**Case Study #: Mapping a System Specification**

**Embassy Martine LAN System**

**Facts:** Embassy Martine operations have grown in size over the last five years due to a friendly alliances with the U.S., William Republic’s agricultural cooperatives that sell their organic produce to U.S. markets, and two mining companies that have established their commercial relationships with a popular U.S. TV Jewelry Show that imports the rare Pacifica Blue Topaz, mined exclusively in William Republic, and is sold mounted in rings, earrings and pendants. As a result, more William Republic organic agricultural cooperatives and mining companies are joining the bandwagon to sell their exotic fruits and gems.

To create a balance of trade, U.S. Foreign Service Economic Officers are promoting U.S. exports to William Republic. With a noteworthy population of discerning gourmet vegans, Officers are focusing on fulfilling William Republic’s market demand for North Dakota world-class semolina flour pasta, protein-rich Georgia pecans, and native Minnesota wild rice.

The large population of well-educated William Republic college students are applying for visas to attend U.S. graduate programs in International IT Cyber Security and Management. A record number of William Republic citizens request visas to vacation in the U.S. rather than previously popular resorts in Thailand and Bali. Visa applications are at an all-time high and projections show they will triple over the next five years.

Six additional Foreign Service Officers will be posted next summer at Embassy Martine and 25 Foreign Service Nationals (FSN) will be hired. Office space has been located in a building near the Embassy to create new offices and work space as there is overcrowding in the embassy compound. The new office space will require a Local Area Network (LAN) subsystem to accommodate offices and workspace for some of the newly assigned Foreign Service Officers and hired FSNs, many Foreign Service Officers that have been located in the Embassy and many FSN employees that have worked in the main embassy building.

**Location:** Embassy Martine is located in the country in William Republic, a large island in the South Pacific. It boasts a solid economy.

**Objectives:**

* Demonstrate the process of moving from a System Requirement to a System Specification
* Provide practice in performing trade-off analyses and allocating requirements across the subsystems
* Provide practice in writing System Specifications

**Description of Exercise:** Your team will select components for the LAN subsystem and allocate the top level System Requirements to the selected components. You will also write the Systems Specification for the configuration items.

**Background:** A System Requirement has been stated for the Office Relocation Project as follows:

*3.1 The Local Area Network (LAN) shall allow a PC User t print a color graphic within 40 seconds.*

Your team must allocate the specified 40-second System Requirement to the individual components in the LAN Subsystem: the PC, the LAN, the File server, and the printer. Trade-off analyses must be done for cost, quality and performance for the alternative types of equipment available.

**Market Survey:** An investigation of file server technology indicates three general classes of machines:

**File Server Class Processing Time Cost**

1 Raid 16 seconds $1,700

2 (PC 3.0 ghz) 14 seconds $2,000

3 (PC 3.6 ghz) 10 seconds $2,500

**Three classes of printers are also identified:**

**Printer Class Print Time Cost**

1. Color Laser 12.5 seconds $2,800
2. Color Laser 10 seconds $3,000
3. Color Laser 8 seconds $3,800

**The LAN requires 5 seconds to process the graphic and the PC processing time depends on the user PC type. Three classes of PCs are identified:**

**PC Class Processing Time Cost**

1. PC Pentium 4 22 seconds $ 600
2. PC 3.0 ghz 15 seconds $1,000
3. PC 3.2 ghz 10 seconds $1,300

**Budget:** A budget of $200,000 has been allocated to the LAN (120 User PCs, 3 servers, and 3 LAN printers (one for each floor.) However, the Project Manager has a problem because two other subsystem budget estimates exceed the original estimates by a total of $50,000. You may consider or ignore this problem in deriving a solution as long as your solution meets budget and system requirements.

**The Challenge:** Your Team must determine what combination of equipment types will meet the User System Requirement of 40 seconds and stay within the specified budget. The total 40 seconds must be divided and allocated to the individual components of the subsystem depending on the selected alternatives. A rationale for the decisions must be developed and justified.

**Suggestions**: Prior to beginning the exercise, elect a Spokesperson to record the decisions of the groupt and to present the Team Report.

**Team Report:**

**Preparation:** Using the pre-formatted graph, write the following in the appropriate space:

* The rationale for your Team’s selection
* The System Specification for each Configuration Item (CI) in the subsystem in the format required for the System Specifications statements.

**Presentation:**  Each Team will report on their findings using the completed Team Report Form.

**Time Limit:**

* Perform Exercise and prepare Report: 30 minutes
* Presentation of Team Report: 15 minutes

**Lessons Learned:**

* How to develop Systems Specifications and the activities within the System Specification Phase that lead to the Project Specification Review
* How to allocate a System Requirement to subsystem, and components
* An understanding of the cost/quality system trade-off in many projects
* How trade-offs results affect the System Specifications

**Mapping the System Specification Team Report Form**

**Team Report**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Subsystem**  **Component** | **Selection** | **Performance**  **Allocation** | **No.** | **Cost** |
| **LAN** | N/A |  | **N/A** | **N/A** |
| **Printer** |  |  |  |  |
| **File Server** |  |  |  |  |
| **User PC** |  |  |  |  |
| **Total** |  |  |  |  |

**Rationale:**