

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

# Development Options for the *AutomateHR* Project

## 1. Introduction

*United Medical Industries (UMI)* is a large medical electronics manufacturing company based in Singapore. It has a central office in Science Park 2, and production facilities in Tuas and Bintan. *UMI* makes extensive use of services and products provided by vendors and contractors. The company uses a mix of manual procedures and small software packages to carry out its human resources (HR) processes. Hence there is a corporate initiative, known as the *AutomateHR* project, to create an intranet application to allow the efficient management of the UMI HR processes.

The users of the system will be the staff of the HR department, and all managers within *UMI* who have staff reporting to them. *UMI* 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 if necessary, usually when:

- No current solution (eg: an off-the-shelf package) exists.
- It is a strategic application.
- The application must satisfy *UMI*-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, the IT department may also:

- Subcontract major software developments to vendors.
- Buy and implement COTS (Commercial Off The Shelf) packages.

The **IT department** has just completed an initial feasibility study, and two options have been identified for consideration:

**OPTION 1:** Development of an in-house solution by the *UMI* IT department.

**OPTION 2:** Outsource the development to a vendor, *Temasek Computer Systems Pte Ltd*, who will deliver a complete end-to-end system based on the well-known *Bandasoft People-Swift* package.

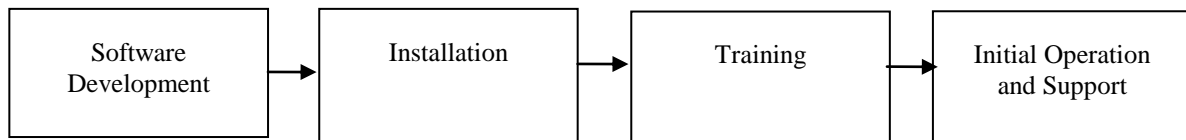
Details of the costs associated with each option are given in section 2, and the benefits that can be accrued from introducing *AutomateHR* are presented in section 3.

## 2. The Cost Benefit Analysis Study - Costs

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 **UMI** IT department develop the **AutomateHR** system using C# and .NET components and libraries. The IT department has already successfully engaged in one previous C#/.NET project. The IT director is very keen to build up the NET capabilities of his department. The major phases of the project are 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 a development team who have previously engaged in a C#/.NET project and are highly experienced. Currently, the size of the system is estimated to be 432 function points. It is planned to estimate the development effort for the **AutomateHR** project using the **Cost-By-Analogy** approach.

#### 2.1.2 Development Schedule

The **UMI** IT department have been using the equation below to calculate calendar time required to carry out development projects:

$$\text{Calendar time (months)} = 1.774 * [\text{Development effort (man-months)}]^{0.28}$$

#### 2.1.3 Development Cost

The development cost can be determined by applying the cost rates defined in section 2.3 to the development effort.

#### 2.1.4 Installation and Training Costs

There are several tasks to consider during implementation:

- a. After software development is complete, the application software must be loaded into the production environment and further production testing must be performed. This will take 10 man-days of **UMI** IT department staff effort expended over 10 calendar days.
- b. After the software has been installed, a 10 day user training course must be conducted by the **UMI** IT department. This will involve:
  - 5 man-days of a **UMI** IT employee writing the user training material.(this can be done in parallel with the software development described in section 2.1.1).
  - 10 man-days of a **UMI** IT employee giving the training.

## **APPENDIX C**

- 10 man-days each for 20 users attending the training.

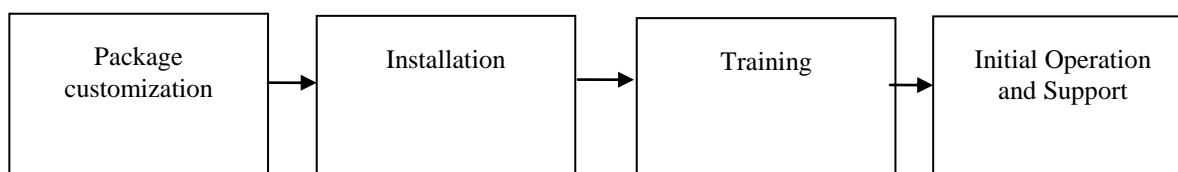
Note: **all** training costs must be included in the project costing.

### **2.1.5 Initial Operation, Maintenance and Support**

In the past, the **UMI** IT department has calculated annual software maintenance costs as 5% of the total development cost.

## **2.2 Option 2: Outsourced Development**

In this option, it is proposed that the **UMI** IT department subcontracts the **AutomateHR** software development to **Temasek Computer Systems Pte Ltd**. **Temasek** has been employed by **UMI** on several previous projects and has been generally successful. **Temasek** is proposing to procure and customize the **Bandasoft People-Swift** COTS package. This package has been used successfully in many other companies as an end-to-end HR system. The major phases of the project are as follows:



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

### **2.2.1 People-Swift Package License Cost**

The initial cost of the multi-site development license will be S\$200K.

### **2.2.2 Cost of Customization**

**Temasek** will customize the **People-Swift** package in order to meet the specific requirements of **UMI**:

- This will cost S\$100K.
- The work will take 2 calendar months to complete.

### **2.2.3 Installation and Training Costs**

There are several tasks to consider during implementation:

- a. After software development is complete, the application software must be loaded into the production environment and further production testing must be performed. This will take 10 man-days of **UMI** IT department staff effort expended over 10 calendar days.
- b. After the software has been installed, a 10-day user training course must be conducted by **Temasek**. This will involve:
  - A fixed price of S\$22K to be given access to the standard **People-Swift** training materials.

## **APPENDIX C**

- A fixed price of S\$10K for *Temasek* to customize the standard training materials for the *UMI* environment (this can be performed in parallel with the customization described in section 2.2.2).
- The actual training will be conducted by a member of *Temasek* staff and will cost S\$10K.
- 10 man-days each for 20 users attending the training.

Note: all training costs must be included in the project costing.

### **2.2.4 Project Management**

There will be a need for a member of the *UMI* staff to work full-time as the project manager throughout the package customization, Installation and Training phases of the project, overseeing the work performed by *Temasek Computer Systems Pte Ltd*.

### **2.2.5 Initial Operation, Maintenance and Support**

There will be an annual charge of S\$20K for license renewal, maintenance and support.

## **2.3 Overall Assumptions**

- a. Average daily cost of a *UMI* IT employee = S\$0.4K.
- b. Average daily cost of a *UMI* HR department/*AutomateHR* user = S\$0.3K.
- c. Average number of working days in a month = 20.
- d. There are 12 months in a year.

## **APPENDIX C**

### **3. Benefits of *Automate HR***

The benefits accrued by using the new *AutomateHR* system are as follows:

#### **3.1 Current Effort Expended on HR Processes**

Activity/Process	Effort Expended (in man-days) Per Year	
Payroll Management	3	per employee
Workforce Administration	3	per employee
Time and Attendance Management	2	per employee
Recruitment	5	per new recruit
Performance Management	3	per employee
Staff Promotion/Transfer and Succession Planning	5	per affected employee
Learning and Skills Development	4	per employee
Benefits and compensation	3	per employee

#### **3.2 Improvements Brought About by *AutomateHR***

Following discussions with the manager of the procurement department it is estimated there will be the following reductions in effort in each phase of procurement:

Activity/Process	% Reduction in Effort Expended
Payroll Management	20%
Workforce Administration	40%
Time and Attendance Management	30%
Recruitment	40%
Performance Management	30%
Staff Promotion/Transfer and Succession Planning	30%
Learning and Skills Development	40%
Benefits and compensation	30%

#### **3.3 Supporting Information**

- UMI* currently employs 200 staff.
- UMI* currently annually recruit on average 40 staff per year.
- About 20 *UMI* staff are promoted and/or transferred within the organization per year.
- You may assume no other savings are associated with *AutomateHR*.