

Exercise 3

Risk Management

Distribution: **20.12.2004**

Deadline: **19.01.2005**

Presentation: **24.01.2005**

Total points possible: 20

The homework should be done in pairs of two. Do not forget that the presentation slides are part of the solution.

Your Tasks: Below you find a description of the EPS 2004 Project. Your task is to identify, analyze and respond to at least 20 risks. You can use the provided template.

Points: For each risk you can earn one point: half a point if the risk has been correctly identified and analyzed, another half a point if the response to the risk is correct.

The solution can be dropped into the mailbox next to the entrance to the J-Floor hallway.

Do not forget to put your names, student-IDs and email addresses on your solution!

The box will be open from 17.01.2005 until the evening of 19.01.2005.

It can also be sent to:

`ipe@inf.ethz.ch`

as a PDF document.

Name: _____

Student-ID: _____

Email: _____

Name: _____

Student-ID: _____

Email: _____

Overview

The case study is a project to develop and roll out a store system for ExtraCheap Stores. A store system is the totality of software and hardware needed to operate a store.

ExtraCheap Stores is a recently created food retailing company formed by the amalgamation of three already-established supermarket chains – Polka, United, and GerFood (229 stores in total). The owners of ExtraCheap are a consortium of German and Swiss business executives. The consortium has a strategic plan prepared with the help of a leading firm of management consultants. Its plan is to establish an upmarket, profitable, supermarket chain and then to embark on an expansion program into the former Eastern Bloc and the former USSR. ExtraCheap has called its plan EPS 2004.

Electronic communication is absolutely key to the plan. ExtraCheap needs real-time stock and item movement data to link its store operations with its food distribution and manufacturing centers to enable stock replenishment and price management. The first phase of the plan is to refurbish the 229 acquired stores and install state-of-the-art computer systems.

ExtraCheap issued an invitation to tender to three equipment suppliers – Swiss AG, Electra, and Yoko GB – for the development of a store system and the supply and roll out of the store equipment to its 250 stores.

A store system is a system that provides electronic point of sale (EPS) and back-office applications. These two major units are commonly called front-end and back-office.

Polka Chain

Polka (Poland) has 27 stores and is not one of Swiss AG's accounts. It has a variety of computer equipment, most of it Russian. Its front-end is not EPS. The largest store has 15 checkout lanes. ExtraCheap intends to open 3 new stores with up to 30 lanes.

United Chain

United (U.K.) has 92 stores (the largest has 30 checkout lanes) and is also not one of Swiss AG's accounts (Yoko GB). It has an EPS front-end ready for replacement (registers 6-10 years old). Apparently, United is an experienced information technology user. ExtraCheap plans to build eight new stores, each with 50 checkout lanes.

For this chain, ExtraCheap plans to diversify into a variety of financial applications and customer loyalty programs. ExtraCheap intends to establish itself as a bank, offering facilities for deposit, withdrawal, savings, direct transfer, loans, and credit cards – all to be provided at a supermarket checkout lane.

GerFood Chain

GerFood (Germany) was overextended in its capital investment program, hence its vulnerability to takeover. It has been working for 2 years on a set of custom-built back-office applications. When these were operational, it intended to go to the second phase, which was to replace the EPS front-end. Its current registers are from Electra, varying in age from 4 to 7 years. The Technical Support Team of Swiss AG spent 3 months helping GerFood to specify the functions required of the new EPS checkout system. When the takeover took place all plans were shelved pending award of contract for the EPS 2004 equipment.

GerFood has 110 stores, the largest of which has 30 checkout lanes. ExtraCheap intends to build 10 new stores, each with 50 checkout lanes.

EPS 2004 Project

EPS 2004 has been split into five subprojects:

- Development of the systems to be installed in each store, known as the Store System Project
- Development of the systems to be installed in the server sites in Germany, U.K., and Poland
- Refurbishment of the existing 229 stores
- Building of 21 new stores
- Roll out of the store system to the 250 stores

The Store System Project and the Store Rollout Project are to be contracted out to the equipment supplier. Central site development and store refurbishment and build are to remain the responsibility of ExtraCheap.

Swiss AG

The Technical Support Team, located in Basel, has been aware of the EPS 2004 project for some time. GerFood and Swiss AG have been working on the development of a customized store system for almost 3 years. The back-office systems were well into their coding stage when the ExtraCheap takeover occurred. The front-end systems were at the specification stage. Since the takeover, all GerFood development projects have been shelved. Swiss AG has had no contact with the Polka and United chains.

Swiss AG's Response to the ITT

Swiss AG's current EPS front-end supermarket system is the WS99. It consists of both hardware and software and is a well-proven system with 7 years of field life. To propose the WS99 will require some modification to provide the functionality that ExtraCheap requires, but it can be done. The problem is that Swiss AG is on the verge of announcing a new range of supermarket EPS equipment (Marriot) and solution software (Orinoco). Announcement is scheduled for March (next month) with general availability currently targeted at November. It will be announced as the WS04. The WS04 has a better functionality fit to the ExtraCheap requirement and is better suited to multinational use, but it would still need some modification. The Technical Support Team plans to propose the WS04 system and a modified version of the new solution software. All the services and the machines are to be offered under a single, fixed-price systems integration agreement.

The proposed store system will comprise the following components:

- Supermarket Application (Orinoco): The system that manages the process of checkout, the checking out of a customer at the checkout lane. This function is to be provided by Swiss AG's Supermarket Application, modified as required for ExtraCheap.
- Store Application programs: A set of programs that perform the back-office applications that ExtraCheap requires to run the Store Application programs on a UNIX platform. (Most of these applications have already been developed by GerFood Stores.)

- Store Control program: The program that will perform cross-store management of the WS04 systems. It will need to be developed.

Store System Development Status

The Technical Support Team has had a three-person technical team working exclusively with GerFood on the design of the store system.

There is no formal statement of requirement from the users (store managers, store operations) for the front-end checkout applications, but a substantial amount of working documentation was produced by both Swiss AG and the GerFood team over a period of 3 months last year. The documentation largely relates to the modifications required to Swiss AG's WS99 Supermarket Application: 40 changes were identified. There is no other design documentation.

The Technical Support Team wants to subcontract the WS04 Supermarket Application modifications to a firm called DataWare Ltd. (DWL), who developed the WS99 Supermarket Application for Swiss AG's development laboratory. DWL has agreed in principle to make the modifications required.

There are no specifications for the changes needed to the Supermarket Application. The Technical Support Team has estimated the effort involved, and Swiss AG's Purchasing Division is in the process of negotiating an agreement with DWL.

The majority of the GerFood IT staff is engaged in the development of the Store Application programs. This work is currently at the coding stage.

Resource Estimates

Resource estimates for the development of the store system have been made by the Technical Support Team. In summary, the Technical Support Team estimated that four Swiss AG people would be required for the store system development: three C programmers for the Store Control Program, and a project manager. In addition, there would be the resources from DWL, which the Technical Support Team estimates at four more people. Duration was estimated as 21 weeks from award of contract.

Resource Status

The Swiss AG's department in charge of the project has two people who are currently free to do the programming job. Both are highly skilled C programmers, and one of them has just returned from a 12-month assignment in the United States, where he led a team of five people writing control code for store processors. The other is also a very experienced C programmer and team leader.

One of Swiss AG's best project managers has been assigned to act as the proposal manager and to lead the planning and contract preparation. If Swiss AG accepts the mission, he will be the project manager of the delivery project.

Statement of Requirement

ExtraCheap requires the supplier to provide a storewide checkout system and to install it in 250 stores. The supplier also is requested to provide, in each of the 250 stores, a store processing capability for ExtraCheap Store Applications.

Mandatories

ExtraCheap has the following mandatory requirements:

- The software in all stores, regardless of size, must be the same.
- The supplier must take responsibility for the integration of the store system and deliver a system that is operationally ready within 6 months of award of contract.
- The store installation program must be completed within 42 months of award of contract.

Checkout System

The system must be capable of handling an average throughput rate of 1,000 items per lane per hour for periods of up to 1 hour. (For a 50-lane store, the system must handle a volume of 50,000 items per hour for 1 hour.)

The system must be capable of sustaining continuous trading 7 days a week, 24 hours a day. In the event of component failure or removal of any component for servicing, the fallback and recovery provisions should allow trading to continue without interruption and without data loss.

Roll Out

The supplier must roll out the store system to 250 stores situated in three operating countries: Germany, Poland, and the United Kingdom.

Installation must commence in each country within 6 months of award of contract and must be complete within 42 months of award of contract. The supplier also must provide assistance on the store site for a period of 1 month after installation.

Penalties

The supplier shall pay ExtraCheap Stores in the event that any store fails to trade because of late installation of the store system, a sum of € 5,000 for each trading day lost.

Resource Estimates

This document was produced by the Technical Support Team as part of the ExtraCheap EPS 2004 proposal preparation. It includes the required resources.

Assumptions and Methodology

The human resources will be deployed on two types of task: program development and project management. The percentage distribution of effort is assumed to be as follows:

- **Program development 85%**
 - Specification 7%
 - Design 10%
 - Code and unit test 50%
 - System test 12%
 - Documentation 6%
- **Project management 15%**

The duration of each major task has been determined by first dividing the effort estimate by the estimated staffing and then dividing the result by the available hours per day from a full-time project member (this is estimated as 7 hours per day). For example:

Effort = 700 hours

Estimated staffing = 2 people, each available 7 hours per day

Duration = $700 / (2 \times 7) = 50$ workdays = 10 weeks (5 workdays per week).

Specifications

Producing the specification documents for the Supermarket Application modifications is estimated at 120 hours.

2 people, available 7 hours per day

Duration = $120 / (2 \times 7) = 9$ workdays = 2 weeks

Design, Code, and Unit Test – Store Application Programs/Store Control Program

Based on the estimated number of lines of code and a staff availability of 7 hours per day and 5 days per week, the total duration estimate is 10 weeks.

Design, Code, and Unit Test – Supermarket Application

Supermarket Application Modifications will be made to the new solution software currently referred to as Orinoco. The modifications will be made by the supplier DWL. Because Swiss AG has not yet formally specified the work to be done, DWL has declined to accept a fixed price for this work, but has offered to do the work under a time-and-materials contract. We have, therefore, procured the services of DWL based on our own estimates of the work to be done.

We had identified 40 modifications to the old WS99 Supermarket Application, but these did not include the on-line banking transactions now required by ExtraCheap. The new Orinoco Supermarket Applications has improved function and customization capability, so it is entirely possible that the 40 functional changes can be accommodated by the new software. It would be prudent to assume, however, that not all the functional modifications can be accommodated, so

we have assumed this will drop to 20. We will still have the on-line banking transactions, of which we know there are 7. The estimated duration is 10 weeks.

System Test

System test effort is assumed to be 24% of the code and unit-test effort (590 hours) plus an allowance for the testing of the ExtraCheap Store Application programs (assume 50 hours) minus 100 hours, which DWL is contracted to provide.

Documentation

Assumed to be 12% of code and unit-test effort (duration of 9 weeks).

Project Management

Assumed to be 30% of code and unit-test time (duration of 21 weeks).