IFSM 461: Systems Analysis and Design

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| **Precision Electronic Parts, Inc.**  **Case Study** |  |

**Introduction**

This case study will be used for a series of staged assignments. It should be thoroughly read and understood prior to working on any of the assignments.

**Setting**

Precision Electronic Parts (PEP), Inc., is a small private business that has retained you to assist in the development of a new billing and payment system and associated processes.

**Background**

PEP is a small, private specialized electronics company in Kansas. For the past 20 years, it has manufactured a wide range of precision electronic components and replacement parts for medical equipment used in hospitals, doctor’s offices, and pharmacies. Last year, the company began building and delivering custom low voltage motors that reduced electricity costs and made older medical equipment more environmentally friendly. More recently, PEP has added a new line of more efficient low voltage motors that can be used in precision equipment outside the healthcare industry.

As a result, PEP is experiencing significant increases in orders for the motors. The manufacturing facility has been expanded, and the sales and marketing teams have been enlarged. All of this is straining the Ordering & Shipping Department and the Inventory Management Department, which have received no increase in personnel. They are meeting the challenge, but the Executive Leadership Team (the CEO, COO, CFO, and CIO) know that they are only treading water. The Finance Department, however, is getting further and further behind in their invoice, billing and payment processes. The Business Administration Department has stepped up to the task, but is at the breaking point.

**IT Steering Committee**

The IT Steering Committee (ITSC) at PEP is comprised of the Executive Leadership Team, the Senior Vice President and Vice President.

• Carolyn West is the Chief Executive Officer (CEO). She has been at the company for 11 years. Carolyn has a background working for and managing electronics companies. Like most CEOs, Carolyn is focused on the strategic and long-term business health of PEP. She chairs the IT Steering Committee. Carolyn and the committee members jointly make decisions about IT systems and major organizational business process changes.

• Tim Uduak, Jr. is the Chief Operating Officer (COO) and the son of founding partner Tim Uduak, Sr. Tim has been around the company since its inception in one capacity or another, except for four years of college and a 3-year break to startup his own company. When his startup failed, Tim came back to PEP as the SVP, Engineering & Manufacturing Operations. Last year, he was promoted to COO. While Tim has a strategic focus and is not technology averse, he prefers to solve business challenges with processes rather than information technology.

• Karl Manley is the Chief Financial Officer (CFO). He has been with the company for 9 years. Karl has a background in accounting and finance, and is a certified public accountant (CPA). He tends to focus on the company’s financial health to the exclusion of all other business concerns. While Karl is technology fluent, he resists new IT purchases unless there is a clear and direct connection made between the technology investment and improving the company’s financial profile. The Director, Accounts Receivable (Mary Winston) and the Director, Accounts Payable (Amy Dole) report to the CFO, and together are responsible for the financial operations of the business.

• Mark Temple is the Chief Information Officer (CIO) and head of the IT Department. He provides all IT services to PEP. Prior to being hired as the CIO, Mark was an IT manager at a large multi-national corporation responsible for providing IT services to their offices from the headquarters in Lincoln, Nebraska. While in that position, Mark participated in very structured IT processes, and developed an appreciation for working with the operational and management divisions to ensure success of IT projects. When he arrived at PEP, he advised the CEO, COO and CFO that an IT Steering Committee could help ensure they pursued the most beneficial IT projects. He is your primary point of contact for dealing with PEP in analyzing their processes and systems.

• Susan Black is the Senior Vice President (SVP), Engineering & Manufacturing Operations and is Tim’s replacement. Susan has worked for the company for 13 years. She started as a Senior Engineer, andafter six years was promoted to Director, Engineering, where she spearheaded the successful research and development of the low voltage motors. Susan is a champion of information technology as long as it is clearly focused on the core business.

• Jason Udo is the Vice President (VP), Business Administration. He oversees all departments, except Engineering& Manufacturing, Finance, and IT. His responsibilities include key support functions such as Sales, Marketing, Ordering & Shipping, Inventory, and Human Resources.

The ITSC has adopted the IT governance processes recommended by the CIO. They review proposals for IT investments and determine where to invest their limited funds. Each of the members has particular areas of interest, but all of them are focused on reducing the overall cost of running the business, increasing sales, and managing the cost of IT for the company. The ITSC has established a series of checkpoints at which they make go/no-go decisions on IT projects. At these decision points the following documents are reviewed by the ITSC:

* Preliminary Investigation Report – describes the problem/opportunity, identifies benefits of a new system, and reports on various aspects of feasibility of the proposed project.
* Requirements Specification – documents the requirements to be fulfilled by the proposed system.
* Systems Design Specification – translates the requirements into a logical design for the proposed system.
* Final System Report – compiles previous documents and lays out the way ahead if the project is approved and funded.

As each report is approved, work on the following step begins. This controls the amount of time and effort put into a request for a system. For example, if the Preliminary Investigation Report is not accepted by the ITSC, no further work is performed on the system proposal.

**Your Task**

You are an independent Business and IT Systems Analyst, specializing in developing IT solutions for small business needs. You have been contracted by the CIO to prepare the documentation required for the ITSC as they consider replacing the information systems associated with operations, business administration, and finance. Due to the backlog in the billing and payment processes, the ITSC wants to start by replacing the current customer billing and payment system and processes. However, the ITSC requires assurance that a new billing and payment system and processes can be interfaced with other new IT systems and updated business processes as needed. While there is currently no money in the budget allocated to replacing or upgrading these systems, the executives are committed to moving the company forward and improving PEP’s ability to manage its growing business efficiently and effectively.

**Your Activities**

After interviewing each member of the ITSC, you have collected the following information regarding the invoice, billing and payment processes and needs:

• Customer billing is handled by the Invoicing Department, which reports to the VP, Business

Administration.

• Customer payments are handled by the Accounts Receivable Department, which reports to the

CFO.

• Customer billing and payments are managed and recorded in an in-house developed Microsoft

Access based solution. The solution was developed by the IT Department and is housed on a server controlled and managed by the IT Department. The solution is updated on request from the Invoicing and Accounts Receivable Departments.

• The Sales Department works with Invoicing to establish new customer accounts and update and close existing accounts as needed.

• The Ordering & Shipping Department sends a monthly report to Invoicing where the products ordered and shipped and their codes are entered into the invoicing module. Pricing is computed based on the product codes and quantities entered.

• Invoicing is responsible for adding, updating, and maintaining the product codes and pricing used by the invoicing database on the 15th of each calendar month. The monthly report containing the updates is provided by the Marketing Department.

• Invoicing generates and mails customer bills on the last business day of each calendar month.

• Customer payments (lump sum) are due by the 10th of each calendar. Customers send the payments to Accounts Receivable. Accounts Receivable is responsible for updating customer account records when the payments are received.

• Invoicing is responsible for identifying accounts that are 30 days, 60 days or more overdue. These reports are sent to Accounts Receivable and Sales. Accounts Receivable handles all collections.

• There is a 2% fee added to all invoices that are 30 days or more overdue.

• Accounts Receivable notifies the Sales Department to assist with customers who are 60 days or more delinquent. Ordering & Shipping is also notified so that no further shipments are made until the outstanding invoice is paid in full. These situations are rare.

• Installation services are offered as a fixed price fee for small businesses (doctor’s offices, individually owned pharmacies, etc.). Larger installations (hospitals, chain pharmacies, pharmaceutical manufacturers, etc.) are billed on a pre-defined hourly rate.

• Volume discounts are not currently offered, but Marketing is planning to offer this discount within the next six (6) months because the low voltage motors are increasingly being ordered in quantities of five (5) or more. The following volume discounts will be offered:

o 5 or more: 2%

o 10 or more: 5%

o 25 or more: 10%

• Electronic invoicing via email is not currently offered, but Marketing and Invoicing plan to offer this feature within the next six (6) months.

• Electronic payment to a lockbox account is not currently offered, but Marketing and Accounts Receiving plan to offer this feature within the next six (6) months.

• The customer account data elements currently include:

o Customer Organization Name

o Customer Street Address

o Customer City

o Customer State

o Customer Zip Code + 4

o Primary Contact First Name

o Primary Contact Last Name

o Primary Contact Phone Number

o Primary Contact Email Address

o Secondary Contact First Name

o Secondary Contact Last Name

o Secondary Contact Phone Number

o Secondary Contact Email Address

o Products Ordered

o Product Ordered Date

o Products Shipped

o Product Ship Date

o Quantity

o Product Pricing

o Calculated Price (Calculated Field)

o Amount Due (Calculated Field)

o Amount Paid

o Date Paid

o Amount 30 Days Overdue (Calculated Field)

o Amount 60 Days Overdue (Calculated Field)

o Amount Greater Than 60 Days Overdue (Calculated Field)

o 2% Overdue Amount (Calculated Field)

• The customer account data elements required for near-term plans include:

o Quantity Discount (Calculated Field)

o Electronic Invoicing (Check Box)

o Electronic Payment (Check Box)

• Paper invoices currently contain the following data elements:

o Unique Serialized Invoice Number (System Generated?)

o Customer Organization Name

o Customer Street Address

o Customer City

o Customer State

o Customer Zip Code + 4

o Products Ordered

o Product Ordered Date

o Products Shipped

o Product Ship Date

o Quantity

o Product Pricing

o Calculated Price (Calculated Field)

o Amount Due (Calculated Field)

o Amount 30 Days Overdue (Calculated Field)

o Amount 60 Days Overdue (Calculated Field)

o Amount Greater Than 60 Days Overdue (Calculated Field)

o 2% Overdue Amount (Calculated Field)

• Paper invoice data points required for near-term plans include:

o Volume Discount (Calculated Field)

o Electronic Invoicing (Yes or No)

o Electronic Payment (Yes or No)

• When electronic invoices are offered, the same current and near-term data elements as shown above will be included.

You have also documented the following additional considerations:

• All customer, invoicing, and payment data must be secured, but accessible to those departments and personnel who have a need to know.

• PEP requires the ability to generate a receipt automatically at the time payments are recorded. The receipt will be sent electronically to the organization’s primary contact email address. The receipt must contain:

o Unique Serialized Invoice Number

o Customer Organization Name

o Customer Street Address

o Customer City

o Customer State

o Customer Zip Code + 4

o Amount Paid

o Date Paid

o Amount Outstanding

• The following company entities need to be able to generate their own reports as needed:

o COO

o CFO

o Director, Accounts Receivable

o Accounts Receivable Managers & Staff

o Director, Accounts Payable

o SVP, Engineering & Manufacturing Operations

o VP, Business Administration

o Invoicing Managers & Staff

o Sales Managers & Staff

o Marketing Managers & Staff

o Ordering & Shipping Managers & Staff

**Your Deliverables**

Your first task is to develop the Preliminary Investigation Report (PIR), which will examine the problems/opportunities, identify benefits of a new system, and report on various aspects of feasibility of such a project. You will draw upon the background and other information provided above to develop the PIR. If that Report is accepted by the ITSC, you will analyze and organize the requirements you have collected into a Requirements Specification. After receiving approval of the Requirements Specification, you will develop the Systems Design Specification, which will translate the requirements into a logical design of the proposed system. With a further decision to proceed, you will then develop the Final System Report, which will combine your previously developed documents and lay out the way ahead if the project is approved and funded.