: <input type="text"/></p> <p>Opening Balance: <input type="text"/> as of <input type="date" value="12/15/2015"/> <a href="#">How do I determine the opening balance?</a></p> <p><b>Address Info</b>   <a href="#">Additional Info</a>   <a href="#">Account Prefill</a></p> <p>Company Name: <input type="text"/> Contact: <input type="text"/>  Mr./Ms./...: <input type="text"/> Phone: <input type="text"/>  First Name: <input type="text"/> M.I.: <input type="checkbox"/> FAX: <input type="text"/>  Last Name: <input type="text"/> Alt. Phone: <input type="text"/>  Alt. Contact: <input type="text"/>  E-mail: <input type="text"/>  Cc: <input type="text"/>  Print on Check as: <input type="text"/></p> <p><b>Addresses</b></p> <p>Billed From Address: <input type="text"/> Shipped From Address: <input type="text"/>  <input type="button" value="Copy &gt;&gt;"/> <input type="button" value="Edit"/></p> <p><input type="checkbox"/> Vendor is inactive</p> <p><b>OK</b>   <b>Cancel</b>   <b>Next</b>   <b>Help</b></p>	<p><b>New Job</b></p> <p>Job Name: <input type="text"/></p> <p>Opening Balance: <input type="text"/> as of <input type="date" value="12/15/2015"/> <a href="#">How do I determine the opening balance?</a></p> <p><b>Address Info</b>   <a href="#">Additional Info</a>   <a href="#">Payment Info</a>   <a href="#">Job Info</a></p> <p>Customer: <input type="text"/> Contact: <input type="text"/>  Company Name: <input type="text"/> Phone: <input type="text"/>  Mr./Ms./...: <input type="text"/> FAX: <input type="text"/>  First Name: <input type="text"/> M.I.: <input type="checkbox"/> Alt. Phone: <input type="text"/>  Last Name: <input type="text"/> Alt. Contact: <input type="text"/>  E-mail: <input type="text"/> Cc: <input type="text"/></p> <p><b>Addresses</b></p> <p>Bill To: Kristy Abercrombie 5647 Cypress Hill Rd Bayshore CA 94326 <input type="button" value="Edit"/> <input type="button" value="Copy &gt;&gt;"/> <input type="button" value="Add New"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/></p> <p>Ship To: <input type="text"/> <input type="checkbox"/> Default shipping address</p> <p><b>OK</b>   <b>Cancel</b>   <b>Next</b>   <b>Help</b> <input type="checkbox"/> Job is inactive</p>
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<p><b>New Customer</b></p> <p>Customer Name: <input type="text"/></p> <p>Opening Balance: <input type="text"/> as of <input type="date" value="12/15/2015"/> <a href="#">How do I determine the opening balance?</a></p> <p><b>Address Info</b>   <a href="#">Additional Info</a>   <a href="#">Payment Info</a>   <a href="#">Job Info</a></p> <p>Company Name: <input type="text"/> Contact: <input type="text"/>  Mr./Ms./...: <input type="text"/> Phone: <input type="text"/>  First Name: <input type="text"/> M.I.: <input type="checkbox"/> FAX: <input type="text"/>  Last Name: <input type="text"/> Alt. Phone: <input type="text"/>  Alt. Contact: <input type="text"/>  E-mail: <input type="text"/>  Cc: <input type="text"/></p> <p><b>Addresses</b></p> <p>Bill To: <input type="text"/> Ship To: <input type="text"/>  <input type="button" value="Copy &gt;&gt;"/> <input type="button" value="Add New"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>  <input type="checkbox"/> Default shipping address</p> <p><input type="checkbox"/> Customer is inactive</p> <p><b>OK</b>   <b>Cancel</b>   <b>Next</b>   <b>Help</b></p>	<p><b>Intuit</b>   (866) 379-6635   <a href="#">Contact Us</a>   <a href="#">Schedule Demo</a>   <a href="#">Local Help</a>   <a href="#">Buy Now</a></p> <p>Sample Rock Castle Construction - Intuit QuickBooks Enterprise Solutions 11.0 - [Write Checks - Checking]</p> <p>File Edit View Lots Favorites Company Customers Vendors Employees Banking Reports Online Solutions Window Help</p> <p>Home Search Company Snapshot Customer Center Vendor Center Employee Center Dot Center Report Center App Center Live Community Invoice Item Check Bill Reg Acct Rnd Find Feedback Services</p> <p>Bank Account: 00100 - Checking Ending Balance: 46,969.10</p> <p>No: 517 Date: 12/15/2015 Pay to the Order of: \$ 0.00</p> <p>Dollars: <input type="text"/> Address: <input type="text"/> Memo: <input type="text"/> <input type="button" value="Order Checks"/></p> <p>Expenses: \$0.00 Bills: \$0.00 <input type="checkbox"/> Online Payment <input type="checkbox"/> To be printed</p> <p>Customer Job: <input type="text"/> Bill #: <input type="text"/> Class: <input type="text"/></p> <p>Customer: <input type="text"/> Amount: <input type="text"/> Memo: <input type="text"/></p> <p>Clear Splits Recalculate Save &amp; Close Save &amp; New Clear <a href="#">Print QuickBooks</a> <a href="#">Close Window</a></p>
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## Sample Rock Castle Construction - Intuit QuickBooks Enterprise Solutions 11.0

File Edit View Lists Favorites Company Customers Vendors Employees Banking Reports Online Solutions Window Help

Home Search Company Snapshot Customer Center Vendor Center Employee Center Doc Center Report Center App Center Live Community Invoice Item Check Bill Reg Acct Rmnd Find Feedback Services

## Company Snapshot

Company Payments Customer

How do I customize this page?

Print

Add Content | Restore Default

## Income and Expense Trend

\$ in 1000s

This year-to-date



## Prev Year Income Comparison

\$ in 1000s

Yearly



## Customers Who Owe Money

Customer

Search

How do I customize this page?

Print

Due Date

Amt Due

Customer	Due Date	Amt Due
Hendro Riyadi	11/18/2015	4,223.00
Robson, Darsi	12/15/2015	12,420.98
Allard, Robert	09/27/2016	14,510.00
Mackey's Nursery and Garden Supply	11/04/2016	13,900.00
Pretell Real Estate	11/09/2016	5,026.50
Cook, Brian	11/14/2016	9,397.33
Vitton, David	11/30/2016	700.00
Teschner, Anton	12/13/2016	565.95
Melton, Johnny	12/20/2016	8,618.64
Burch, Jason	12/25/2016	1,005.00
Campbell, Heather	12/25/2016	13,900.00
Jacobsen, Doug	12/25/2016	2,320.00

Receive Payments

## Account Balances

Account

Balance

Accounts Receivable	93,007.93
Checking	46,969.10

## Top Customers by Sales

This year-to-date

350

## Prev Year Expense Comparison

All

Yearly

\$ in 1000s

350

Current Year

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File Edit View Lists Favorites Company Customers Vendors Employees Banking Reports Online Solutions Window Help

Home Search Company Snapshot Customer Center Vendor Center Employee Center Doc Center Report Center App Center Live Community Invoice Item Check Bill Reg Acct Rmnd Find Feedback Services

## Company Snapshot

Company Payments Customer

## Account Balances

Account

Balance

Accounts Receivable	93,007.93
Checking	46,969.10
Accounts Payable	26,636.92
Savings	17,910.19
Payroll Liabilities	5,404.45
Federal Withholding	1,364.00
FICA Payable	2,118.82
AEIC Payable	0.00
FUTA Payable	100.00
State Withholding	299.19
SUTA Payable	110.00
State Disability Payable	48.13

Select Accounts

Go to Chart of Accounts

## Expense Breakdown

This year-to-date

350

\$ in 1000s

## Prev Year Expense Comparison

All

Yearly

\$ in 1000s

350

Current Year

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## Sample Rock Castle Construction - Intuit QuickBooks Enterprise Solutions 11.0

File Edit View Lists Favorites Company Customers Vendors Employees Banking Reports Online Solutions Window Help

Home Search Company Snapshot Customer Center Vendor Center Employee Center Doc Center Report Center App Center Live Community Invoice Item Check Bill Reg Acct Rmnd Find Feedback Services

## Company Snapshot

Company Payments Customer

## QuickLinks

- [Receive Payment](#)
- [Create Sales Receipt](#)
- [Credits & Refunds](#)

Add credit card processing

## Invoice Payment Status

Last month

## Receivables Reports

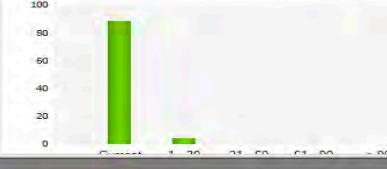
- [Customer Balance](#)  Summary  Detail
- [A/R Aging](#)  Summary  Detail
- [Sales by Customer](#)  Summary  Detail
- [Deposit Detail](#)  View
- [Unbilled Costs by Job](#)  View

Create custom Merchant Service reports

Report Center

## A/R by Aging Period

\$ in 1000s As of December 15, 2015 change



## Customers Who Owe Money

Customer

Search

Due Date

Amt Due

Hendro Riyadi	11/18/2015	4,223.00
Robson, Darsi	12/15/2015	12,420.98
Allard, Robert	09/27/2016	14,510.00
Mackey's Nursery and Garden Supply	11/04/2016	13,900.00
Pretell Real Estate	11/09/2016	5,026.50
Cook, Brian	11/14/2016	9,397.33
Vitton, David	11/30/2016	700.00
Teschner, Anton	12/13/2016	565.95
Melton, Johnny	12/20/2016	8,618.64
Burch, Jason	12/25/2016	1,005.00
Campbell, Heather	12/25/2016	13,900.00
Jacobsen, Doug	12/25/2016	2,320.00

Receive Payments

## Payment Reminders

Description

Due Date

Amount

- [Money to Deposit \(2\)](#)  Did it clear with the bank?
- [Overdue Invoices \(1\)](#)  Get paid faster

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**Company Snapshot**

**Customer**: Abercrombie, Kristy

**Sales History** (\$ in 1000s) Yearly

Date	Num	Amount	Open Balance
12/10/2015	1091	4,522.00	0.00
11/25/2015	1084	3,111.28	0.00
06/07/2015	1043	1,292.78	0.00
02/01/2015	1024	5,019.08	0.00

**Sales Summary** This year-to-date

Total sales	14,502.55
Total Sales for same period last year	0.00

**Recent Invoices**

Date	Num	Amount	Open Balance
12/10/2015	1091	4,522.00	0.00
11/25/2015	1084	3,111.28	0.00
06/07/2015	1043	1,292.78	0.00
02/01/2015	1024	5,019.08	0.00

**Recent Payments**

Date	Check/Ref#	Amount
12/15/2015		7,633.28
08/15/2015	100242	1,207.78

**Best-Selling Items**

Amount	This year-to-date

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Sample Rock Castle Construction - Intuit QuickBooks Enterprise Solutions 11.0 - [Inventory Valuation Summary]

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Modify Report... Memorize... Print... E-mail Export... Hide Header Refresh

Dates All

12:48 AM  
12/15/15

**Rock Castle Construction**  
**Inventory Valuation Summary**

All Transactions

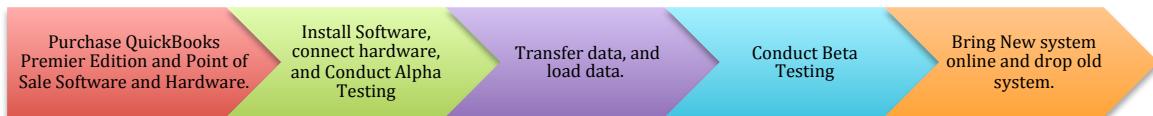
Inventory	Item Description	On Hand	U/M	Avg Cost	Asset Value	% of Tot Asset	Sales Price	Retail Value	% of Tot Retail
<b>Cabinets</b>									
Cabinet Pulls	Cabinet Pulls	423	ea	2.56	1,082.60	3.5%	0.00	0.00	0.0%
Light Pine	Light pine kitchen c...	6		1,500.00	9,000.00	29.3%	1,799.00	10,794.00	44.1%
Cabinets - Other	Cabinets	0		0.00	0.00	0.0%	0.00	0.00	0.0%
<b>Total Cabinets</b>		429	ea		10,082.60	32.9%		10,794.00	44.1%
<b>Door Frame</b>	standard interior d...	21		12.00	252.00	0.8%	0.00	0.00	0.0%
<b>Hardware</b>									
Brass hinges	standard interior b...	246	ea	3.00	738.00	2.4%	0.00	0.00	0.0%
Doorknobs Std	Doorknobs Part # D...	124		26.91	3,337.16	10.9%	30.00	3,720.00	15.2%
Lk Doorknobs	Locking interior do...	122		35.27	4,302.35	14.0%	36.00	4,636.00	19.0%
Hardware - Other		0		0.00	0.00	0.0%	0.00	0.00	0.0%
<b>Total Hardware</b>		492	ea		8,377.51	27.3%		8,356.00	34.2%
<b>Wood Door</b>									
Exterior	Exterior door - #P...	16		308.51	4,936.10	16.1%	120.00	1,920.00	7.9%
Interior	Interior door - P-18...	47		69.90	3,265.17	10.7%	72.00	3,384.00	13.8%
Wood Door - Other		1		1,750.00	1,750.00	5.7%	0.00	0.00	0.0%
<b>Total Wood Door</b>		64			9,971.27	32.5%		5,304.00	21.7%
<b>Total Inventory</b>		1,006	ea		28,663.38	93.5%		24,454.00	100.0%

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## Implementation Plan

The implementation process will be considered an abrupt cutover process in which there will be a point when we stop using the old system, and we start using the new one. Given that the type of system we are recommending is similar in nature (just more advanced) to the one currently in use, and that there is extremely low risk of losing data in the cutover process, this is the most logical plan. The following steps outline recommended implementation. Note that construction of the system is not necessary due to the fact that the solution is a commercial package.



1. Purchase QuickBooks Premier Edition and Point of Sale Software and Hardware:
  - a. This is done via <http://quickbooks.intuit.com/>
  - b. It is best to conduct this purchase via the phone, and a representative will make sure that you have everything you need to get started, and the proper accounts are set up for components of the POS to function properly.
2. Install Software, Connect Hardware, and Conduct Alpha Testing:
  - a. Contract with a local QuickBooks expert to conduct the following steps:
    - i. A QuickBooks expert can be reached via the following link:  
<http://proadvisor.intuit.com/accountant-match/?requestid=50834>
    - b. Install the software on the office computer running Windows operating system, and check to make sure all system requirements are met before installing.
    - c. Connect the hardware to the POS system.
    - d. Once everything is connected, enter some simulated data and conduct alpha testing to ensure that the system is functioning properly.
3. Transfer Data and Load Data:
  - a. Contract with a local QuickBooks expert to conduct the following steps:
    - b. Load all data from current QuickBooks edition into Premier edition platform.
    - c. Enter all inventory items into POS system via bar code scanning methods.
    - d. Enter all vendor information (including account information for payments).
4. Conduct Beta Testing:
  - a. Testing the functioning of the system with the real data loaded.
  - b. Contract with a local QuickBooks Expert to conduct owner and employee training on the new system. Reserve an afternoon for this.
5. Bring the New System Online, and Drop the Old System.
  - a. Bring POS and Premier online
  - b. Double-check to make sure everything is functioning properly
  - c. Drop the old system

# QuickBooks Cost/Benefit Analysis:

## DEVELOPMENT COSTS:

### **Hardware and Software Costs:**

QuickBooks Premier Edition:	\$319.95
QuickBooks Point of Sale Software:	\$1,499.95
QuickBooks POS Hardware (BarCode Scanner):	\$199.95
Merchant Service for Web Stores:	\$59.95
<b>Total Hardware and Software Costs:</b>	<b>\$2,079.80</b>

### **Personnel Costs:**

QuickBooks Expert (15 hrs at \$50/hr)	\$750.00
<b>Employee Training Time (5 hrs at \$15/hr)</b>	<b>\$75.00</b>
<b>Total Personnel Costs:</b>	<b>\$825.00</b>

**Total Development Costs:****\$2,904.80**

## PROJECTED ANNUAL OPERATING COSTS:

### Expenses:

Expert Assistance (20hrs at \$50/hr):	\$1,000.00
Web Store Services (\$19.95/mo)	\$239.40
Service Plan with Online Backup	\$149.00
<b>Total Expenses:</b>	<b>\$1,388.40</b>

**Total Projected Annual Costs:****\$1,388.40**

## Benefits of the Recommended QuickBooks Solution:

*\*See notes regarding justification of these calculations:*

### Cost Savings:

Inventory Management Time Efficiency Savings:	\$450.00
Purchase Order Time Efficiency Savings:	\$90.00
Checkout Process Efficiency Improvement Savings:	\$1,625.00
Reduced Billing Errors:	\$7,800.00
<b>Total Annual Cost Savings:</b>	<b>\$9,965.00</b>

### Increased Sales:

Increased Sales from Rewards Program:	\$18,750.00
Increased Annual Sales from web store (3% increase):	\$15,000.00
<b>Total Annual Increase in Sales:</b>	<b>\$33,750.00</b>

### Improved Customer Good Will:

500 Customers, sales of \$100 per customer

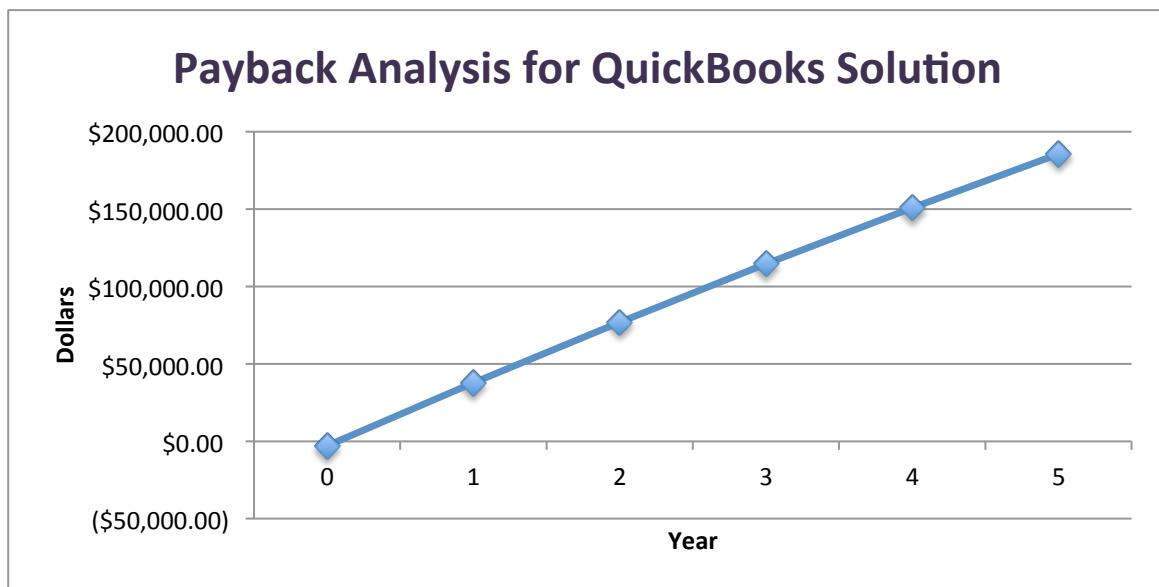
\$14,500.00 \*See Notes for Calculation

**Projected Annual Benefits (Without Good Will):****\$43,715.00****\*FIGURES USED IN CALCULATIONS:**

Average Orders/Day:	10
Ave Copies/Order:	200
Rate of Incorrect Billing:	15%
Ave. Billing Error Loss:	\$0.10
Inv. Mgmt Savings (Hours Annually)	30
PO Effic. Improv. (hrs/year):	6
Annual Business Revenue	\$500,000.00
Ave Sale Amount:	\$100.00
Annual Customers:	500
Top 10% Ave. Purchase (	\$25,000
Employee Salary:	\$15.00
C.O. Effic. Improvement:	2.5

## Payback Analysis

<u>Cash Flow Description:</u>	<u>Year 0</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Development Cost:	(\$2,904.80)					
Annual Costs:		(\$1,388.40)	(\$1,388.40)	(\$1,388.40)	(\$1,388.40)	(\$1,388.40)
Time Adjusted Costs(4%):	(\$2,904.80)	(\$1,335.00)	(\$1,283.65)	(\$1,234.28)	(\$1,186.81)	(\$1,141.16)
Cumulative Adjusted Costs:	(\$2,904.80)	(\$4,239.80)	(\$5,523.45)	(\$6,757.74)	(\$7,944.55)	(\$9,085.71)
Benefits Derived From New System:	\$0.00	\$43,715.00	\$43,715.00	\$43,715.00	\$43,715.00	\$43,715.00
Time Adjusted Benefits:	\$0.00	\$42,033.65	\$40,416.97	\$38,862.48	\$37,367.77	\$35,930.54
Cumulative Adjusted Benefits:	\$0.00	\$42,033.65	\$82,450.63	\$121,313.10	\$158,680.87	\$194,611.41
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Cumulative Lifetime (Time Adjusted)</b>						
<b>costs+benefits:</b>	(\$2,904.80)	\$37,793.85	\$76,927.17	\$114,555.37	\$150,736.32	\$185,525.70



## NPV Analysis:

Total Present Value of Lifetime Costs: (\$9,085.71)  
 Total Present Value of Lifetime Benefits: \$194,611.41

**NET PRESENT VALUE OF THIS ALTERNATIVE: \$185,525.70**

\*Note Regarding Customer Good Will:

What is the result of customer ill will? The customer will submit fewer (or no) orders.

To What degree will a customer reduce orders?

There is a 50 percent chance that a regular customer would send a few orders -- fewere than 10 percent of all its orders--to competitors to test their performance.

There is a 20 percent hange tha the refular customer would send as many as half its orders to competitors, particularly those orders are historically slow to fulfill.

There is a 10 percent chance that a regular customer would send us an order only as a last resort. That would reduce that customer's normal business to 10 percent of current volume. There is a 5 percent chance that a refular customer would choose not to do business with us at all.

Estimated Loss = (.5\*.1)+(.2\*.5)+(.1\*.9)+(.05\*1) or, 29 percent estimated loss of business.

# Custom Solution (Filemaker DBMS with Apple Hardware)

## DEVELOPMENT COSTS:

### **Hardware and Software Costs:**

Mac Mini with Mac OSX Server Software:	\$1,666.00
Filemaker Server Database Software:	\$999.00
Apple I-pad (3 at \$499.00 each)	\$1,497.00
Cyberoffice Shopping Cart:	\$99.00
<b>Total Hardware and Software Costs:</b>	<b>\$4,261.00</b>

### **Personnel Costs:**

Programming Costs (320 hrs at \$50/hr):	\$16,000.00
Employee Training Time (10 hrs at \$15/hr)	\$150.00
<b>Total Personnel Costs:</b>	<b>\$16,150.00</b>

**Total Development Costs:** **\$20,411.00**

## PROJECTED ANNUAL OPERATING COSTS:

### **Expenses:**

Expert Assistance (20hrs at \$50/hr):	\$1,000.00
Cyberoffice Shopping Cart:	\$120.00
Programmer/Analyst (50hrs at \$50/hr):	\$2,500.00
<b>Total Expenses:</b>	<b>\$3,620.00</b>

**Total Projected Annual Costs:** **\$3,620.00**

## BENEFITS OF A CUSTOM SYSTEM:

### **Benefits of the Recommended Custom Solution:**

\*See notes regarding justification of these calculations:

### **Cost Savings:**

Inventory Management Time Efficiency Savings:	\$450.00
Checkout Process Efficiency Improvement Savings:	\$1,625.00
Reduced Billing Errors:	\$7,800.00
<b>Total Annual Cost Savings:</b>	<b>\$9,875.00</b>

### **Increased Sales:**

Increased Sales(4%) from Improved Business Processes:	\$10,000.00
Increased Annual Sales from web store (3% increase):	\$20,000.00
<b>Total Annual Increase in Sales:</b>	<b>\$30,000.00</b>

### **\*FIGURES USED IN CALCULATIONS:**

Average Orders/Day:	10
Ave Copies/Order:	200
Rate of Incorrect Billing:	15%
Ave. Billing Error Loss:	\$0.10
Inv. Mgmt Savings (Hours Annually)	30
PO Effic. Improv. (hrs/year):	6
Annual Business Revenue:	\$500,000.00
Ave Sale Amount:	\$100.00
Annual Customers:	500
Top 10% Ave. Purchase (Annually)	\$25,000
Employee Salary:	\$15.00
C.O. Effic. Improvement:	2.5

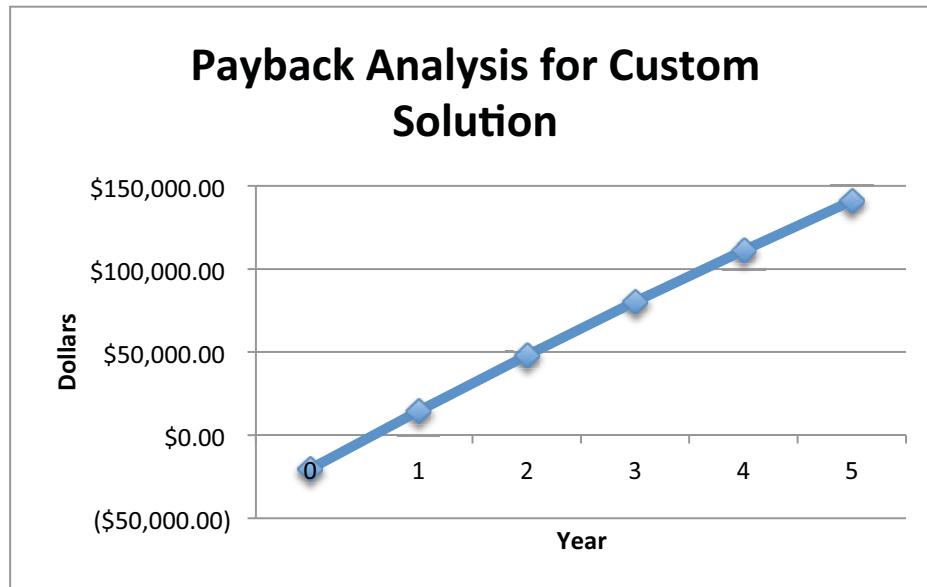
### **Improved Customer Good Will:**

500 Customers, sales of \$100 per customer      **\$14,500.00** \*See Notes for Calculation

**Projected Annual Benefits (Without Good Will):** **\$39,875.00**

## Payback Analysis

<u>Cash Flow Description:</u>	<u>Year 0</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Development Cost:	(\$20,411.00)					
Annual Costs:		(\$3,620.00)	(\$3,620.00)	(\$3,620.00)	(\$3,620.00)	(\$3,620.00)
Time Adjusted Costs(4%):	(\$20,411.00)	(\$3,480.77)	(\$3,346.89)	(\$3,218.17)	(\$3,094.39)	(\$2,975.38)
Cumulative Adjusted Costs:	(\$20,411.00)	(\$23,891.77)	(\$27,238.66)	(\$30,456.83)	(\$33,551.22)	(\$36,526.60)
Benefits Derived From New System:	\$0.00	\$39,875.00	\$39,875.00	\$39,875.00	\$39,875.00	\$39,875.00
Time Adjusted Benefits:	\$0.00	\$38,341.35	\$36,866.68	\$35,448.73	\$34,085.32	\$32,774.34
Cumulative Adjusted Benefits:	\$0.00	\$38,341.35	\$75,208.03	\$110,656.75	\$144,742.07	\$177,516.42
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Cumulative Lifetime (Time Adjusted) costs+benefits:</b>	<b>(\$20,411.00)</b>	<b>\$14,449.58</b>	<b>\$47,969.36</b>	<b>\$80,199.93</b>	<b>\$111,190.85</b>	<b>\$140,989.82</b>



## NPV Analysis:

Total Present Value of Lifetime Costs:	(\$36,526.60)
Total Present Value of Lifetime Benefits:	\$177,516.42

**NET PRESENT VALUE OF THIS ALTERNATIVE:** **\$140,989.82**

\*Note Regarding Customer Good Will:

What is the result of customer ill will? The customer will submit fewer (or no) orders.

To What degree will a customer reduce orders?

There is a 50 percent chance that a regular customer would send a few orders -- fewere than 10 percent of all its orders--to competitors to test their performance.

There is a 20 percent hange tha the refular customer would send as many as half its orders to competitors, particularly those orders are historically slow to fulfill.

There is a 10 percent chance that a regular customer would send us an order only as a last resort. That would reduce that customer's normal business to 10 percent of current volume. There is a 5 percent chance that a refular customer would choose not to do business with us at all.

Estimated Loss = (.5\*.1)+(.2\*.5)+(.1\*.9)+(.05 or, 29 percent estimated loss of business.

# Sage Peachtree Cost Analysis:

## DEVELOPMENT COSTS:

### **Hardware and Software Costs:**

Sage Peachtree Premium Edition	\$499.90
Sage Virtual Terminal	Unknown *
POS Hardware:	\$100.00 *
Cyberoffice Shopping Cart:	\$99.00 *
<b>Total Hardware and Software Costs:</b>	<b>\$698.90</b>

### **Personnel Costs:**

PeachTree Expert (10 hrs at \$50/hr)	\$500.00
<b>Employee Training Time (5 hrs at \$15/hr)</b>	<b>\$75.00</b>
<b>Total Personnel Costs:</b>	<b>\$575.00</b>

**Total Development Costs:****\$1,273.90**

## PROJECTED ANNUAL OPERATING COSTS:

### Expenses:

Expert Assistance (20hrs at \$50/hr):	\$1,000.00
Cyberoffice Shopping Cart:	\$120.00
Sage Peachtree Online Backup	\$119.95
<b>Total Expenses:</b>	<b>\$1,239.95</b>

**Total Projected Annual Costs:****\$1,239.95**

## Benefits of the Recommended Peachtree Solution:

*\*See notes regarding justification of these calculations:*

### Cost Savings:

Purchase Order Time Efficiency Savings:	\$90.00
<b>Total Annual Cost Savings:</b>	<b>\$90.00</b>

### Increased Sales:

Increased Annual Sales from web store (3% increase):	\$15,000.00
<b>Total Annual Increase in Sales:</b>	<b>\$15,000.00</b>

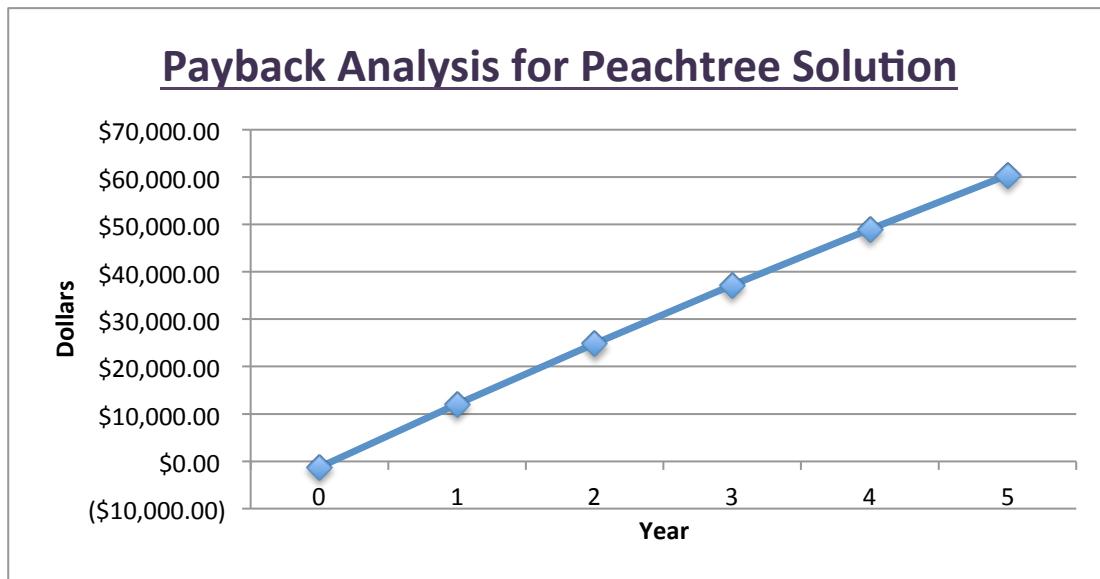
### Improved Customer Good Will:

500 Customers, sales of \$100 per customer      **\$14,500.00 \*See Notes for Calculation****Projected Annual Benefits (Without Good Will):**      **\$15,090.00**

<b>*FIGURES USED IN CALCULATIONS:</b>	
Average Orders/Day:	10
Ave Copies/Order:	200
Rate of Incorrect Billing:	15%
Ave. Billing Error Loss:	\$0.10
Inv. Mgmt Savings (Hours Annually)	30
PO Effic. Improv. (hrs/year):	6
Annual Business Revenu	\$500,000.00
Ave Sale Amount:	\$100.00
Annual Customers:	500
Top 10% Ave. Purchase l	\$25,000
Employee Salary:	\$15.00
C.O. Effic. Improvement:	2.5

## Payback Analysis

<u>Cash Flow Description:</u>	<u>Year 0</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Development Cost:	(\$1,273.90)					
Annual Costs:		(\$1,239.95)	(\$1,239.95)	(\$1,239.95)	(\$1,239.95)	(\$1,239.95)
Time Adjusted Costs(4%):	(\$1,273.90)	(\$1,192.26)	(\$1,146.40)	(\$1,102.31)	(\$1,059.91)	(\$1,019.15)
Cumulative Adjusted Costs:	(\$1,273.90)	(\$2,466.16)	(\$3,612.56)	(\$4,714.87)	(\$5,774.79)	(\$6,793.94)
Benefits Derived From New System:	\$0.00	\$15,090.00	\$15,090.00	\$15,090.00	\$15,090.00	\$15,090.00
Time Adjusted Benefits:	\$0.00	\$14,509.62	\$13,951.55	\$13,414.96	\$12,899.00	\$12,402.88
Cumulative Adjusted Benefits:	\$0.00	\$14,509.62	\$28,461.17	\$41,876.12	\$54,775.12	\$67,178.00
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Cumulative Lifetime (Time Adjusted) costs+benefits:</b>	<b>(\$1,273.90)</b>	<b>\$12,043.46</b>	<b>\$24,848.61</b>	<b>\$37,161.25</b>	<b>\$49,000.33</b>	<b>\$60,384.06</b>



## NPV Analysis:

Total Present Value of Lifetime Costs: (\$6,793.94)  
 Total Present Value of Lifetime Benefits: \$67,178.00

**NET PRESENT VALUE OF THIS ALTERNATIVE: \$60,384.06**

\*Note Regarding Customer Good Will:

What is the result of customer ill will? The customer will submit fewer (or no) orders.

To What degree will a customer reduce orders?

There is a 50 percent chance that a regular customer would send a few orders -- fewere than 10 percent of all its orders--to competitors to test their performance.

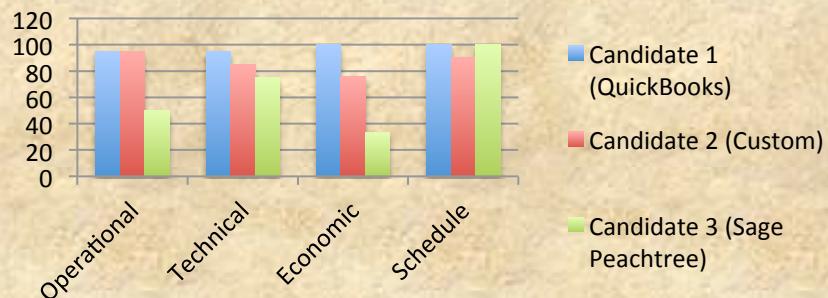
There is a 20 percent hange tha the refular customer would send as many as half its orders to competitors, particularly those orders are historically slow to fulfill.

There is a 10 percent chance that a regular customer would send us an order only as a last resort. That would reduce that customer's normal business to 10 percent of current volume. There is a 5 percent chance that a refular customer would choose not to do business with us at all.

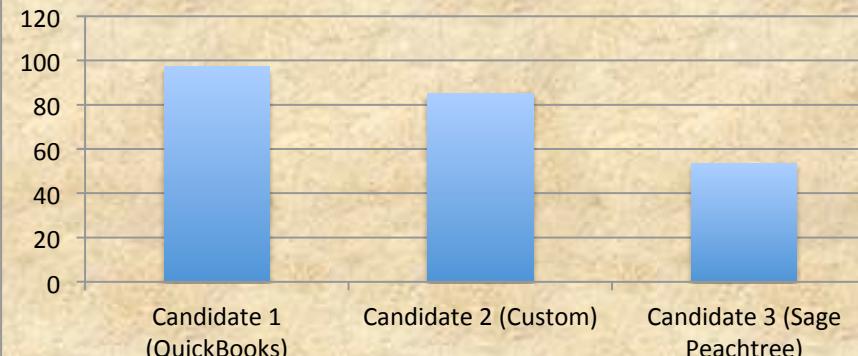
Estimated Loss = (.5\*.1)+(.2\*.5)+(.1\*.9)+(.05\*1) or, 29 percent estimated loss of business.

Feasibility Criteria	Category Weight	Candidate 1 (QuickBooks)	Candidate 2 (Custom)	Candidate 3 (Sage Peachtree)
Operational Feasibility	32%	95	95	50
Technical Feasibility	20%	95	85	75
Economic Feasibility	38%	100	76	33
Schedule Feasibility	10%	100	90	100
	100%	97.4	85.28	53.54

### Category Scores for Candidate Solutions

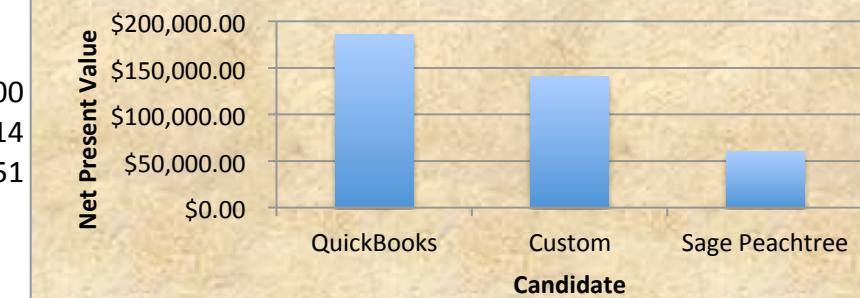


### Candidate System Rankings



Solution	NPV
QuickBooks	\$185,525.70
Custom	\$140,989.82
Sage Peachtree	\$60,384.06

### NET PRESENT VALUES OF CANDIDATES



# **Analyst Report for Crescent Printing and Copying**

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University of Maryland, R.H. Smith School of Business  
Reyner Fouch

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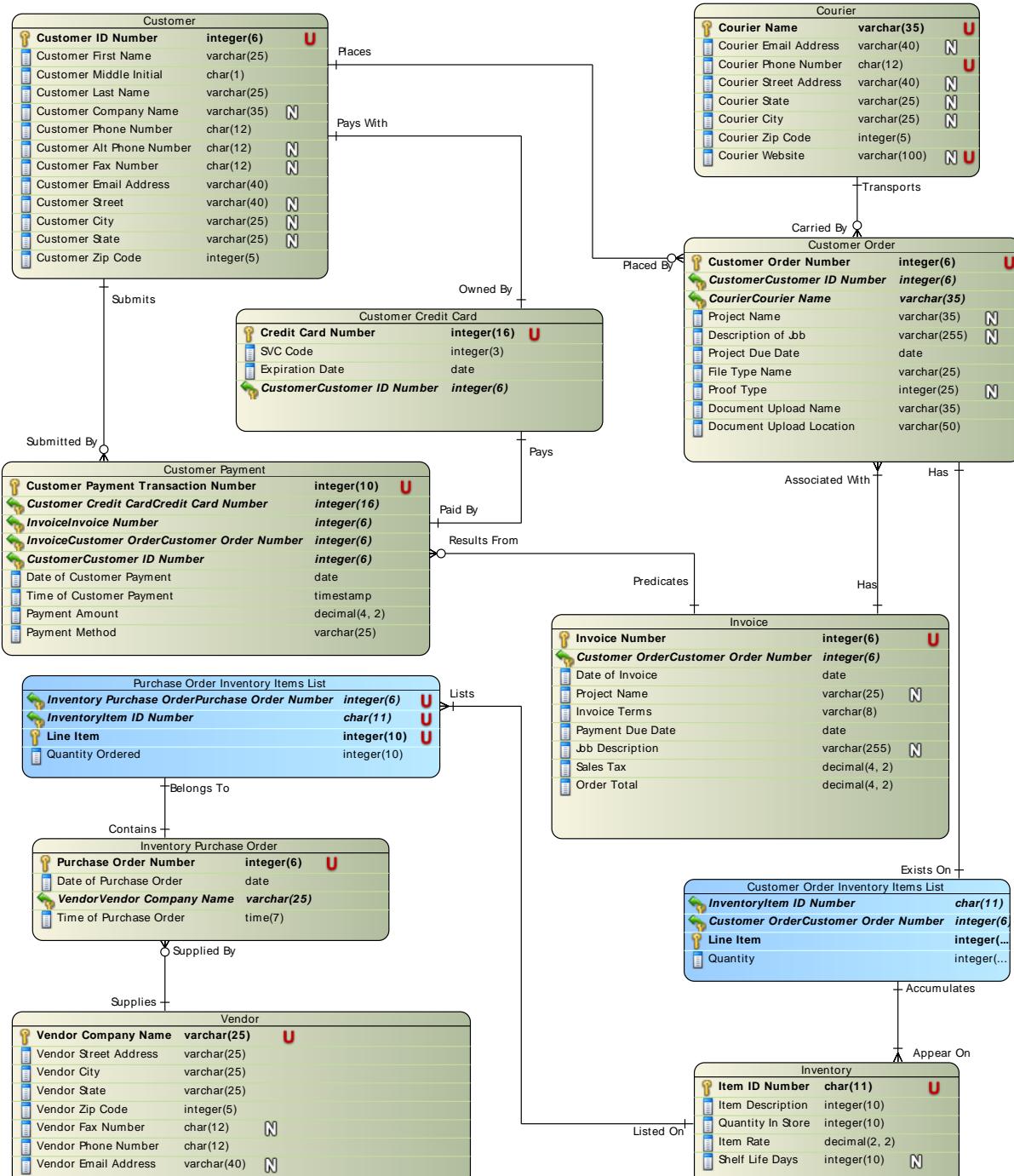
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## Entity Relationship Diagram

# Crescent Printing and Copying ERD Proposal



## Summary

Name	Documentation
 Courier	The Courier entity represents all informational attributes stored for any instance of a courier that would be utilized to bring a customer order to the customer.
 Customer	This Customer entity represents all informational attributes stored regarding any instance of a customer.
 Customer Order	The Customer Order entity represents all informational attributes stored for any instance of a customer order.
 Customer Credit Card	Customer Credit Cards are stored on file only for customers who would like their payment information to be stored on file for ease of purchase.
 Customer Payment	The Customer Payment entity represents all information attributes stored for any instance of a customer payment.
 Invoice	The Invoice entity represents all informational attributes stored for any instance of an invoice.
 Purchase Order Inventory Items List	
 Inventory Purchase Order	The Inventory Purchase Order entity represents all informational attributes stored for any instance of an Inventory Purchase Order.
 Customer Order Inventory Items List	
 Vendor	The Vendor entity represents all informational attributes stored for any instance of a supplier.
 Inventory	The Inventory Entity represents all informational attributes stored for any instance of an inventory item.

## Details

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### Courier

Name	Value
Data Model	Logical
Documentation	The Courier entity represents all informational attributes stored for any instance of a courier that would be utilized to bring a customer order to the customer.
Author	Reyner Fouch
Create Date Time	Mar 24, 2011 12:37:20 AM
Last Modified	Apr 12, 2011 10:41:01 PM

## Columns Summary

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Name	DataType	Constraints	Nullable	Documentation
Courier Name	varchar(35)	PKUnique	No	
Courier Email Address	varchar(40)		Yes	
Courier Phone Number	char(12)	Unique	No	
Courier Street Address	varchar(40)		Yes	
Courier State	varchar(25)		Yes	
Courier City	varchar(25)		Yes	
Courier Zip Code	integer(5)		No	
Courier Website	varchar(100)	Unique	Yes	

## Customer

Name	Value
Data Model	Logical
Documentation	This Customer entity represents all informational attributes stored regarding any instance of a customer.
Author	User
Create Date Time	Mar 24, 2011 12:34:55 AM
Last Modified	Apr 12, 2011 10:41:01 PM

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
Customer ID Number	integer(6)	PKUnique	No	
Customer First Name	varchar(25)		No	
Customer Middle Initial	char(1)		No	
Customer Last Name	varchar(25)		No	
Customer Company Name	varchar(35)		Yes	
Customer Phone Number	char(12)		No	
Customer Alt Phone Number	char(12)		Yes	
Customer Fax Number	char(12)		Yes	
Customer Email Address	varchar(40)		No	
Customer Street	varchar(40)		Yes	
Customer City	varchar(25)		Yes	
Customer State	varchar(25)		Yes	
Customer Zip Code	integer(5)		No	

## Customer Order

Name	Value
Data Model	Logical

Documentation	The Customer Order entity represents all informational attributes stored for any instance of a customer order.
Author	User
Create Date Time	Mar 24, 2011 12:36:39 AM
Last Modified	May 1, 2011 11:25:24 PM

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
Customer Order Number	integer(6)	PKUnique	No	
CustomerCustomer ID Number	integer(6)	PK/FK (Customer.Customer ID Number)	No	
CourierCourier Name	varchar(35)	PK/FK (Courier.Courier Name)	No	
Project Name	varchar(35)		Yes	
Description of Job	varchar(255)		Yes	
Project Due Date	date		No	
File Type Name	varchar(25)		No	
Proof Type	integer(25)		Yes	
Document Upload Name	varchar(35)		No	
Document Upload Location	varchar(50)		No	

## Customer Credit Card

Name	Value
Data Model	Logical
Documentation	Customer Credit Cards are stored on file only for customers who would like their payment information to be stored on file for ease of purchase.
Author	Reyner Fouch
Create Date Time	Apr 9, 2011 11:28:25 PM
Last Modified	Apr 10, 2011 1:08:03 AM

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
Credit Card Number	integer(16)	PKUnique	No	
SVC Code	integer(3)		No	
Expiration Date	date		No	
CustomerCustomer ID Number	integer(6)	PK/FK (Customer.Customer ID Number)	No	



## Customer Payment

Name	Value
Data Model	Logical
Documentation	The Customer Payment entity represents all information attributes stored for any instance of a customer payment.
Author	User
Create Date Time	Mar 24, 2011 7:05:58 AM
Last Modified	May 1, 2011 11:25:24 PM

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
Customer Payment Transaction Number	integer(10)	PKUnique	No	
Customer Credit CardCredit Card Number	integer(16)	PK/FK ( Customer Credit Card.Credit Card Number)	No	
InvoiceInvoice Number	integer(6)	PK/FK ( Invoice.Invoice Number)	No	
InvoiceCustomer OrderCustomer Order Number	integer(6)	PK/FK ( Invoice.Customer OrderCustomer Order Number)	No	
CustomerCustomer ID Number	integer(6)	PK/FK ( Customer.Customer ID Number)	No	
Date of Customer Payment	date		No	
Time of Customer Payment	timestamp		No	
Payment Amount	decimal(4)		No	
Payment Method	varchar(25)		No	



## Invoice

Name	Value
Data Model	Logical
Documentation	The Invoice entity represents all informational attributes stored for any instance of an invoice.
Author	User
Create Date Time	Mar 24, 2011 7:05:13 AM
Last Modified	May 1, 2011 11:25:24 PM

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation

Invoice Number	integer(6)	PKUnique	No	
Customer OrderNumber	integer(6)	PK/FK ( Customer Order.Customer Order Number)	No	
Date of Invoice	date		No	
Project Name	varchar(25)		Yes	
Invoice Terms	varchar(8)		No	
Payment Due Date	date		No	
Job Description	varchar(255)		Yes	
Sales Tax	decimal(4)		No	
Order Total	decimal(4)		No	

## Purchase Order Inventory Items List

Name	Value
Data Model	Logical
Author	Reyner Fouch
Create Date Time	Apr 12, 2011 10:21:54 PM
Last Modified	May 2, 2011 9:51:44 PM

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
Inventory Purchase OrderPurchase Order Number	integer(6)	PK/FK ( Inventory Purchase Order.Purchase Order Number); Unique	No	
InventoryItem ID Number	char(11)	PK/FK ( Inventory.Item ID Number); Unique	No	
Line Item	integer(10)	PKUnique	No	
Quantity Ordered	integer(10)		No	

## Inventory Purchase Order

Name	Value
Data Model	Logical
Documentation	The Inventory Purchase Order entity represents all informational attributes stored for any instance of an Inventory Purchase Order.
Author	User
Create Date Time	Mar 24, 2011 7:07:18 AM
Last Modified	May 2, 2011 9:50:19 PM

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
Purchase Order Number	integer(6)	PKUnique	No	
Date of Purchase Order	date		No	
Vendor/Vendor Company Name	varchar(25)	PK/FK ( Vendor.Vendor Company Name)	No	
Time of Purchase Order	time(7)		No	

## Customer Order Inventory Items List

Name	Value
Data Model	Logical
Author	Reyner Fouch
Create Date Time	Apr 12, 2011 10:34:04 PM
Last Modified	May 2, 2011 9:51:44 PM

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
InventoryItem ID Number	char(11)	PK/FK ( Inventory.Item ID Number); Unique	No	
Customer OrderCustomer Order Number	integer(6)	PK/FK ( Customer Order.Customer Order Number); Unique	No	
Line Item	integer(10)	PKUnique	No	
Quantity	integer(10)		No	

## Vendor

Name	Value
Data Model	Logical
Documentation	The Vendor entity represents all informational attributes stored for any instance of a supplier.
Author	User
Create Date Time	Mar 24, 2011 7:07:00 AM
Last Modified	May 2, 2011 9:50:19 PM

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
Vendor Company Name	varchar(25)	PKUnique	No	
Vendor Street Address	varchar(25)		No	

Vendor City	varchar(25)		No	
Vendor State	varchar(25)		No	
Vendor Zip Code	integer(5)		No	
Vendor Fax Number	char(12)		Yes	
Vendor Phone Number	char(12)		No	
Vendor Email Address	varchar(40)		Yes	

## Inventory

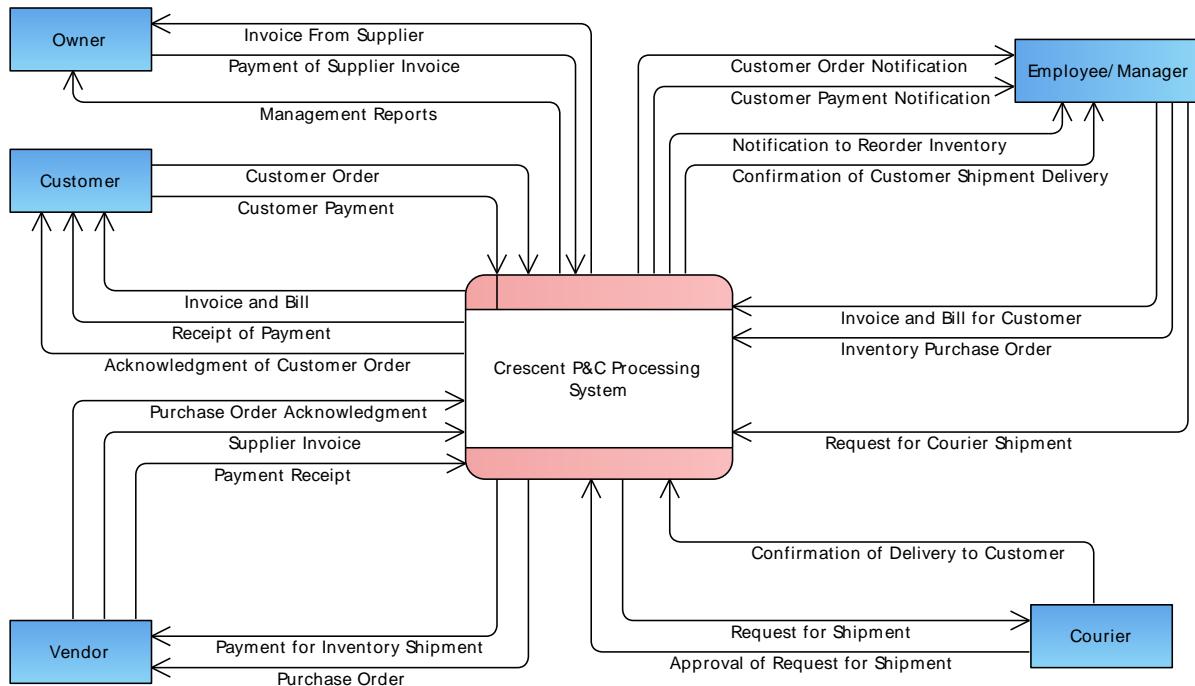
Name	Value
Data Model	Logical
Documentation	The Inventory Entity represents all informational attributes stored for any instance of an inventory item.
Author	Reyner Fouch
Create Date Time	Mar 29, 2011 9:35:30 PM
Last Modified	May 2, 2011 9:51:44 PM

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
Item ID Number	char(11)	PKUnique	No	
Item Description	integer(10)		No	
Quantity In Store	integer(10)		No	
Item Rate	decimal(2)		No	
Shelf Life Days	integer(10)		Yes	

### Data Flow Diagram

# Crescent Printing and Copying Context Diagram for Proposal



## Summary

Name	Documentation
Owner	Owner Entity represents the owner of Crescent Printing and Copying (Currently, Brad Vali). As much as possible, the owner should be removed from the low level business functions, and should fill a decision maker role based in data received from the system.
Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
Customer	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.
Crescent P&C Processing System	This is the logical processing system for all data used in the operations of Crescent Printing and Copying.
Courier	The Courier external entity represents any of the main shipping companies (Fed Ex, UPS, etc.) that Crescent P&C can contract with for the shipment of finished customer orders.

 Vendor	The Vendor External entity is any supplier carrying any items used in the course of business for Crescent P&C.
--	--

## Details

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### Owner

Name	Value
Documentation	Owner Entity represents the owner of Crescent Printing and Copying (Currently, Brad Vali). As much as possible, the owner should be removed from the low level business functions, and should fill a decision maker role based in data received from the system.
Author	User
Create Date Time	Mar 24, 2011 12:38:28 PM
Last Modified	May 2, 2011 3:10:00 PM

### Employee/Manager

Name	Value
Documentation	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
Author	Reyner Fouch
Create Date Time	Apr 10, 2011 2:51:27 PM
Last Modified	Apr 29, 2011 4:23:26 PM

### Customer

Name	Value
Documentation	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.
Author	User
Create Date Time	Mar 24, 2011 12:10:28 PM
Last Modified	May 2, 2011 3:15:26 PM

### Crescent P&C Processing System

Name	Value
Documentation	This is the logical processing system for all data used in the operations of Crescent Printing and Copying.
Author	User
Create Date Time	Mar 24, 2011 12:09:12 PM

Last Modified	May 2, 2011 2:58:04 PM
Decomposed Diagram	 Crescent Printing and Copying: Level 0 Diagram

## Sub Diagrams

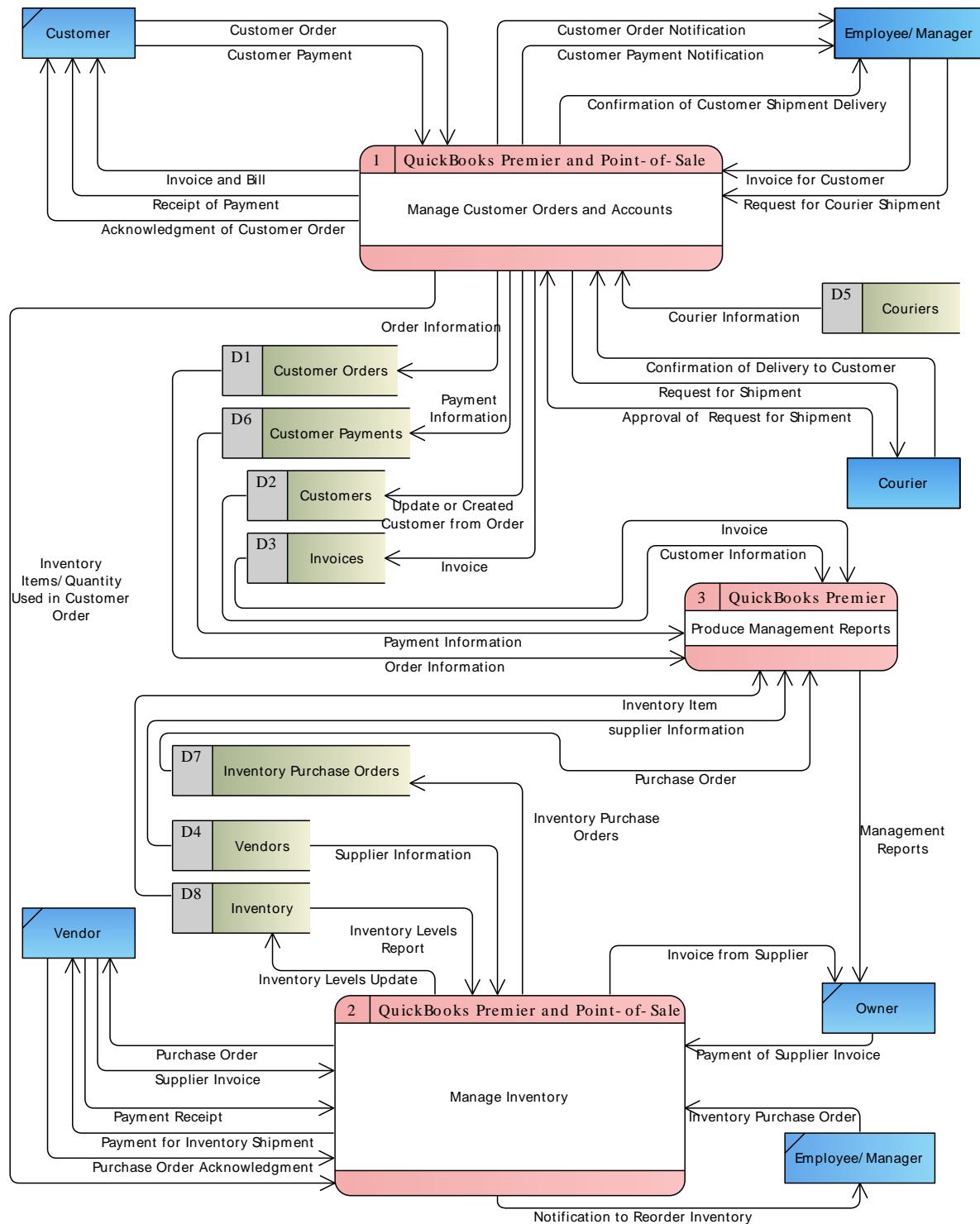
Name	Documentation
 Crescent Printing and Copying: Level 0 Diagram	This is the Level 0 Diagram for Crescent Printing and Copying. For context, see decomposition diagram

## Courier

Name	Value
Documentation	The Courier external entity represents any of the main shipping companies (Fed Ex, UPS, etc.) that Crescent P&C can contract with for the shipment of finished customer orders.
Author	User
Create Date Time	Mar 24, 2011 12:38:35 PM
Last Modified	Apr 29, 2011 4:23:26 PM

## Vendor

Name	Value
Documentation	The Vendor External entity is any supplier carrying any items used in the course of business for Crescent P&C.
Author	User
Create Date Time	Mar 24, 2011 12:38:42 PM
Last Modified	May 2, 2011 9:51:44 PM

**Data Flow Diagram****Crescent Printing and Copying: Level 0 Diagram**

## Summary

Name	Documentation
 Customer	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Manage Customer Orders and Accounts	The Manage Customer Orders and Accounts process handles all incoming customer orders, regardless of order method, and updates the appropriate accounts and data-stores. It also produces management reports based on the data that is involved in this process.
 Couriers	The Couriers data-store will store all information found in the Courier entity on the ERD for each courier that is used by Crescent Printing and Copying.
 Customer Orders	The Customer Orders data store will store all information found in the Customer Orders entity on the ERD for each instance of a Customer Order.
 Customer Payments	The Customer Payments data store will store all information found in the Customer Payments entity on the ERD for each instance of a Customer Payment.
 Courier	The Courier external entity represents any of the main shipping companies (Fed Ex, UPS, etc.) that Crescent P&C can contract with for the shipment of finished customer orders.
 Courier	The Courier external entity represents any of the main shipping companies (Fed Ex, UPS, etc.) that Crescent P&C can contract with for the shipment of finished customer orders.
 Courier	The Courier external entity represents any of the main shipping companies (Fed Ex, UPS, etc.) that Crescent P&C

	can contract with for the shipment of finished customer orders.
 Customers	The Customers data store will store all information found in the Customer entity on the ERD. If the customer already exists in the data store, information will only be updated if necessary.
 Invoices	The Invoice data-store will store all information found in the Invoice entity on the ERD for each invoice that is created.
 Produce Management Reports	Produce management reports process aggregates data from all data-stores for on demand reporting, and for a "company Snapshot" report.
 Inventory Purchase Orders	The Inventory Purchase Orders Data-store will store all information found in the Inventory Purchase Order entity on the ERD for each instance of an inventory purchase order.
 Vendors	The Suppliers data-store will store all information found in the Supplier entity on the ERD for each supplier that Crescent Printing and Copying uses to supply products for the business.
 Inventory	The Inventory data-store will store all information found in the Inventory Item(s) entity on the ERD for each item in Crescent's inventory.
 Vendor	The Vendor External entity is any supplier carrying any items used in the course of business for Crescent P&C.
 Owner	Owner Entity represents the owner of Crescent Printing and Copying (Currently, Brad Vali). As much as possible, the owner should be removed from the low level business functions, and should fill a decision maker role based in data received from the system.
 Manage Inventory	The Manage Inventory Process handles the real-time tracking of inventory levels, and the processing of inventory purchases and related updating of inventory levels.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.

## Documentation

This is the Level 0 Diagram for Crescent Printing and Copying. For context, see decomposition diagram

## Details

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### Manage Customer Orders and Accounts

Name	Value
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Documentation	The Manage Customer Orders and Accounts process handles all incoming customer orders, regardless of order method, and updates the appropriate accounts and data-stores. It also produces management reports based on the data that is involved in this process.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 8:37:11 PM
Last Modified	May 3, 2011 10:17:12 PM
Id	1
Location	QuickBooks Premier and Point-of-Sale
Decomposed Diagram	 Crescent Printing and Copying Level 1a DFD

## Sub Diagrams

Name	Documentation
 Crescent Printing and Copying Level 1a DFD	

## Couriers

Name	Value
Documentation	The Couriers data-store will store all information found in the Courier entity on the ERD for each courier that is used by Crescent Printing and Copying.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 9:00:35 PM
Last Modified	Apr 29, 2011 4:23:26 PM
Type	Computerized Data
Id	5

## Customer Orders

Name	Value
Documentation	The Customer Orders data store will store all information found in the Customer Orders entity on the ERD for each instance of a Customer Order.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 8:59:59 PM
Last Modified	May 2, 2011 3:10:00 PM
Type	Computerized Data
Id	1

## Customer Payments

Name	Value
Documentation	The Customer Payments data store will store all information found in the Customer Payments entity on the ERD for each instance of a Customer Payment.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 9:00:38 PM
Last Modified	May 2, 2011 3:10:00 PM
Type	Computerized Data
Id	6

## Customers

Name	Value
Documentation	The Customers data store will store all information found in the Customer entity on the ERD. If the customer already exists in the data store, information will only be updated if necessary.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 9:00:09 PM
Last Modified	May 2, 2011 3:10:00 PM
Type	Computerized Data
Id	2

## Invoices

Name	Value
Documentation	The Invoice data-store will store all information found in the Invoice entity on the ERD for each invoice that is created.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 9:00:18 PM
Last Modified	May 2, 2011 3:10:00 PM
Type	Computerized Data
Id	3

## Produce Management Reports

Name	Value
Documentation	Produce management reports process aggregates data from all data-stores for on demand reporting, and for a "company Snapshot" report.
Author	Reyner Fouch
Create Date Time	May 2, 2011 2:54:06 PM
Last Modified	May 3, 2011 10:17:12 PM

Id	3
Location	QuickBooks Premier

## Inventory Purchase Orders

Name	Value
Documentation	The Inventory Purchase Orders Data-store will store all information found in the Inventory Purchase Order entity on the ERD for each instance of an inventory purchase order.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 9:00:44 PM
Last Modified	May 2, 2011 3:10:00 PM
Type	Computerized Data
Id	7

## Vendors

Name	Value
Documentation	The Suppliers data-store will store all information found in the Supplier entity on the ERD for each supplier that Crescent Printing and Copying uses to supply products for the business.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 9:00:27 PM
Last Modified	May 2, 2011 9:51:44 PM
Type	Computerized Data
Id	4

## Inventory

Name	Value
Documentation	The Inventory data-store will store all information found in the Inventory Item(s) entity on the ERD for each item in Crescent's inventory.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 9:00:23 PM
Last Modified	May 2, 2011 3:10:00 PM
Type	Computerized Data
Id	8

## Manage Inventory

Name	Value

Documentation	The Manage Inventory Process handles the real-time tracking of inventory levels, and the processing of inventory purchases and related updating of inventory levels.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 8:37:50 PM
Last Modified	May 3, 2011 10:17:12 PM
Id	2
Location	QuickBooks Premier and Point-of-Sale
Decomposed Diagram	 Crescent Printing and Copying Level 1b DFD

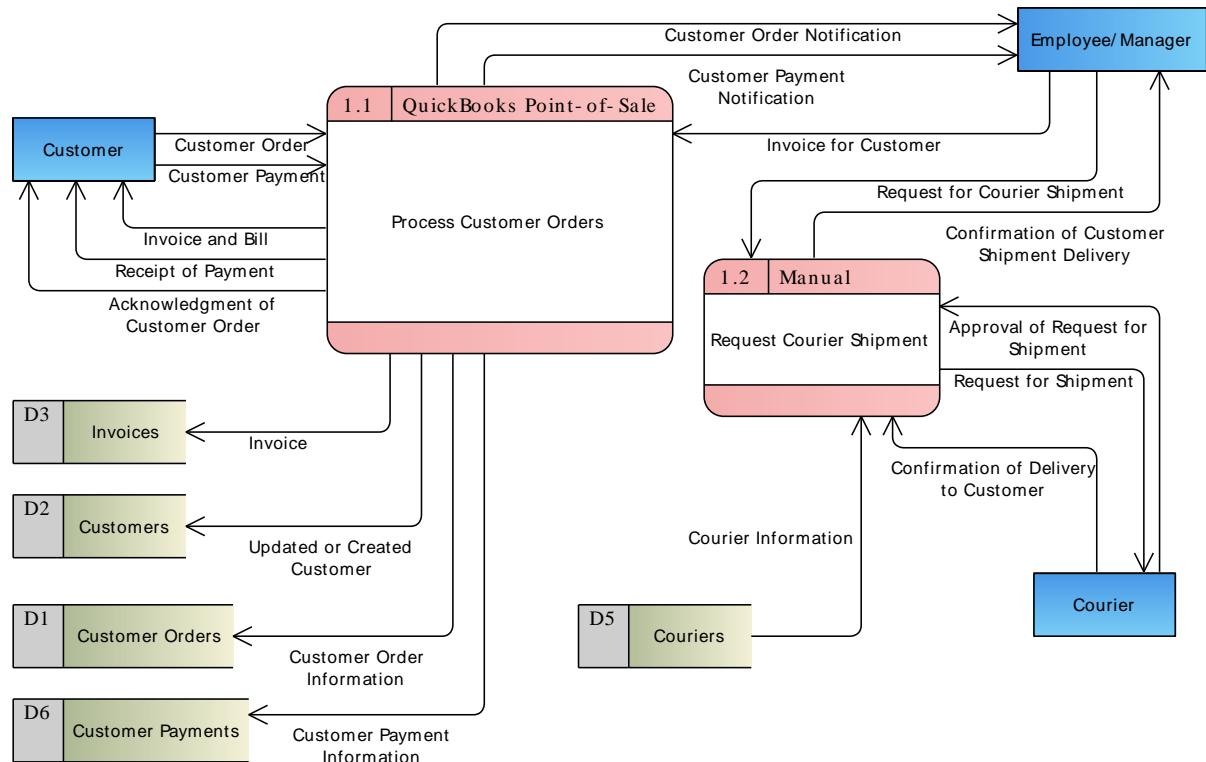
## Sub Diagrams

Name	Documentation
 Crescent Printing and Copying Level 1b DFD	



## Data Flow Diagram

# Crescent Printing and Copying Level 1a DFD



## Summary

Name	Documentation
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Process Customer Orders	The Process Customer Orders process handles all incoming customer orders, regardless of order method, distributes appropriate information to the Update Customer Accounts Process, communicates order information to the store manager. It automatically acknowledges a

	customer order via notification of order receipt, and distributes invoice and receipt of payment to customer.
 Customer	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.
 Customer	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.
 Customer	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.
 Customer	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.
 Customer	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.
 Request Courier Shipment	A request for courier Shipment may or may not be necessary for a Customer Order. A request for courier shipment is the process of a store manager utilizing the courier website and filling out a request for courier shipment. It can also be an email request, or a phone call to the courier service.
 Invoices	The Invoice data-store will store all information found in the Invoice entity on the ERD for each invoice that is created.
 Customers	The Customers data store will store all information found in the Customer entity on the ERD. If the customer already exists in the data store, information will only be updated if necessary.
 Courier	The Courier external entity represents any of the main shipping companies (Fed Ex, UPS, etc.) that Crescent P&C can contract with for the shipment of finished customer orders.
 Courier	The Courier external entity represents any of the main shipping companies (Fed Ex, UPS, etc.) that Crescent P&C can contract with for the shipment of finished customer orders.
 Courier	The Courier external entity represents any of the main shipping companies (Fed Ex, UPS, etc.) that Crescent P&C can contract with for the shipment of finished customer orders.
 Customer Orders	The Customer Orders data store will store all information found in the Customer Orders entity on the ERD for each instance of a Customer Order.
 Couriers	The Couriers data-store will store all information found in the Courier entity on the ERD for each courier that is used by Crescent Printing and Copying.
 Customer Payments	The Customer Payments data store will store all information found in the Customer Payments entity on the ERD for each instance of a Customer Payment.

## Details

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### Process Customer Orders

Name	Value
Documentation	The Process Customer Orders process handles all incoming customer orders, regardless of order method, distributes appropriate information to the Update Customer Accounts Process, communicates order information to the store manager. It automatically acknowledges a customer order via notification of order receipt, and distributes invoice and receipt of payment to customer.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 10:38:18 PM
Last Modified	May 3, 2011 10:19:55 PM
Id	1.1
Location	QuickBooks Point-of-Sale
Decomposed Diagram	 Crescent Printing and Copying Level 2 Diagram (Process Customer Orders)

## Sub Diagrams

Name	Documentation
 Crescent Printing and Copying Level 2 Diagram (Process Customer Orders)	

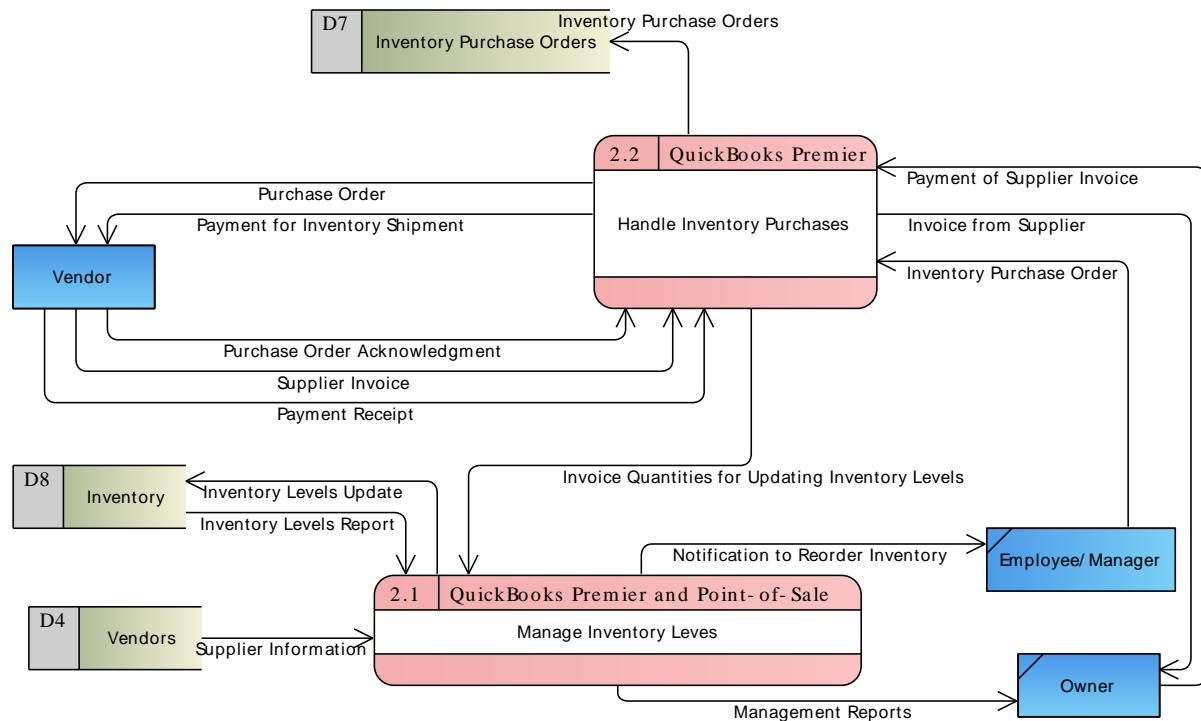
### Request Courier Shipment

Name	Value
Documentation	A request for courier Shipment may or may not be necessary for a Customer Order. A request for courier shipment is the process of a store manager utilizing the courier website and filling out a request for courier shipment. It can also be an email request, or a phone call to the courier service.
Author	Reyner Fouch
Create Date Time	Apr 25, 2011 10:37:35 AM
Last Modified	May 3, 2011 10:19:55 PM
Id	1.2
Location	Manual



## Data Flow Diagram

# Crescent Printing and Copying Level 1b DFD



## Summary

Name	Documentation
D7 Inventory Purchase Orders	The Inventory Purchase Orders Data-store will store all information found in the Inventory Purchase Order entity on the ERD for each instance of an inventory purchase order.
2.2 Handle Inventory Purchases	The Handle Inventory Purchases process facilitates the store manager ordering and the owner pay for an inventory purchase order. Purchase orders are created by the system, and either emailed to the supplier or the system sends it to the supplier via a linked software process. The payment is handled also via the system, as supplier can be selected and paid all via the system capabilities.
Vendor	The Vendor External entity is any supplier carrying any items used in the course of business for Crescent P&C.
Vendor	The Vendor External entity is any supplier carrying any items used in the course of business for Crescent P&C.
Vendor	The Vendor External entity is any supplier carrying any items used in the course of business for Crescent P&C.

 Vendor	The Vendor External entity is any supplier carrying any items used in the course of business for Crescent P&C.
 Vendor	The Vendor External entity is any supplier carrying any items used in the course of business for Crescent P&C.
 Inventory	The Inventory data-store will store all information found in the Inventory Item(s) entity on the ERD for each item in Crescent's inventory.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
 Manage Inventory Leves	The Manage Inventory Levels process retrieves inventory levels and updates inventory levels real time. When inventory levels reach a certain preset level, the process automatically notifies the store manager that it is time to reorder inventory. This process also generates management reports on inventory levels and trends to the business Owner.
 Vendors	The Suppliers data-store will store all information found in the Supplier entity on the ERD for each supplier that Crescent Printing and Copying uses to supply products for the business.
 Owner	Owner Entity represents the owner of Crescent Printing and Copying (Currently, Brad Vali). As much as possible, the owner should be removed from the low level business functions, and should fill a decision maker role based in data received from the system.
 Owner	Owner Entity represents the owner of Crescent Printing and Copying (Currently, Brad Vali). As much as possible, the owner should be removed from the low level business functions, and should fill a decision maker role based in data received from the system.
 Owner	Owner Entity represents the owner of Crescent Printing and Copying (Currently, Brad Vali). As much as possible, the owner should be removed from the low level business functions, and should fill a decision maker role based in data received from the system.

## Details

### Handle Inventory Purchases

Name	Value
	R.H. Smith School of Business

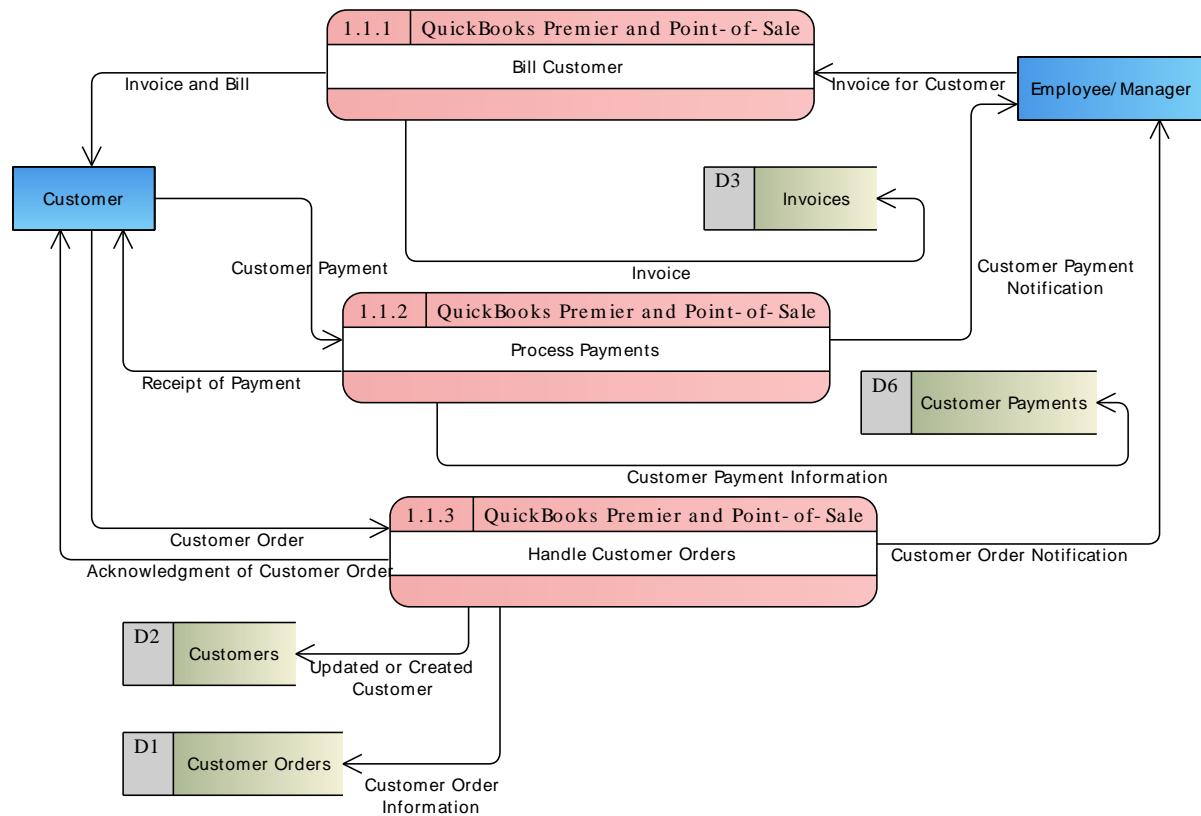
Documentation	The Handle Inventory Purchases process facilitates the store manager ordering and the owner pay for an inventory purchase order. Purchase orders are created by the system, and either emailed to the supplier or the system sends it to the supplier via a linked software process. The payment is handled also via the system, as supplier can be selected and paid all via the system capabilities.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 11:55:19 PM
Last Modified	May 3, 2011 10:19:55 PM
Id	2.2
Location	QuickBooks Premier

## Manage Inventory Leves

Name	Value
Documentation	The Manage Inventory Levels process retrieves inventory levels and updates inventory levels real time. When inventory levels reach a certain preset level, the process automatically notifies the store manager that it is time to reorder inventory. This process also generates management reports on inventory levels and trends to the business Owner.
Author	Reyner Fouch
Create Date Time	Apr 23, 2011 11:55:15 PM
Last Modified	May 3, 2011 10:19:55 PM
Id	2.1
Location	QuickBooks Premier and Point-of-Sale

### Data Flow Diagram

## Crescent Printing and Copying Level 2 Diagram (Process Customer Orders)



## Summary

Name	Documentation
Bill Customer	Billing a customer is the process of producing an invoice and sending a bill to the customer. It can also be as simple as verbally telling the customer how much the bill is, and the customer pays in the store.
Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
Employee/Manager	Employee/Manager represents the employee or manager hired to run the store in Bethesda.
Customer	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.

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 Customer	Customer External Entity Represents Any Customer making a purchase of any kind from Crescent Printing and Copying.
 Invoices	The Invoice data-store will store all information found in the Invoice entity on the ERD for each invoice that is created.
 Process Payments	This is the process of accepting a payment via QuickBooks POS system.
 Customer Payments	The Customer Payments data store will store all information found in the Customer Payments entity on the ERD for each instance of a Customer Payment.
 Handle Customer Orders	Handle Customer Orders process accepts orders from the customer, notifies the appropriate people, and stores the appropriate information.
 Customers	The Customers data store will store all information found in the Customer entity on the ERD. If the customer already exists in the data store, information will only be updated if necessary.
 Customer Orders	The Customer Orders data store will store all information found in the Customer Orders entity on the ERD for each instance of a Customer Order.

## Details

### Bill Customer

Name	Value
Documentation	Billing a customer is the process of producing an invoice and sending a bill to the customer. It can also be as simple as verbally telling the customer how much the bill is, and the customer pays in the store.
Author	Reyner Fouch
Create Date Time	Apr 29, 2011 4:17:00 PM
Last Modified	May 3, 2011 10:21:51 PM
Id	1.1.1
Location	QuickBooks Premier and Point-of-Sale

### Process Payments

Name	Value
Documentation	This is the process of accepting a payment via QuickBooks POS system.
Author	Reyner Fouch
Create Date Time	Apr 29, 2011 4:17:10 PM
Last Modified	May 3, 2011 10:21:51 PM
Id	1.1.2
Location	QuickBooks Premier and Point-of-Sale

## Handle Customer Orders

Name	Value
Documentation	Handle Customer Orders process accepts orders from the customer, notifies the appropriate people, and stores the appropriate information.
Author	Reyner Fouch
Create Date Time	Apr 29, 2011 4:17:16 PM
Last Modified	May 3, 2011 10:21:51 PM
Id	1.1.3
Location	QuickBooks Premier and Point-of-Sale



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