(Note: this document was issued to all candidates prior to the examination as pre-reading material)

Development Options and Benefits for the *Singa-Manga* Website Upgrade Project

1.   Introduction

Singa-Manga Pte Ltd is a publishing house based in Singapore producing comics and magazines for the local youth market. Much of its sales are made by direct subscription by a small but dedicated clientele. The internal IT department currently supports a static website which advertises and supports ***Singa-Manga*** products. The new marketing director has proposed that a more extensive website be created that would not only promote ***Singa-Manga*** products, but also allow for direct online sales. This proposal for the ***Singa-Manga Website Upgrade Project*** has been accepted by the ***Singa-Manga*** board.

Singa-Manga has a medium sized IT department that develops and supports the IT facilities that underpin the operations of the company. The department **will** engage in large-scale software development when:

- No current solution (eg: an off-the-shelf package) exists.

- It is a strategic application.

- The application must satisfy ***Singa-Manga***-specific requirements that are not available in generic IT solutions.

- The IT department wishes to build up technical and/or domain skills associated with the new application.

However, for projects that do not meet any of the above criteria, the IT department will normally adopt one of the following approaches:

(1)   Subcontract the project to a vendor.

(2)   Buy and implement COTS (Commercial Off The Shelf) packages.

The IT department has completed an initial analysis of how best to develop the upgraded website and has identified two options for consideration:

OPTION 1:   Development of an in-house solution by the IT department, based on the .NET framework using C#.

OPTION 2:   Outsource the development to a vendor, ***Alkali Computer Systems***, who will deliver a complete end-to-end solution using the well known EXCELLENT e-commerce tool-set.
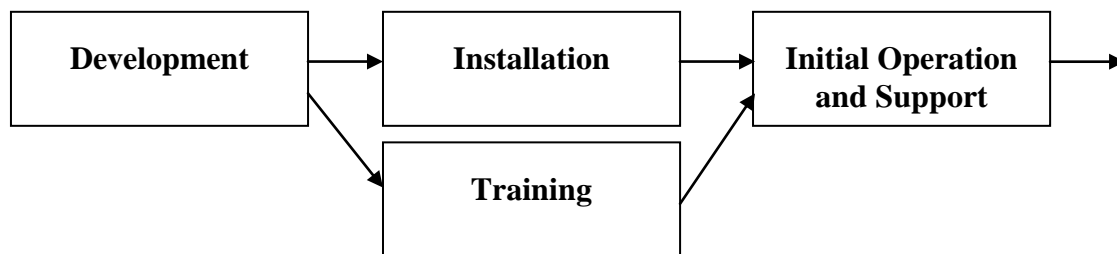
Details of the costs associated with each option are given in section 2, and the benefits that can be accrued from introducing the upgraded website are presented in section 3.

2. Cost Analysis

Details of the costs associated with each option are discussed in the following subsections.

2.1 Option 1: In-house Development

In this option, it is proposed that the *Singa-Manga* IT department develop the website upgrade system using C# and .NET components and libraries. The IT department has successfully completed several .NET C# projects. The IT director is very keen to build up the .NET C# capabilities of the department. The major phases of the project would be as follows:

The approach to be taken to estimate and schedule these phases is described in the following subsections.

2.1.1 Development Effort

The software would be developed by an internal development team. The size of the system is estimated to be 80 function points.

2.1.2 Development Schedule

The *Singa-Manga* IT department uses the equation below to calculate the calendar time required to carry out development projects:

Calendar time (months) = $1.07*[\text{Development effort (man-months)}]^{0.63}$

2.1.3 Development Cost

The development cost can be determined by applying the cost rates for the *Singa-Manga* IT department staff defined in section 2.3 to the development effort.

2.1.4 Installation and Training Costs

The following installation and training tasks would be performed during system implementation:

a. After software development is complete, the application software must be loaded on to the production environment and then production testing must be performed. This will take 22 man-days of a *Singa-Manga* IT department staff effort expended over 22 calendar days.

b. In parallel with the software installation, a 3 day user training course must be conducted by the *Singa-Manga* IT department. This will involve:

-   3 man-days of a *Singa-Manga* IT department staff member to write the user training material.

- 3 man-days of a ***Singa-Manga*** IT department staff member to conduct the training.
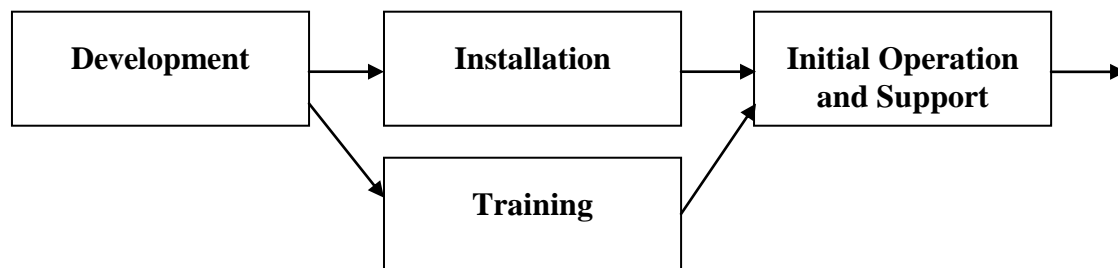- 3 man-days each of 10 users from the ***Singa-Manga*** marketing and sales department to attend the training.

Note: All training costs must be included in project costing.

2.1.5   Initial Operation, Maintenance and Support

The ***Singa-Manga*** IT department normally estimates the annual software maintenance cost to be 5% of the total development cost.

2.2   Option 2: Contracted Development

In this option, it is proposed that the ***Singa-Manga*** IT department contracts the website upgrade software development to a vendor; ***Alkali Computer Systems***. This vendor has been engaged by ***Singa-Manga*** on several previous projects and has been generally successful. The vendor is proposing to use the EXCELLENT e-commerce tool-set to upgrade the website. EXCELLENT has been used successfully by ***Alkali Computer Systems*** on ***Singa-Manga*** projects. The major phases of the project would be as follows:

The approach to be taken to estimate and schedule these phases is described in the following subsections.

2.2.1   Development Effort

The software would be developed by an ***Alkali Computer Systems*** project team using the EXCELLENT tool-set. Their senior consultant has agreed with the estimated size of the system of 80 function points.

2.2.2   Development Schedule

Alkali Computer Systems have agreed with ***Singa-Manga*** IT department that the equation below can be used to estimate the calendar time required to carry out this development project:

Calendar time (months) = $1.07*[\text{Development effort (man-months)}]^{0.63}$

2.2.3   Development Cost

The development cost can be determined by applying the cost rates for the ***Alkali Computer Systems*** consultants defined in section 2.3 to the development effort.

2.2.4   Installation and Training Costs

The following installation and training tasks would be performed during system implementation:

a.   After software development is complete, the application software must be loaded on to the production environment and then production testing must be performed. This will take 22 man-days of a *Singa-Manga* IT department staff effort expended over 22 calendar days.

b.   In parallel with the software installation, a 3 day user training course must be conducted by the *Alkali Computer Systems* project team. This will involve:

- A fixed price of S$5,000 to create training material and then conduct the 3 day training course.

- 3 man-days each of 10 users from the *Singa-Manga* marketing and sales department to attend the training.

    Note: All training costs must be included in project costing.

2.2.5   Initial Operation, Maintenance and Support

The cost of the EXCELLENT tool-set license renewal and maintenance /updates is S$20,000 per annum.

2.3   Overall Assumptions

a.   The average daily cost of a *Singa-Manga* IT department staff member is S$1,000.

b.   The average daily cost of a *Singa-Manga* marketing and sales department user is S$700.

c.   The average daily price of an *Alkali Computer Systems* project team member is S$2,500.

d.   Average number of working days in a month is 22.

e.   There are 12 months in a year.

3.   Benefits of the Website Upgrade Project

The benefits accrued by introducing the upgraded website will be based on the following estimates made by the new *Singa-Manga* Marketing Director:

a.   Currently there are 10,000 online customers for *Singa-Manga* products.

b.   There will be an average 10% increase in new customers each quarter due to the new website.

c.   Currently each customer spends an average of S$100 per quarter on *Singa-Manga* products, of which S$50 is profit.

Note: These benefits are only realized after the upgraded website goes live.

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