**Transcripts**

EDC Concerns and Syn Computing Challenges

In this slide we will discuss the concerns raised by EDC, the challenges faced by Syn Computing, and the proposed resolution plan for each item of concern.

Our first item is the requirement for an industry standard Operating System (OS). Indeed Syn Computing acknowledges that this is an important item, however, it was originally mentioned that an in-house OS would possibly be used. The concern is that the use of a third-party OS would require more budget for the payment of license fees. Budget which is not available. Our suggestion is that either EDC finances another OS or Syn continues shipping the product with the in-house one. The current OS will perform all the requirements and can also be changed by any user after sale, because of the use of a standard CPU architecture.

With regards to an external keyboard. Currently there is a connector for such but it has been bi-passed via the internal hardware to the built-in keyboard. The bypass can be moved externally allowing a user to unplug the internal keyboard and plug in an external one when required.

The third item is RAM. Currently the system has four RAM chips soldered into the board preventing expansion. However, we have sourced an expansion module which will allow for further RAM to be added. We intend on inserting a 128KB and a 256KB RAM chip on the expansion board. Meeting the requirement of 512KB and allowing further expansion with another two slots available on the expansion module.

It is agreed that using non-standard drives may cause issues. Our proposal is to remove the proprietary floppy drive and replace it with a universal one. However, we intend on still supplying an internally designed cartridge drive as there is surplus stock of this item available at our stores. One issue of note was that the drives were causing interference with the system causing resets. The mitigation for this is to cover the drives with earthed EMI shields, which Syn intends on performing using a cost effective method.

Pertaining to communication interfaces; the current single RS422 interface will be expanded via the expansion module to facilitate a further port. Additionally, an SCSI interface will be populated on the board.

Our second to last item is the processor. The current processor is capable of fulfilling all the system requirements in terms of RAM, and speed. Nonetheless, the expansion module will allow another CPU to be added allowing additional processing power and RAM. Therefore, the option is available for a customer who requires a more performant system to add another CPU.

Lastly, covering GUI and mouse supportability. The current system can accommodate two connected devices simultaneously from the three choices of keyboard, mouse, and joystick. For example, during normal use a keyboard and mouse combination would be apt. When a user would like to play games then the mouse and keyboard can be disconnected, and two joysticks connected. With regard to using a GUI for user interaction, the current system can support this with the installed display ULA chip supporting a 512 by 256-pixel display. Additionally, the OS shipped with the device will support GUI functionality.

In closing, Syn Computing has tried to accommodate the various requirements, both from a business, home, and gaming or advanced user perspective. However, it is not possible or feasible to provide a computer with extremely high upgradability when only a small portion of the buyers will be using it for advanced purposes. This may push the bulk of the buyers away by adding complexity and higher purchase prices. We believe Syn Computing has found the sweet spot where most customers can use the system to meet their needs.

Cost Adjustments

In order for any project to run efficiently, we need to work within the boundaries of a budget. A sensible budget has an impact on any project’s success (IBM, 2019).

Whilst mapping out our project requirements and potential solutions, we realized we were being unrealistic and were constrained by our budget. Consequently, we had to abandon potential solutions, such as licensing external OS options from MS and MCC, as this would cost nearly £100 per unit, exceeding our budget. Additionally, their high-end hardware requirements were too costly. Furthermore, we decided that introducing an external keyboard provided minimal improvement was deemed a waste of our budget. Thus, we decided to focus on an OS GUI as this proved more valuable.

We have currently invested £324,000 to produce a total of 2,000 machines. This amount was used to cover the original hardware design, operating system development, and licensing. Taking this into account, we have the remaining £176,000 left to upgrade the system and execute the new project requirements.

We have decided to make use of the remaining budget to execute both hardware and software upgrades. The hardware upgrades involve adding expansion cards and components to maximize performance. This includes a new pro expansion card to support a more powerful 68 000 CPU, extending the memory to 512 Kilobytes (384KB additional), a 3.5-inch floppy drive, and SCSI and serial port cards. Altogether, this will cost approximately £60 per machine. The manufacturer also requires a £12 production fee per expansion card.

On the other hand, the remaining budget will then be used to execute software upgrades, such as developing the OS graphical user interface and the hardware currently supporting the OS. Considering we lack this expertise internally, we will be hiring a software architect and two engineers to deliver a quality prototype. Their services will cost approximately £30,000.

Evidently, we have meticulously allocated every pound in our adjusted plan.

In conclusion, the use of our remaining budget was specifically catered towards improving client satisfaction and delivering a better-quality product.

‌Timeline and Milestones

The original project schedule was planned for a duration of 13 months, and we are currently in the twelfth month. According to the original plan, the project should be nearing completion. Most of the development work has been completed, and we are now in the system testing phase. Manufacturing orders have been placed based on the original design.

However, due to new requirements and unforeseen issues, we have created a revised plan to ensure quality, feasibility, and timely delivery of the adjusted product to EDC. This plan considers the nature of various requirements and aims to maximize parallel task execution. Each task is detailed with specific resources for accuracy, manageability, and traceability (PMI, 2019).

The new plan for EDC's requirements is divided into several parts:

1. Fixing Original Potential Issues - We will address the system's random reset issue with an EMI shield. This fix will also benefit the new system, which includes a standard portable drive. We have assigned one hardware architect to design the solution and one hardware engineer for testing. We estimate this task will be completed in 2 weeks.

2. Hardware Upgrading

This is the core of the entire plan. We will use a pro expansion card to meet the new requirements. The card will be sourced from our supplier, and we have allocated 1 week to discuss specific details and gather necessary information for our development tasks.

Once we have the necessary hardware materials, we will immediately start a 1-week Proof of Concept (POC) focusing on solution feasibility. A review will be conducted in the following week. If all goes well, further detailed testing will be carried out to ensure the hardware design works as expected.

3. OS Support for Upgraded Hardware

As soon as the hardware architecture POC is completed, our software team will begin updating the OS to support the new pro expansion card. This task will take 2 weeks, with one software architect designing and one software engineer testing and fixing bugs. This will run parallel to the hardware review and testing, facilitating easy updates between the hardware and software teams.

4. OS GUI

This task is independent of the hardware changes and can start at the beginning. To expedite development, we will involve 2 software architects in the design stage and 4 software engineers in coding and testing. We expect this task to be completed in 10 weeks, which is faster than the MS or MCC options.

5. System Testing

During the OS GUI development, the hardware upgrade and OS driver should be ready. After the OS GUI is completed, we will conduct a 1-week system integration testing involving both hardware and software engineers.

We expect to present a rough system prototype in 6 weeks. After system testing, we will be able to provide a stable, high-level completion prototype for trial.

App Demo

The application starts off with a quick list of instructions on how to use the application. Quite useful for new users. And already you can see from the instructions the 3 parts of the application. Creating a Project, Editing or managing the project and checking the Total costs that is generated from the entries on the edit project part.

For a first-time usage of the system, it is important to first create a project since the purpose of the application is to manage projects. So, we start of by going to the Create new project menu on the left side here.

There are 2 parts of this page, an option to create a new project and another to delete at the bottom here. Let’s now create a new project. Let’s call it “Synupter Hardware Project”. And then let’s submit to save it.

Now let’s check the bottom here to be sure it’s there. And it is there as you can see.

Next thing we want to do is explore the edit existing project page which is next on our menu.

On the edit project page, you can view and select available projects, The selected project will affect the rest of the process on this page. What this means is that whatever you do on this page will affect the selected project so be sure to select the right project before proceeding. We have for this page the options to add, view, edit and delete Tasks, Materials and Staff, all on the same page.

Let’s now select our newly created project from the previous page which is the “Synupter Hardware Project”. And as we can see, there are no tasks added yet. Now let’s add a new task by filling out the options for Task Description, 3 estimations and a chosen estimation and finally allocated staff.

Following the form, Let’s create about 4 different tasks. For hard drive, network port, mouse, and keyboard

And of course, there is the option to delete or edit any of the items we have added.

Now that we have added our tasks, let’s go on to add materials. The materials have same format as the add task page. Option to view, edit, add, and delete.

We will go ahead and add about 3 materials by entering a description for the material, number of materials required and the cost for each one. Let’s do this for Cables, resistors, and disks for our hard drive.

Now let’s look at our staff page which is also the same format. Edit, Add, and delete options.

Let’s add 5 new staff. The form here requires a designation and rate. Let’s do entries for an electrical engineer, V&V engineer, Lead Engineer. Quality Control and Safety Engineer

Now that we are done entering all the required parts for our project, we will go and see the project cost by selecting project costs at the menu.

A bit like the previous page, we must select our project which is the “Synupter Hardware Project”, and then we see the results.

So, picking an example for each table,

Total Staff cost for Hard Drive for instance chosen to estimate of 1,400 with 2 staff working on V&V processes at a rate of 45 is a total of 63,000

And for materials we have cables with a need of 100 of them at a unit cost of 23 is giving us a total cost 2,300

And of course, we can also see the total cost for project which is 370,000 and total cost for materials which is 13,640. And so, we seem to be working with expensive professionals in this example.

Reference

IBM (2019). *Planning, budgeting and forecasting*. [online] Ibm.com. Available at: https://www.ibm.com/topics/planning-budgeting-and-forecasting.

Pmi.org. (2019). Fundamentals of scheduling & resource leveling. [online] Available at: https://www.pmi.org/learning/library/scheduling-resource-leveling-project-progression-8006.