LAPTOP REPLACEMENT PROPOSAL

Development Department C

Abstract

In this document, I propose a laptop upgrade for my department with a $55K budget. The best solution I found was to purchase upgraded MacBook Airs and multiple accessories to increase comfort and productivity. Throughout this proposal lies my research and reasoning to come to this decision.

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Contents

Importance

There are lot of benefits that an upgrade can provide for the team. Below is a list of the most complained about issues for our current technology.

Most Common Complaints

1. Screen size. The use of an external monitor (not provided) is all but required to work at a decent pace.
2. Internal storage. The relatively small disk on our current laptops limits us from taking on larger projects and slowly reduces compilation speed over time.
3. Processing speed. While this issue is generally more of a nitpick, during the debugging of large projects, the decently long compilation times can severely reduce the team's output.

As shown through the reasoning for each entry, there are substantial issues that the department faces daily. All these issues could massively improve with an upgrade.

Pros and Cons of Upgrading

Table 1 contains the main benefits and drawbacks of an upgrade.

Pros	Cons
A faster processor with higher ram allows for faster calculations, lowering time waiting for results.	Depending on the direction we take, it may take a while to get used to a new operating system, lowering productivity.
A larger screen size makes it easier to work.	We may need to upgrade of our other current equipment because newer laptops are not always compatible with older tech.
Higher storage allows my team to work or more and bigger projects with less worry and wasted time.	Setting up and transferring data can take a long time, lowering productivity.
New laptops increase employee happiness which leads to an increase in productivity and job satisfaction.	Upgrading entails a significant financial cost.

Table 1 - Pros and cons of upgrading to new laptops.

Device Candidates

In this section, I lay out the requirements for a candidate and briefly introduce the candidates I have selected.

Minimum System Requirements

Created with the use of an outside source, ***Table 2*** displays the baseline of requirements for a programing laptop. All candidates for this proposal must meet these requirements.

Category	Minimum system requirements
Processor	- 8 GB of ram. - 64-bit architecture. - Intel core i5 or i7 processor with a 3GHz frequency.
Screen	- 13 inches display to allow for sufficient viewing of multiple tabs. - Full HD 1920 x 1080 - Allows for blue light filter to reduce eye strain.
Accessory compatibility	- 2 USB ports (for mouse, external keyboard, etc.) - Ethernet viable. - HDMI port.
Storage	- 256 GB SSD.
Battery	- 5 hour unplugged battery life. - Needs to be able to last a day at work. Fast charging lets us overlook this somewhat.

Table 2 - Minimum system requirements. *Source*

Candidates

Figure 1 shows the three candidates labeled; all of them meet the requirement from ***Table 2***. There will be more details and a comparison in the next section, ***Device Research and Comparison.***

Acer Swift 3 Notebook | Lenovo ThinkPad X1 | MacBook Air

Figure 1 - The three laptop replacement candidates.

Device Research and Comparison

Table 3 compiles the specs of the three laptops into a similarly structured table to ***Table 2***. The winner(s) of each category have a green checkmark added.

Category	Acer Swift 3 Notebook (13.5”) $879.00	Lenovo ThinkPad X1 Carbon Gen 8 (14”) $1391.40*	MacBook Air (13”) $999.00
Processor	- 2.8 GHz i7-Core	- 1.6-4.2 GHz i5-Core. - 4-Core CPU.	- M1 chip allows for increased processing speed and battery efficiency. - 8-Core CPU. ✓
Screen	- 13.5-inch 2256 x 1504 IPS display.	- 14-inch 1920 x 1080 IPS display. - Anti-glare. - Largest screen of the candidates. ✓	- 13-inch - 2560 x 1600 retina display.
Accessory compatibility	- Meets all requirements from this section of ***Table 2***. ✓	- Meets all requirements from this section of ***Table 2***. ✓	- Will require additional adapters to meet any requirements from this section of ***Table 2***.
Storage	- 512 GB SSD, twice that of the other candidates. ✓	- 256 GB SSD.	- 256 GB SSD.
Battery	- 17.5 hours maximum battery life.	- 19.5-hour maximum battery life. - Rapid charging. ✓	- 11-hour maximum battery life.

Table 3 - Comparision of device base models. ***Acer source***, ***Levono source***, ***Macbook source***

*Price not redeemable in bulk

Summary of Comparison Table

- The Acer is solid in every category. It has a similar price point to the MacBook but does not feature any upgrades to fill out the budget.
- The ThinkPad wins in the most categories. However, the main issue is that the price is very high, even for the basic model.
- The MacBook wins only one category, but it can catch up in other categories with a variety of upgrades available when purchasing.

Department Survey

Figure 2 and ***Figure 3*** display the results of a survey that every member of my team filled out. The survey aimed to help me make an informed decision by indirectly answering the following questions.

Deciding Factor Questions about Laptops

- Are people going to be able to make good use of an Apple computer?
- Will the budget have to account for the MacBook accessories?
- Is screen size important enough to warrant external monitors?

With these questions in mind, the survey helped to fill out the full picture.

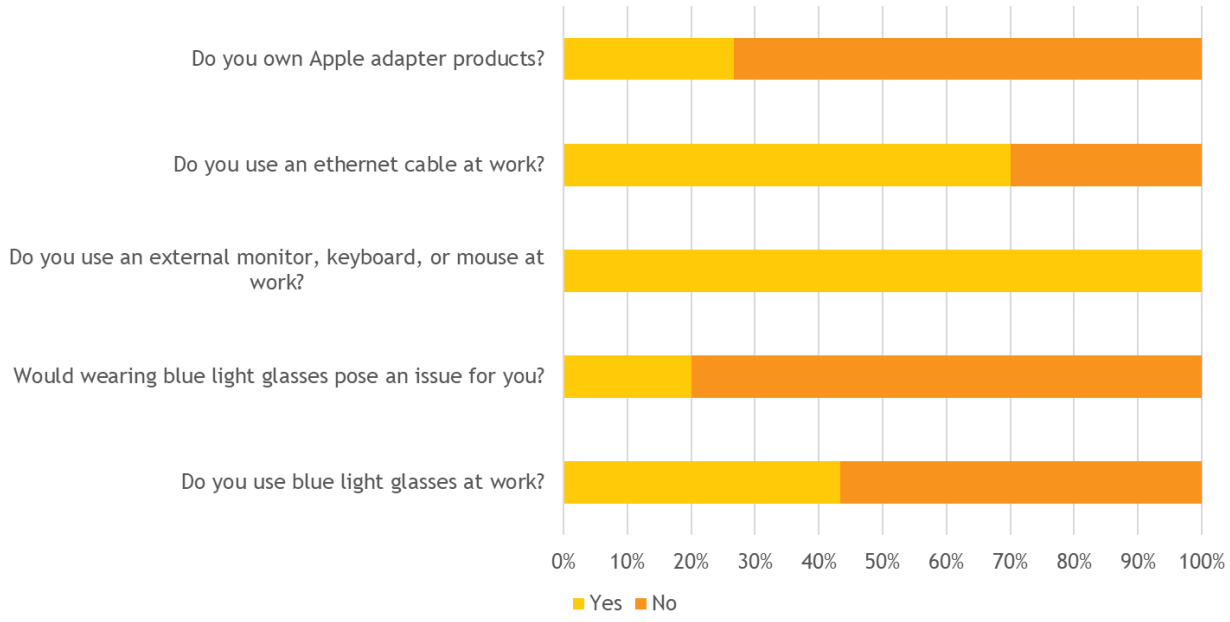

Figure 2 – Survey results, Yes/No section.

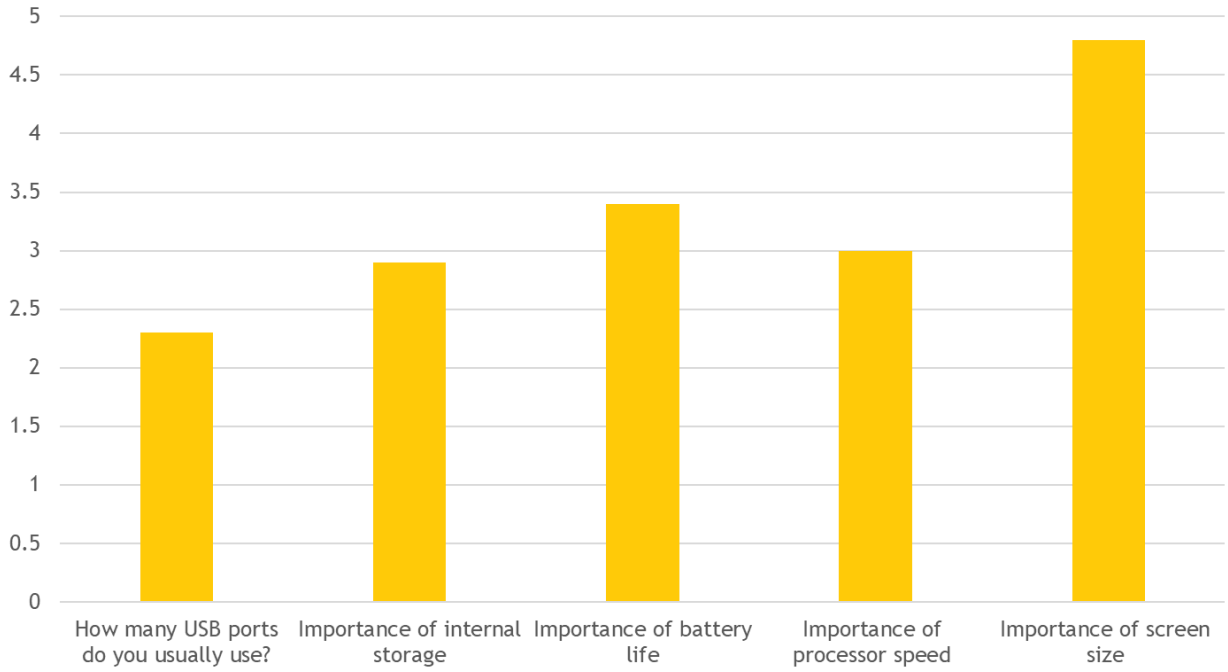

Figure 3 - Survey results, rate 1-5 section.

From these results, we know that screen size and accessory use are the two most important things to my team. Also, most of my team does not own apple adapters, which means the budget will have to compensate if we choose the MacBook. The final section, **Final Decision**, will elaborate on these results further and use the results to support my choice.

Final Decision

In this section, I will declare and justify my decision. Additionally, I will briefly list a few significantly different alternative routes.

My Decision

I decided to go with the Upgraded MacBook Air combined with a compatible mechanical keyboard, mouse, and monitor to address the laptops weaknesses. Below is a list of all the ways this choice addresses the issues posed by the current technology.

Reasons for Choosing the Upgraded MacBook

1. The M1 chip. This processing upgrade makes the MacBook superior to either other candidate in terms of processing power.
2. Medium Price point allows the addition of multiple accessories that are compatible with the MacBook.
    - The mouse will greatly increase workflow and reduce frustration caused by using a trackpad.
    - The keyboard is mechanical making it fast and enjoyable to use.
    - The monitor is 32” which provides an excellent amount of workspace for multiple tabs and windows.
3. The upgraded version comes with a 512 GB SSD, double what programmers recommend, so there will not be any memory issues.
4. Another feature of the upgraded MacBook is 16 GB of ram, further increasing the processing power.

With the upgrades and accessories, the MacBook well exceeds the minimum requirements. No one will have to bring in their gear anymore as we provide all of it. This decision provides everyone with a fast and complete workstation. It will both increase productivity and eliminate the pains cause by our current technology.

The total cost of the MacBooks and accessories is **$52,169.10.**

Alternative Options

Below I will briefly cover some alternatives.

Alternative options

1. Only upgrading laptops to Acer (**$26,370.00**).
    - Very low-cost relative to my decision.
    - Solid all around, contains a some of the features from the upgraded MacBooks.
    - Does not fix the issue of screen size.

    This would still be a major improvement over our current technology, but it leaves some glaring flaws (namely screen size).

2. Only upgrading to laptops to ThinkPad's (**$64,595.06**).
    - These are the best laptops by themselves.
    - Fixes all the issues somewhat.
    - Do not have to get used to a new operating system.
    - Requires a significant budget increase.