Tar Ball Parts Proposal

HARDWARE UPGRADE

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Project Plan Overview

Project Name: Hardware Upgrade

Department: IT

Project Manager: Steven Crosby and Laura MacNeil

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Prepared By

Document Owner(s)	Project/Organization Role
Steven Crosby	Project Manager
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☐High ☐Medium ☐Low

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Executive Summary

Tar Ball Parts Inc. started off ten years ago in a home office with five employees, and over the years has grown to become an established business with twenty-five employees. As the company expects this growth trend to continue, changes must be made to facilitate this expansion. This plan proposes three options for a hardware upgrade to allow users to run modern office software suites and to allot certain stations to be better optimized for design software. The three options presented are of varying levels of effort and cost (low, medium, and high) to allow the company to assess what option is best suited to their needs.

In this report we will go over why this is a justifiable upgrade path and include our recommendation for the option we support the most. This document also outlines the objectives for the project and what we hope to deliver with the upgrade. We also provide a feasibility analysis, assessment of limitations and assumptions for the upgrades within the Tar Ball Parts company environment.

Scope Statements

Project Justification

Most employee computers are obsolete to the point that they prevent innovation and growth. The unsupported operating systems present a security risk as they are long discontinued and are not receiving software updates. The computers set aside for CAD are at the level of what a basic user computer should be. The company needs an environment suited to handle the work the company provides, and to keep pace with business standards and market demand.

Project Objective

Option 1:

- Keeps all existing hardware in place.
- Installs modern Linux OS to allow longevity out of dated hardware.
- Users will have access to newer software developed on the Linux platform.
- Training will be provided for IT staff and office employees.

Option 2:

- Keep most existing hardware in place.
- Implement a Citrix software server solution to allow use of modern software.
- Existing users will be able to work with software from any station.
- IT staff will have access to Citrix support teams.

Option 3:

- Upgrade all hardware so that they can run modern software suites.
- Have dedicated high end machines better optimized for modern design software.
- Existing users will be able to seamlessly move to new technology environment.
- Systems will be easy to support for IT staff.

Project Product/Deliverables

Option 1:

- Keeps existing hardware in place.
- Only adds a minimum in new hardware.
- A modern and secure operating system environment.
- Ease of pushing software updates for IT staff.
- Modern alternatives to dated software.
- Documentation/ training for all staff.

Option 2:

- Keeps existing hardware in place.
- Focuses on creating a software first solution.
- Adds in some new hardware to accommodate software updates.
- Ease of pushing software updates for IT staff.
- Cloud backup solution through Citrix and Microsoft 365.
- Documentation for all staff.

Option 3:

- Discards or donates 20 antiquated systems.
- Focuses on creating a Hardware first solution.
- Repurposes best existing systems.
- Adds 30 modern hardware systems with a modern operating system.
- Ease of pushing software updates for IT.
- Cloud backup solution through Microsoft 365.
- Documentation for all staff.

Assumptions/Limitations

- IT will be able to complete server-side installations and upgrades by referring to documentation.
- Training will be vetted for any new systems being implemented.
- IT is familiar with the deployment and management of Windows and Linux operating systems.

Feasibility Analysis

Technical Feasibility

The technology is available and is not new so the price should remain stable as it is not a technology in its infancy. Having these upgraded machines would allow capable designers to fulfill their full potential during the design process increasing productivity. It is therefore very technically feasible for each of these options to be implemented, even the more expensive option selected technology that is readily available.

Managerial Feasibility

The management staff would have a minimal role during this upgrade project as it would mostly be handled by the IT staff or any other IT professionals hired for training or installation. A manager would mostly oversee the purchasing of equipment and the implementation of the various phases keeping the project on track for the timeline expected. As all options we provide mostly require the use of the IT staff for implementation, the role of the managers would stay the same with a focus on project management of the timeline.

Economic Feasibility

Regardless of which option is selected for the upgrade this project will generate economic benefits for Tar Ball Parts. Anywhere from 10-40% increase in profit and productivity depending on the option selected and the level of upgrading being implemented. See each cost analysis for specific returns on investments for each of the options outlined.

Financial Feasibility

Considering the level of capital required for an upgrade such as this, the three options we propose for this project all sit within the budget scope of 60k without having to consider any additional financial aid. A further breakdown of these finances and suggestions within the budget for each option is noted within the cost analysis section.

Cultural Feasibility

As the hardware and software being upgraded is just a more efficient form of the machines being used currently by the staff of Tar Ball Parts, there are no expected cultural issues to arise that may interfere with this project. The only consideration that may be done would relate to the timing of the year when employees are expected to implement this upgrade as to not conflict with any major holidays or religious events observed by staff members. Each option would have similar considerations except for the third option which would support recycling older technologies after they are replaced. Typically recycling or reusing old technology is preferred to simply discarding them, which is something most staff would be assumed to support.

Social Feasibility

This project would help create a framework that fosters innovation and growth. The IT staff would be provided an opportunity to learn and grow during the implementation of this project, possibly garnering more respect and admiration from co-workers. Designers who would be newly equipped with modern technologies would feel more empowered within their station and have the tools and environment to reach their full potential. The ease of use for new more intuitive technologies would reduce stress and frustration for other office workers. Managerial staff may see a decrease in responsibilities/workload and could have the possibility for retraining for other positions to fit into this new system.

Safety Feasibility

Upgraded systems which support currently serviced operating systems and software help reduce the risk for any security breach in the company's system. Data leaks or breaches can be very costly for companies and having regular updates and support for the systems being used will go a long way to offer protection. Implementing modern machines will also have a positive impact on the speed at which data can be backed up and stored in-case of any issues of corruption within the system. Data loss can be quite costly, and that information may never be retrievable without proper system data backups. Automating regular system maintenance to guard against these issues will be made easy after the completion of this project.

Political Feasibility

Although Tar Ball Parts provides services for a politically charged industry the company is not impacted as harshly. While considering the amount of working being done in the oil fields and the demand for the work Tar Ball Parts supplies is important the company with the upgraded systems could potentially pivot their services to another industrial sector, designing parts for aerospace or environmental energy projects as examples.

Environmental Feasibility

The only environmental impact the upgrade would have is the delivery of the products ordered to the company. Travel emissions for equipment as well as any in person training services purchased. These three options we propose would not require a larger office or any environmental changes to be done. Old technology can be recycled or donated to charities/libraries or schools who may have need of working computers. Having computers capable of video conferencing and faster and more efficient data transfers would allow more work to be conducted remotely, resulting in a smaller carbon footprint for business meetings and collaborative project work being done.

Market Feasibility

Implementing an upgraded system allows for Tar Ball Parts to compete at a high level offered previously which could give an edge to their market variability. Having systems that support innovation and the full potential of their designers the company can offer better pricing options if the new systems cut down the timeline for project creation, potentially increasing demand. Another option could be to pivot their focus if jobs are slowing down due to the political climate, they could compete for contracts in other sectors as mentioned above such as sustainable energy or aerospace technologies.

Option #1: Analysis

Cost Estimate

1.	Buy 20 PCs	*2855.80*
2.	Buy 20 HDMI monitors	*2479.80*
3.	Buy 20 keyboards	*2052.00*
4.	Buy mouse (20)	*259.80*
5.	Deploy [Linux distro] on all the PCs	*0.00*
6.	Install Libre Office	*0.00*
7.	Install FreeCAD	*0.00*
8.	Train for [Linux distro]	*0.00*
	TOTAL COST	***7,647.40***

Financial Analysis

Considering the above listed feasibility points this option for implementing a very minimal upgrade far below the project budget would still result in a 10% increase in revenue, profitability, and production. The amount of cost upfront reflects the percentage level of increase in the return for the company. The use of open-source free software and training will help generate the return increase with minimal expenditures.

Project Impact

Any upgrade would positively impact the social, and economic factors mentioned above but to varying degrees. This minimal upgrade would have a positive impact on managerial staff and general office staff socially, but not as big of an impact on IT or the designers. There will be value added if this option is selected but to a minimal degree.

Option #2: Analysis

Cost Estimate

1.	Buy 20 HDMI monitors	*2479.80*
2.	Buy 20 keyboards	*2052.00*
3.	Buy mouse (20)	*259.80*
4.	Buy 20 Citrix PC's	*2719.00*
5.	Buy Dell PowerEdge Server	*792.09*
6.	Server shipping	*83.99*
7.	Microsoft 365 Business Standard (Annual)	*192.00*
8.	AutoCAD (Three-years)	*6250.00*
	TOTAL COST	***14,828.68***

Financial Analysis

Option two for consideration, while accounting for the above listed feasibility points, implements a very modest upgrade well below the project budget maximum, and would allow for other upgrades at a later point or a larger investment in training if needed. Selecting this implementation would result in a 20% increase in revenue, profitability, and production. The amount of cost upfront reflects the percentage level of increase in the return for the company which for this would be a decent increase with the potential for more growth in the future.

Project Impact

The second approach to the company's hardware and software upgrade would have a positive impact on all staff members including general office staff, IT, designers, and management. This option results in a decent increase in return for the investment made with a lot of potential and financial room for growth in the future. Having a modest approach could be beneficial if the company is looking for an upgrade with a very reasonable budget and has a solution that produces positive results.

Option #3: Analysis

Cost Estimate

1.	Buy 30 HDMI monitors	*3719.70*
2.	Buy 10 PCs for AutoCAD	*26000.00*
3.	Windows 10 Enterprise	*1680.00*
4.	Upgrade RAM in all PCs	*6718.80*
5.	Buy 30 new PCs	*11268.60*
6.	Buy 30 Display to HDMI converters	*487.32*
7.	Microsoft 365 Business Standard (Annual)	*192.00*
8.	AutoCAD (Three-years)	*6250.00*
	TOTAL COST	***56,316.42***

Financial Analysis

Option three which again accounts for the above listed feasibility points, implements a maximal approach, sitting just below the maximum project budget. This large investment would result in an incredible 40% increase in revenue, profitability, and production. The amount of cost upfront reflects the percentage level of increase in the return for the company which in this case appears to be well worth the investment and creates many new opportunities for competition in the current or new markets as well as having a positive impact within the company's social environment.

Project Impact

Upgrading the current system with this maximal approach would result in greater impacts socially, economically, and regarding market feasibility. The final and maximal approach to the company's hardware and software upgrade would have a positive impact on most staff members including general office staff, IT, and designers. There is however the point to consider that with this upgrade there will be less demand for management staff and so offering retraining for those members of staff should be considered.

Conclusions and Recommendation

Keeping in mind the financial climate of Tar Ball Parts Inc., our recommendation is to implement option three which consists of the full revamp of every current machine while also staying within the project budget. This option puts Tar Ball Gear in a competitive market position without putting any additional financial stress on the company and eases the workload and stress on staff during their daily duties. This option also allows for ease of maintenance moving forward and encompasses the growth potential of the company for the next five years.

Appendix:

Cited Costs:

Option 1

Buy 20 PC's
Buy 20 HDMI monitors
Buy 20 keyboards
Buy mouse (20)
Deploy [Linux distro]
Install Libre Office
Install FreeCAD
Train for [Linux distro]

Option 2

Buy 20 Citrix PCs
Buy 20 HDMI monitors
Buy 20 keyboards
Buy mouse (20)
Citrix training
Citrix
Dell PowerEdge Server R710 LFF 2x X5650 Six Core 2.66Ghz 12GB 6x 1TB Perc 6/i
Microsoft 365 Business Standard
AutoCAD: three years access
Deploy office 365 on Citrix
Other notes/Questions/Citrix requirements

Option 3

Buy 10 AutoCAD systems
Buy 30 new PC's
AutoCAD three years access
Microsoft 365 Business Standard
Windows 10 Enterprise subscription

Project Plan Worksheet:

1. ***What is the project?***
   - Hardware and software upgrade for Tar Ball Parts Inc. to update current environment and allow for company growth encompassing the next five years.

2. ***Why should the project be done?***
   Without an update in their work environment:
   - Leaves a security risk from machines that no longer receive software updates.
   - The company will lack the ability to foster innovation.
   - The lack of equipment to deal with company growth at the current rate would result in delayed growth/expansion.

3. ***Was there any system previous to this one?***
   - Hardware and software is available but is extremely outdated compared to business standards.
   - Both regular office machines and specific design machines are already in place within the company but outdated

4. ***Are there any COTS (Commercial Off-The-Shelf) systems available that are similar to the newly proposed system?***
   - Due to extent of the upgrades needed for both the hardware and software there are no current off-the-shelf solution available.
   - Closest option to off the shelf system would be the business suites and operating systems/training we suggest.

5. ***What technologies will be incorporated into the project and where?***
   - Depending on the option selected it would be a mix of the following:
   - Linux distribution or Windows for operating systems.
   - Other software would include Citrix, Office365, Libra Office, and/or FreeCAD/AutoCAD.

6. ***Is there any research that must be done before the development can begin?***
   - For the options we supply there is plenty of documentation and support for the operating systems and the software we suggest.
   - No other research would be needed for the development/updating to commence.

7. ***Is there any testing that must be done before the development can begin?***
   - This project will not require testing as the options we suggest will implement whole new systems with hardware and software designed for it specifically. Training would be done for the option chosen and the only testing would be of the user competence level for the new system.

8. ***Who will be involved and what will they do?***
   - The current IT staff would be able to setup and install the physical machines as well as go through training to install the operating systems and software needed for each of the computers needed. Optimizing a smaller selection for design purposes.
   - Managerial staff and finance would oversee the budget and ordering of the equipment needed for the upgrade as well as the purchase of any training needed for the IT or general office staff.
   - If needed, temporary IT help could be hired to help speed up the installation of the computers.

9. What resources are needed?

- Financial resources.
- IT experience for setup/installation.
- IT expertise for training – can be purchased.
- Time. Installation of computers can happen while staff are using current machines but the training on the new operating systems and software will take away from regular business operations.

10. What assumptions must be made?

- Current IT generalists on staff are comfortable with installation of new computers encompassing both hardware and software.
- Current IT staff would be trained well enough to handle troubleshooting issues that may arise during upgrade – could be helped with the purchase of expertise trainers during this period.
- IT will be able to complete server-side installations and upgrades by referring to documentation.
- Training will be vetted for any new systems being implemented.
- IT is familiar with the deployment and management of Windows and Linux operating systems.

11. Will any training be required for the IT staff implementing the solution(s) or management?

- With the above assumptions being made, there should only a minimal amount of training needed for the IT staff to implement these possible solutions.

12. What are the economic, social, environmental, and political impacts of the need?

- Economic: Regardless of which option is selected for the upgrade this project will generate economic benefits for Tar Ball Parts. Anywhere from 10-40% increase in profit and productivity depending on the option selected and the level of upgrading being implemented.
- Social: This project would help create a framework that fosters innovation and growth. The IT staff would be provided an opportunity to learn and grow during the implementation of this project, possibly garnering more respect and admiration from co-workers. Designers who would be newly equipped with modern technologies would feel more empowered within their station and have the tools and environment to reach their full potential. The ease of use for new more intuitive technologies would reduce stress and frustration for other office workers. Managerial staff may see a decrease in responsibilities/workload and could have the possibility for retraining for other positions to fit into this new system.
- Environmental: The only environmental impact the upgrade would have is the delivery of the products ordered to the company. Travel emissions for equipment as well as any in person training services purchased. These three options we propose would not require a larger office or any environmental changes to be done. Old technology can be recycled or donated to charities/libraries or schools who may have need of working computers. Having computers capable of video conferencing and faster and more efficient data transfers would allow more work to be conducted remotely, resulting in a smaller carbon footprint for business meetings and collaborative project work being done.
- Political: Although Tar Ball Parts provides services for a politically charged industry the company is not impacted as harshly. While considering the amount of working being done in the oil fields and the demand for the work Tar Ball Parts supplies is important the company with the upgraded systems could potentially pivot their services to another industrial sector, designing parts for aerospace or environmental energy projects as examples.

13. Are there any limitations that must be accounted for? (People working, overtime, space, etc.)

- Depending on how the company would like to implement the option they select there can be some limitations to consider including:
- Setting up new machines while staff are continuing with work on older machines.

- Overtime if setup would be done outside of business hours to prevent the above limitation.
- Revenue loss if business closes during the upgrading of their systems.
- Storage space for all the new equipment being purchased and the storage of old machines to be recycled.

14. Do you foresee any problems that might occur during the initial phases of the project?

- There will always be a bit of a learning curve for anyone getting introduced to a new system. With the help of current IT staff and expertise training/documentation available, it should help alleviate major pains while staff adjusts to the new system workflow.
- Delays in delivery of equipment could impact the timeline of implementing the upgrade.

15. What are the outcomes of the project?

- Updated equipment will allow the company to keep pace with the fantastic growth rate and stay within industry standards for the next five years.
- Having advanced and dedicated machines for design will foster an environment for innovation.
- Smooths transition to any new updates in technologies past the scope of this project.
- Provides higher level of security for information within the system by having software that is serviced via regular updates.

16. What are the phases/milestones of the project? (list and describe them)

- Phase 1: Assess and order equipment. Data readiness process begins, backing up and preparing for data migration to new systems.
- Phase 2: Begin installation of machines in office while simultaneously beginning training for staff on new software via documentation, presentations, and demonstrations.
- Phase 3: After installation of equipment is completed, install, and update all operating systems and software needed for each computer. This should also include the scheduled automation for any new updates to auto-install outside of business hours to keep systems current and prevent interference from staff members.
- Phase 4: Test the staff on the basics for the system use and provide support as needed.

17. Estimate how long the phases will take.

- The following time estimates are a generous approximation, depending on which option is implemented times may vary.
- Phase 1: Dependent on delivery times for each item, approximately anywhere from 1-6 weeks. Any important data that is not online should be backed up and be readied to migrate to new systems after installation, depending on the amount of data/files transferred this could be a few hours or a few days.
- Phase 2: Approximately a half hour for each old computer station to be removed, and for the new computer unpacking and plugging in each piece of equipment. Number of machines to be taken down is 30 which is about 15 hours work plus the setup of new computers not yet needed (for growth) would equal seven more hours work.
- Phase 3: Approximately an hour for each operating system installation. For 30 machines currently needed this would be 30 hours, for the total machines ordered it would be 44 hours.
- Phase 4: Staff testing for basic system use could vary depending on the comfort level staff have with the new systems. Approximately 30 minutes to 1 hour for basic tasks and further explanations if needed.

18. How will you know when the project is completed?

- After the purchase and installation of all machines are completed and training for each staff member has finished, the system will be in place completely and the project will cover the company growth for the next five years. With these objectives completed the project will come to a close.

19. Will the need still exist by the time the project is completed?

- After the initial purchase, install, and training has been completed the company would be equipped to deal with growth for the next five years. Very little will need to be done to upkeep the new system, only occasional updates which could be set to run after business hours to provide updated security and functionality for the users without impacting the working hours for staff.

20. What are the alternate means of satisfying the need?

- The alternate to implementing an upgrade would be to outsource the work the current company systems are not able to handle. This creates a risk putting Tar Ball Parts in the place of a middleman with potential to be cut out of the loop if clients want a direct source to potentially cut costs. Another variable to consider are the amount of contractors available for such a specific/niche type of work, the options for the company to hire/chose from may be very limited.

21. Is any training required for users as a result of this project?

- Some training for IT staff may be needed for dealing with the system troubleshooting when the system is implemented.
- Regular staff will need training on the new operating system and software installed.

22. Are there any time sensitivity, blackout periods or down-time issues that may affect the testing/installation of any proposed solutions?

- Depending on how the company would like to organize the installation for this project, it may require either overtime for some staff members to help install the new machines and take down the old. This could also be done during a regular business week but may require the downtime/blackout period to be stated to make the install go faster and smooth. During this time regular staff could also be attending training sessions to learn more about the new systems so they will feel more comfortable when working at their new station setups.

23. What testing needs to be performed and when would this happen?

- Some basic testing for user competency could be implemented to ensure staff has a solid grasp of the basics for using their new system, this would help alleviate most issues for the few IT staff later on dealing with troubleshooting issues.
- The hardware and software selected for each of the options works well with one another so testing them would not be necessary as they were designed for each other and no major issues should arise.