Division of Information Technology Computer Repair Process

Bailey's Favorite Five
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Abstract

Our client, the Division of Information Technology, came to us with the problem of an inefficient and archaic system for tracking incident reports of laptop repairs for their help desk. After going through the DMAIC process, our team has come up with a recommendation that not only solves the problem of the initial scope, but also improves the overall customer experience with the DIT Help Desk.

Scope

We had the chance to work with the Division of Information Technology (DIT) to give recommendations to improve their laptop diagnosis and repair process. Specifically, the project that we were given by the scoping class was to "create a new electronic form system to optimize the process of submitting incident reports for computer repairs at the ACT Help Desk." After speaking with our point of contact, Steve Tender, and taking a close look at DIT's current state, however, we discovered that this electronic form system already exists.

When a student walks into the help desk on the first floor of McKeldin Library, they fill out an electronic "ticket" with one of the front of staff. The ticket has basic information about the customer and computer such as contact information, laptop serial number, laptop password, symptoms, etc. Once filled out, the ticket is printed out and taped to the laptop. The paper ticket is what is used for identification and as the medium for notes taken by the technicians during the rest of the diagnosis and repair process. This is one of the major issues that we decided to look into further. We wanted to discover why the shift to paper in the middle of the process was occurring.

We talked a lot with current staff, both frontend and backend, about inefficiencies in the process that they saw and other issues that they encounter on a daily basis. We will discuss the details of the definition of the current state in the coming sections. Based on the information we received from the staff and from Mr. Tender, we have come up with a three pronged recommendation for DIT. They are: switch to a paperless labeling system for the laptops, improve the existing data entry forms and reduce current barriers to access these tickets digitally, and redesign the physical workspaces and layout of the help center. Again, the details of these recommendations, as well as an implementation plan, follows in the rest of the sections.

We were originally tasked with creating a new electronic form system to optimize the

process of submitting incident reports for computer repairs at the ACT Help Desk. Upon our initial contact and meetings with our client, we discovered that our scope would have to change. The Help Desk does in fact have an electronic form system that is used when customers first enter the store. When they present their computer to a technician, the technician fills in preliminary information, prints out the electronic ticket, taking the store of information from digital to physical. Thus, we rescoped the project so that we would ensure use of the digital system, rather than creating a new one.

Measure and Analyze

After shifting to this new scope, we began to watch the laptop repair process and the ticket system more in depth. Through our research, we identified a couple key metrics. First, the Help Desk has an average of 130 cases a week, thus meaning a buildup of over 4,000 paper tickets a year with inaccessible data. This is a bad result for the Division IT, and we identified multiple reasons behind the shift to paper tickets. First, the paper tickets must have the signature of students. However, we discovered that this could easily be remedied by digital signatures. Next, the digital tickets take too long to access. Both frontend and backend technicians said that it took too long to login to the current system, find the electronic ticket they are working on, and type in comments. This presents a high barrier to the technicians using an electronic system in the first place. Next, we realized from complaints of technicians that the electronic tickets are not detailed enough to make it convenient for technicians to enter comments. Instead of checkboxes, only text boxes exist, costing the employees the repetitive time of typing the same comments and process into every electronic ticket. Furthermore, the current ticket information does not fully record the actual symptoms observed in the laptops behavior. This lack of information creates difficulty for the back-end technicians that must start from scratch to identify the issue. Another problem with the electronic system is that it makes the computers unidentifiable because there is no other labeling system. Lastly, the paper system acts as a fallback. Technically, without a paper attached to each laptop, technicians would be forced to enter comments on a computer, but it would be highly inconvenient because of the previous barriers mentioned. Thus, an outright cancellation of the current system would not be an effective implementation. To these problems, we have developed a series of recommendations combatting each issue: a new label system, a redesign of the forms, and a change to the time it takes to access the digital forms.

Recommendations

The proposed reformation plan calls for a shift to a paperless system in which all customer information as well as laptop information is recorded on a digital form. Currently, customers are helped by a staff member to print their form and fill out all of the necessary parts. The new plan will place a series of iPads near the front of the store. These iPads will be running a specialized application created solely for DIT laptop repair. The customer side of this application will require all of the same information as the original paper form in a more

organized fashion. After consulting with many technicians, we have discovered that there is a disparity between the information on the customer end and the information on the back end. A major problem that the technicians see is self-diagnosis. Often times, customers and front-end employees will try to diagnose the problem and forget to include the symptoms of the laptop. This creates difficulty in the repair process because it does not give technicians enough information about what is actually wrong with the laptop. If these diagnoses prove to be wrong, the technicians then have no other information to expedite their repair. The new digital form will have a list of common symptoms that the customer can choose from to describe their problem. This list will channel the customer to describing the symptoms plaguing their device not their suspicion of the cause.

Once the customer has finished the iPad form, they will submit it to a queue. The queue will be a list of waiting customers displayed on a TV screen in the main room. This queue will add more organization to DIT's customer processing. Furthermore, customers may then wait outside of the store until their time has come. This will greatly reduce human traffic in the limited DIT space.

The first person to assist the customer after they have filled out the digital form is the front-end technician. The front-end technician is responsible for checking the laptop for simple fixes and software issues. They will see the front-end version of the new digital form. This form will allow them to comment on or add symptoms to the list already created by the customers. Due to the shift to completely digital records, the technician will be able to observe any previous incidents in which the laptop was submitted. This gives the technician an idea of what problems have occurred in the past, and it may ultimately lead to them identifying the problem much faster. Most importantly, the front-end technician can now easily record any and all steps or methods they take to try and identify/solve the issue. This eliminates any possible redundancies in the future.

In the event that the laptop is experiencing significant hardware failure, it will be submitted to the back-end technicians for maintenance. The back-end technicians will see all of the information entered by the customer as well as any additions made by the front-end technician. Similarly to the front-end form, the back-end form will include a section for steps taken along the path to solution. Furthermore, the back-end form will have sections for recording parts ordered. Finally, there will be a resolution section in which the technician will identify what the problem was and how it was fixed. The resolution information and part information is not currently recorded by DIT, but it could prove very valuable when repairing a laptop on multiple occasions. Overall, the new form will streamline the information process allowing DIT to store data on all aspects of repair. Not only will the paper form be eliminated, but the new form will expedite the current repair process by providing relevant information in an organized manor.

Reevaulation

After answering our scope of the project, we wanted to reevaluate the process after these recommendations were theoretically implemented. We have solved the issue that the forms take a while to get onto, that they are not detailed enough, and that there is no other labeling system, as well as creating a better queue process to save frontend technicians time. The next question is: what is the next biggest barrier and inconvenience to technicians filling out forms digitally. We realized that the current layout of the of the Division of Information Technology's computer repair office in McKeldin Library was inefficient for employees.

The biggest problems occur when the technicians need to start working on the laptops. The technicians do not have dedicated workspaces with the resources and supplies they need. They have to share their work computers, which means they do not have a computer they are always logged into. On top of that, the computers log them out after ten minutes. When looking at other IT Help Desks, for example, Apple's Genius Bar, each technician has a dedicated work station where they have a work computer to support their diagnostic process. In addition, the work computer allows them to access Apple's technician systems. We wanted to have the Division of IT follow a similar model.

Currently, the work computers are located across the room from where the laptops being serviced are. This means that, even if there was a great electronic ticket system, it would still be highly inconvenient for frontend technicians to write in digital comments by crossing the room. We are recommending the creation of a dedicated work space. Two of the Mac Desktops will be moved to the current service area and two will remain at the window. Both areas will now be available for servicing. Each technician will be at an assigned computer, so that computer sharing is cut down on, a barrier that costs employees time when they need to access the electronic forms.

We recognized another problem with the current layout of the Help Desk and the store. In the original state, it is very confusing for new customers of the repair office to figure out where to go. Even though there is a side window that was initially designed for computer repair check-in, most people just walk in the front entrance to that space. Once they walk in this entrance, they are often confused about who can help them and where they need to check in. If they go to the store desk, they are sent towards the back of the store. At this point, they are on the wrong side of the window. However, they are still able to check in and then leave once the drop off process is over.

Our recommendation is to shut the service help window, moving people traffic through one door rather than from multiple points. Next shifting the computers to different desks for dedicated work stations will happen in conjunction with a move of the desk in the middle of the room to the back of the room for the iPad system. The last recommendation is for frontend, student technicians to wear a uniform, either a polo or nametag, to make the customer experience a lot simpler by showing exactly who they need to talk to. These recommendations will improve the physical layout of the store, the customer experience, and improvement of the use of the digital tickets.

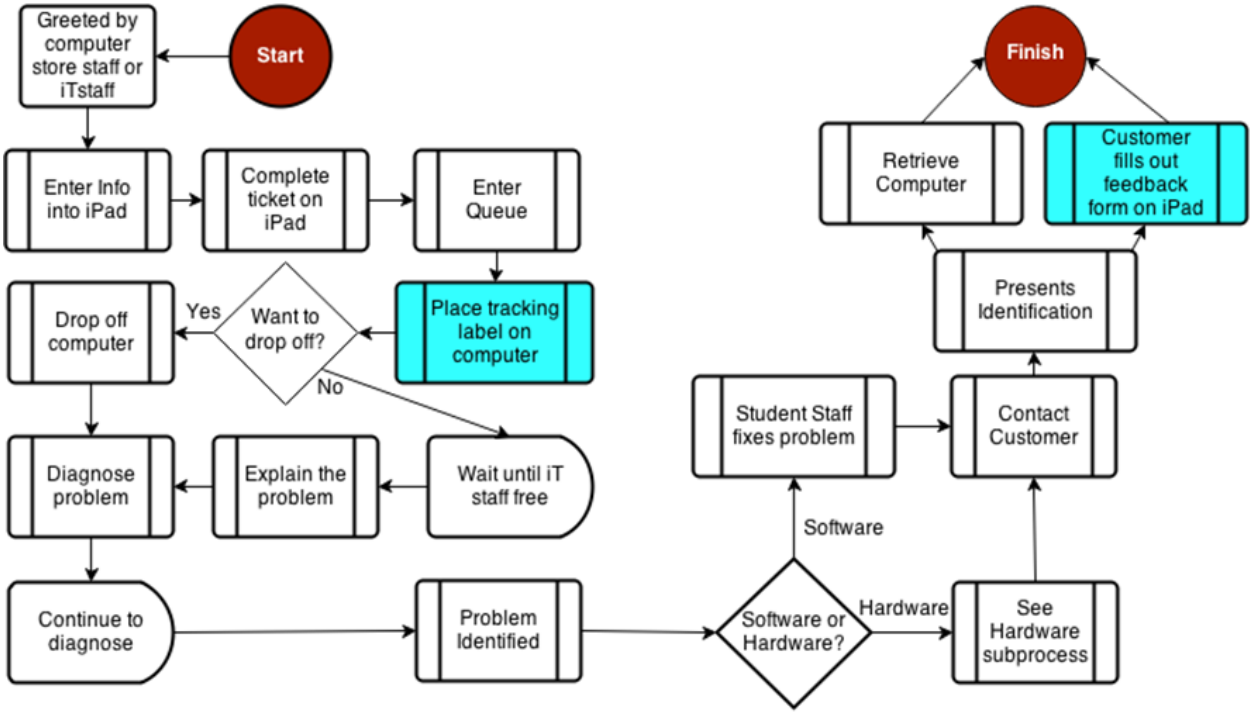
Implementation and Future

This seems like a lot of recommendations, but they can be implemented in a straightforward and stepwise process. Using a three phase process, the recommendations detailed above can be implemented in a time frame that fits the Division of IT repair desk's schedule. Central to phase one is a layout improvement, by splitting up the four workstations and moving the two workstations across the room the room will see a major improvement. To further complement this change, the help desk can additionally close the window and implement uniforms or introduce other forms of front-end employee recognition. In phase two, the front-end experience needs to be simplified by the addition of the two technical changes suggested by BFF. First an iPad receptionist system implemented applying the first part of the three part form would gather basic data about the customer. Secondly a label printer would be added to accelerate the process of locating the computer in the file system. With these two additional technologies, the Division of IT Help Desk can handle a much larger crowd and can offer a more professional and efficient process to their busy customer base. In phase three, the back-end process should be further improved. By releasing the improved forms for both the front end and the back end, the store will be able to better track repairs, make predictions about repairs and in general have better data to further refine and improve their processes.

After the initial changes of each phase are implemented, the processes need to be sustained. From the employee side, two tools could be useful. Run rules would help employees ensure a consistent process for each customer, while a contingency plan would allow employees to report major deviations from the run rules to continuously improve the system and reduce the time they need the customer to stay in the store. From the customer side, a survey questionnaire offered on the iPads, while a customer is waiting to pick up their electronic device will help provide feedback on the process from the customer's perspective.

The improvements detailed in this document are overarching and target the underlying issues as identified as BFF. With key improvements to the physical layout of the store to create designated work stations, much of the front-end process will be improved. Beyond this simple physical improvement, there is ample opportunity to improve the forms into a targeted three part system to better mesh with the current process of computer repairs. From these improvements, we believe that the shift from the paper system they have now to an efficient, easy experience for the customer as well as having digitally stored data will be successful.

Appendices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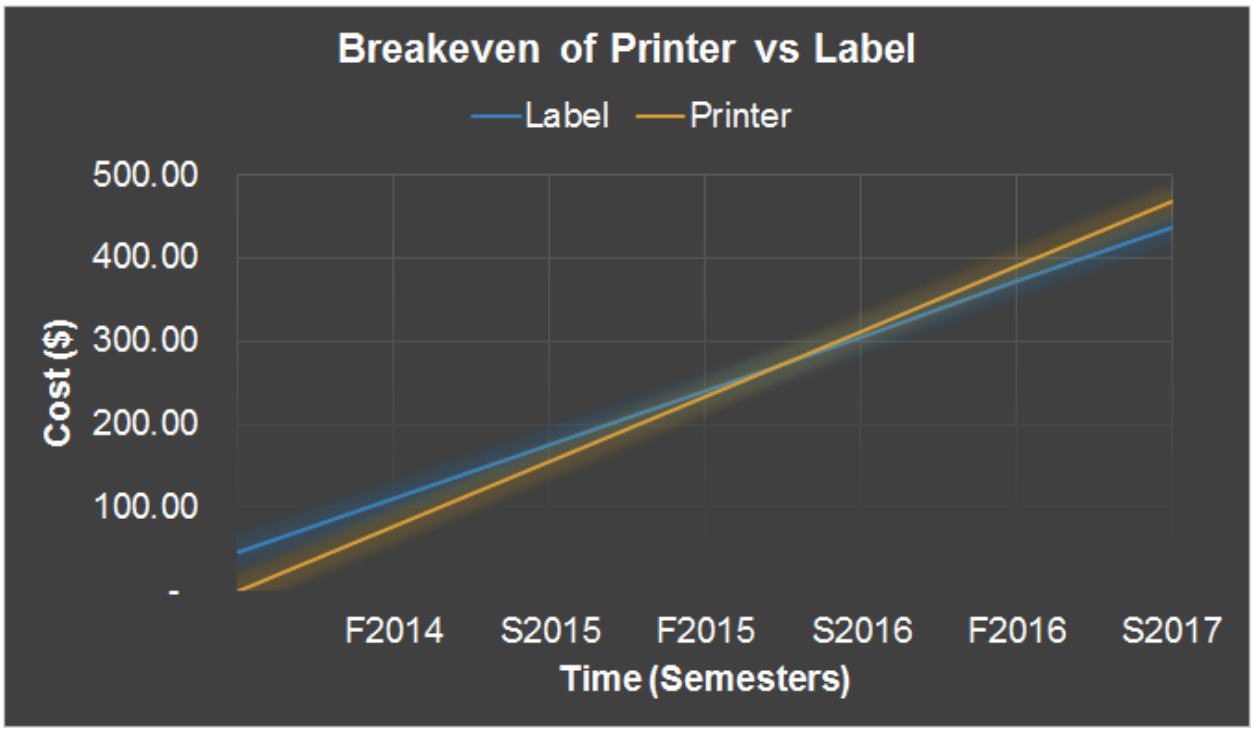
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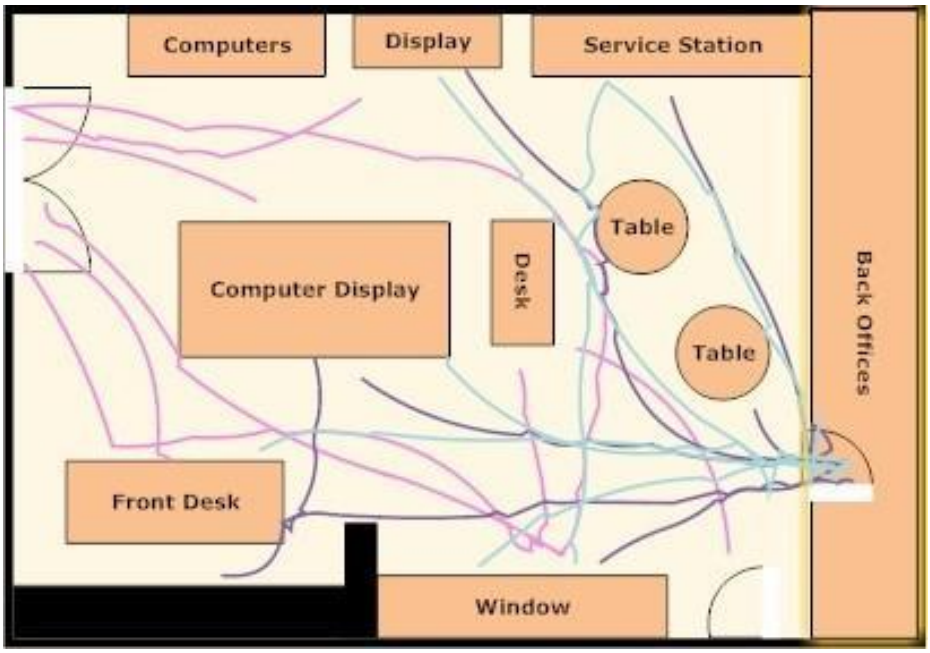

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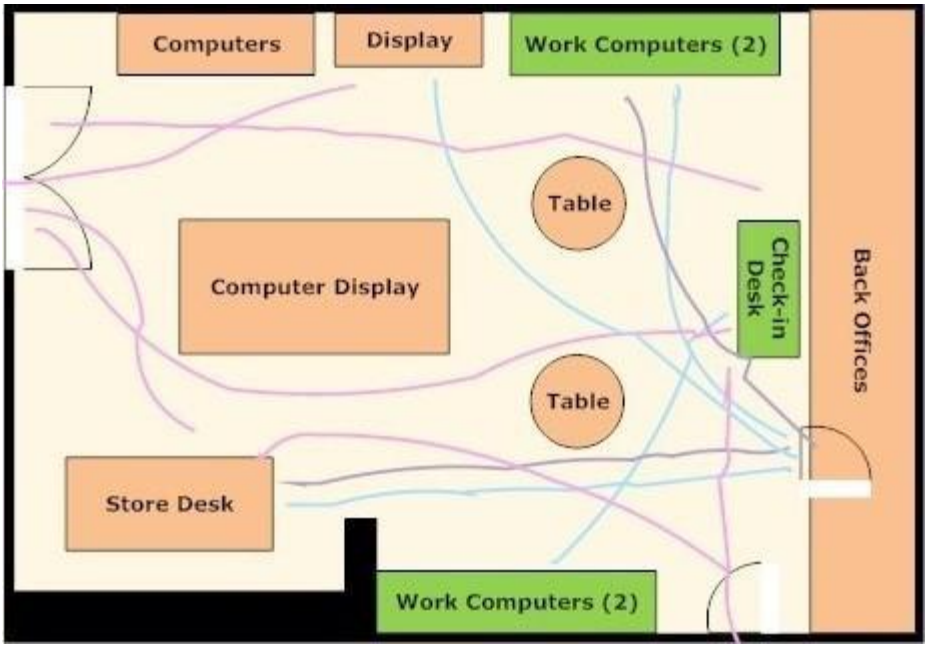

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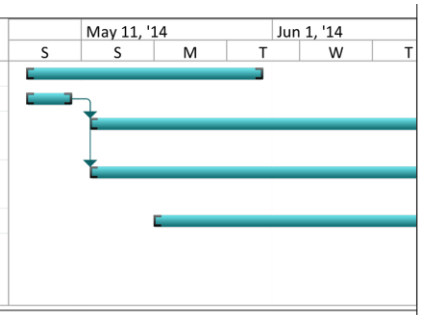
1		Acquire Uniforms	20 days	Mon 5/5/14	Fri 5/30/14	
2		Layout Redesign	5 days	Mon 5/5/14	Fri 5/9/14	
3		Implement iPad Receptionist System	80 days?	Mon 5/12/14	Fri 8/29/14	2
4		Implement new labeling system	80 days?	Mon 5/12/14	Fri 8/29/14	2
5		Develop New Form	100 days	Mon 5/19/14	Fri 10/3/14	
6		Release Improved Back-end and Front-end Form	14 days	Mon 10/6/14	Thu 10/23/14	5



Project: BFFDivITGant
Date: Sun 4/27/14

Task	External Milestone	Manual Summary Rollup
Split	Inactive Task	Manual Summary
Milestone	Inactive Milestone	Start-only
Summary	Inactive Summary	Finish-only
Project Summary	Manual Task	Deadline
External Tasks	Duration-only	Progress