**CS 3377 - Assignment 1**

1. **A screenshot of a cell phone

   Description automatically generatedUsing the table below, consider all the activities that must go into providing access control on any one typical access controlled door. Determine for each activity whether the activity is value add, non-value add, or a waste activity. Each activity can only be one of these.**
2. **Based upon your assessment of the tasks, calculate:**
3. **The cost of putting access control on one door**

The total cost of putting access control on one door is $5950.

1. **The % of tasks that add value (value add # / 39 \*100%)**

Percent of tasks that add value = 16/39 \* 100

= 41.03%

1. **The % of total cost that is value add**

Percent of total cost that is value add = 4080/5950 \* 100

= 68.57%

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1. **The % of total cost that is support activities**

Percent of total cost that is support activities = 555/5950 \* 100

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Description automatically generated = 9.33%

1. **The % of total cost that is waste**

Percent of total cost that is waste = 1515/5950 \* 100

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Description automatically generated= 25.46%

1. **The % of total costs that are software development related**

Percent of total cost that us software development related = 1135/5950 \* 100

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Description automatically generated = 19.08%

1. **The % of development costs that are waste**

Percent of development cost that are waste = 125/1135 \*100

= 11.01%

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1. What conclusion can you draw regarding how much waste there is in construction and the value of applying LEAN strategies in the development of construction software?

LEAN strategies are used in manufacturing and production to ensure that any expenditure used towards a project is not wasteful and is used for the sole purpose of creation of value. By implementing the practices outlined by LEAN, projects are able to preserve value with less work. According to my analysis, a large portion of the total cost for developing the construction software were wasteful. About 25% of total cost incurred were identified as waste. This portion can be allocated towards activities during development that add value in order to maximize efficiency.

1. You looked at the value of each activity in automating one door. Analyze each activity description in the table again. For each activity, suggest how you might be able to maximize value and minimize waste if you install access control on 99 more doors.

|  |  |
| --- | --- |
| **Activity** | **How to maximize value and minimize waste** |
| Attend weekly 1 hr site co-ordination meetings for one year | Cut down meeting time and frequency and use the extra time more efficiently. |
| Attend the meeting to discuss how to ensure no door becomes a man trap after programming | Include this topic of concern into regular meeting instead of holding a completely separate meeting. |
| Generate shop drawings of the system for consultant approval | Makes sure shop drawings are accurate in order to get approval straight away and avoid wait times. Drawings only need to be approved once, so this cost is not incurred for any future door production |
| Identify and confirm device lay down and install locations with site superintendant | Ensure information is gathered and confirmed before project in order to avoid wasteful wait times. |
| Order materials for the access control system (labor) | Order materials in bulk in order to save costs and to have material ready on hand for future door production |
| Provide duplexes and stubbed conduit to concrete trade (material cost + labor) | Make sure material is ordered well in advance so labourers can avoid delays in multiple door installations |
| Create SQL database for integrations between Access Control system and other integrated systems | Database integration will only need to be developed once, therefore this cost will not need to be incurred for future door installations |
| Monitor site for installation of cable tray and mobilization readiness | Ensure material for installation is ordered and ready for all door installation |
| Write the algorithm and code for the doors | Algorithm will only need to be written once and will be able to be used for all other door installations |
| Co-ordinate ethernet drops | Ethernet drops should be coordinated to code to ensure no need for redesign afterwards |
| Obtain IP addresses. Determine and provide MAC addreses | Compile this data for all door installation locations to save time and minimize waste |
| Set the Vmware set points for the card reader devices | Use Vmware set points that have been used before and are known to work to avoid resign |
| Co-ordinate low volatge drops with electrical trade | Ensure drop points are accurate and efficient in order to maximize efficiency |
| Confirm seqeuence of operation with the owners | Make sure project schedule is clear with owner at beginning to ensure transparency and timeliness of project , same sequence will be used for all other doors to minimize waste |
| Research online to determine if the Vmware in your devices will work correctly with new Windows updates | Research will only need to occur once for all door installations, same info will be used repeatedly |
| Determine fire and smoke control operating sequence by doing research online | Research will only need to occur once for all door installations, same info will be used repeatedly |
| Program fire and smoke control operating sequence | Program will be written one time for all door installations which will minimize cost and waste |
| Obtain database of current access cards from Western IT and link to program | One time occurrence, one the cards are programed and linked they can be used for multiple doors |
| Program new access cards for the New Employees of this building | One time occurrence, one the cards are programed and linked they can be used for multiple doors |
| Complete all low voltage wiring by a sub trade you employ (material and labor) | Employ the same trades for future low voltage wiring needed on other doors so ensure accuracy of work |
| Install devices ( labor & material ) | This process needs to be planned beforehand in order to avoid any reinstallations. |
| Obtain mag lock stamped drawings from City Hall | Ensure that mag lock stamped drawings are necessary for door installation, one time occurrence and can be used for all future doors |
| Program controllers and generate computer graphical interface | Programming will only need to be done one time for all future door installations which will maximize its added value |
| Invoicing the customer for the work you have completed thus far | Invoice customers once the project is complete to avoid redundant paperwork |
| Co-ordinate software backup with the Stiller Centre | Backup information for all doors at once to save time |
| Making a second cloud based backup of the Stiller Centre data | Ensure that second cloud backup is necessary in order to avoid wasteful moving of data |
| Wait for a list of systems from the owner that must integrate with the Access Control system | Obtain this list prior in order to avoid wasteful wait times |
| Complete any integrations with other systems such as room booking | Coordination will occur one time between the program and external software |
| Test and tryout the already existing network switch (ping the devices to ensure your software sees them) | One trail run should be enough to ensure switch is running correctly, all other doors should not need a trial as it has already been confirmed |
| Test and tryout computer in your shop | One trail run should be enough to ensure computer is running correctly, all other doors should not need a trial as it has already been confirmed |
| Test and tryout the computer on site once installed | No need for redundant testing of computer on site as it as already confirmed in shop |
| Test and tryout access control card readers prior to installation on site | Testing prior to installation will minimize waste if access control in not working properly |
| Integrate the access control software you have written to work with the fire alarm | Same integration will be used for all door installations in order to maximize added value |
| Participate in Fire alarm trials | Don’t participate in too many as it will be redundant and wasteful |
| Field redesign of system to meet Fire department light flashing requirements | Resign of system is wasteful, design should meet Fire department light requirements before design phase |
| Commission the system AND GO LIVE. | Necessary step that will add value |
| Complete Deficiencies found after GO LIVE | Minimize deficiencies before going live to avoid wasteful post launch troubleshooting |
| Remove all the old trial and commissioning output data from the server at the Stiller Centre | Old trial output should not be stored at Stiller centre in order to avoid wasteful moving of data |
| Post Launch debugging of one door that stays locked all the time | Debugging can be wasteful, all code should have been confirmed to work prior to launch |