

## SAMPLE SYSTEMS ANALYSIS AND DESIGN CASE

After completing a rather hectic term you decided to take your couple of weeks off to gather your thoughts and relax a bit. At a party you met an old friend you hadn't expected to see, Elvis, who had relatively recently purchased the assets and franchise rights, and assumed the lease of two men's clothing outlets in major malls in Vancouver. 'So you finally decided to exercise your entrepreneurial bent,' you stated. 'Good for you.' Elvis said he hoped it would be all he expected, but the operation seemed so straightforward when he was doing the financial planning and negotiating terms - the reality was a little more frightening. 'There is an opportunity to really make some money here and enjoy a nice return for hard work and creativity, but it is incredibly easy to get bogged down with day to day details. You can spend all your time firefighting and easily spend 6 or even 7 ten hour days per week working in the stores. I have big plans for these stores, and hope to eventually open more as time goes by. First, however, I have to get a smooth running model in the existing stores before expansion can even become a remote possibility.'

You mentioned that you had just survived a Systems Analysis and Design seminar, and that in the course you spent considerable time discussing the pros and cons of implementing information systems. Elvis got quite excited when you mentioned that you had been doing exercises where a business is examined and possible computer-based systems considered in terms of benefits and costs. He asked if you would come down to the store and give him a few pointers about these newly-acquired evaluative skills. Since your holidays were looking like an opportunity to wander around in the rain anyway, you offered to come and share some of your experiences and see if this stuff really works.

The next morning found you and Elvis wandering around the larger store. You asked if he utilized any computer based technology right now, and he suggested that the current system was about as manual as they come. Point-of-sale devices were 'dumb' cash registers, items were tagged manually, and accounting routines such as statement preparation and payroll were handled by a local accounting firm. 'There are lots of places to begin,' Elvis suggested, 'but I am worried about the potential impact of a large scale implementation of information systems. The purchase price really stretched my line of credit against the store assets, and the lease is a fixed monthly cost. If sales drop or expenses climb, I could be out of business in a few months.' You wisely advised that there are alternatives to the sudden automation of every process here, and a first step would be to take an inventory of key processes to determine where maximum benefit may be realized. 'Let me make some notes and ask a few questions,' you suggested, 'and then we could discuss possible system options.'

After observing operations in both stores and discussing several matters with Elvis and his staff, you were left with the following notes:

- ☞ the point-of-sale system was relatively straightforward. A customer would enter the store and be served by a sales representative. If clothing or accessories were chosen, they would go to the cash register. A bill would be written out by hand and, if no adjustments were necessary, entered into the cash register. The cash register could classify items (a simple sequence code: '1' was for suits or sportcoats, '2' for outerwear, '3' for shirts, and '4' for accessories such as ties, scarves, or belts). The cash register could also add PST and GST together, since all items in the store were typically subject to both taxes. If the clothing was for a child under sixteen, the PST would be subtracted out for each specific item by the cash register at the end of the transaction. Payments were made by cheque, cash, or major credit card.
- ☞ With a deposit of the larger of \$10 or 10% of the value of the item, any item in the store can be held for a customer for up to 90 days.
- ☞ If adjustments were necessary (hemming pants, or adjusting sleeves on a jacket), the cash register routine was the same (adjustments were free at the time of purchase) and an additional tag written up with the customer's name and telephone number, and a date promised from a schedule left daily by the tailor. When the customer returned on the promised date, the tag receipt was surrendered and the clothing retrieved from the back of the store. Elvis concentrated on service as a product differentiation strategy, so clothing was virtually always available on the promised date. Elvis discussed the next day's promises with the tailor each morning when alterations were picked up and delivered, and if a problem emerged it would be resolved the day before the promised date. This single act had led to considerable customer loyalty with the past owners of the store that Elvis wanted to continue.
- ☞ Elvis had a nice rapport with the customers when he was in the store, and he commented that many faces were becoming familiar. 'I suspect that about one-fifth of our clients are regular shoppers, but we don't have the data to support this yet.' He would eventually like to be able to get to know them so special promotions could be announced to his preferred customers by mail in advance.

- ☞ Payroll was relatively straightforward. Sales staff were paid on an hourly basis, and quarterly bonuses were paid based on individual store performance rather than commissions to the staff. Elvis had agreed with this procedure which had been implemented by the previous owner. ‘It keeps a competitive spirit between the two stores,’ he suggested, ‘but doesn’t motivate staff to get too anxious and push an individual sale.’ Calculations are handled by the accounting firm, as is the lease and payables.
- ☞ Orders were placed for inventory seasonally. ‘This,’ Elvis suggested, ‘is the art of managing the store. I have to be able to keep up with incoming fashions so I can make the bulk orders wisely and know when to offer a sale to unload stale merchandise. If something really takes off and I am quick to notice, I can usually place a second order from my suppliers and receive more inventory quickly. If I hesitate, however, the competing stores grab all the stock and it can take months to receive the reorder. By that time, something else is the hot seller, so the opportunity is lost.’
- ☞ If a customer sees an item they like but it is in a wrong size or color, a series of activities commences. First, a telephone call is immediately made to the other store requesting the desired item. If the item is in the other store, the customer can either elect to have it held and pick it up (a rare event, since one store is in North Vancouver and the other in Richmond), or arrangements can be made to have the product brought to the store in two business days. The tailor services both stores, so this service is provided at no charge to Elvis by the tailor. If the item is not available in the other store and is a big ticket item, such as a suit or topcoat, a second call is made to the supplier to see if the product can be delivered within a week. Beyond that time, experiences have shown, the sale is lost anyway. Apparently the suppliers are moving to an on-line inventory system where product availability could be checked by a computer over telephone lines. Small items, such as inexpensive accessories, are only subjected to the same procedures if the customer is recognized by the sales clerk as a ‘regular.’ Staff turnover is fairly low in the store, so this heuristic seems to work acceptably.

**SYSTEMS ANALYSIS QUESTIONS**

1. What benefits would a computerized system offer Elvis?
2. Identify the feasibility issues you see for this application. Which type(s) of feasibility would you expect to be concerned about with the implementation?
3. Describe the specific applications you would tackle if you decided to develop a computerized system to support this process. What order do you think would be appropriate to do these in (i.e. which one(s) first, and which ones at one time)? Itemize and explain your reasoning.
4. What implementation options exist here? What would be the key advantages and disadvantages of each possible implementation alternative?

**POSSIBLE TECHNIQUES QUESTIONS (would be listed on separate pages, you would get two or three)**

1. Draw a single (i.e. level 1 outlining the data flows and stores) Data Flow Diagram for the point of sale process you think would be optimal.
2. Draw a use-case diagram comparable to the Data Flow diagram outlined in the previous question.
3. Identify key entities you would model here and link them in an Entity-Relationship diagram.