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5/24/16
System Analysis and Design

Custom Rigs Description

The opportunity for fully customizable PC's is completely evident. In today's market with regards to PC building is filled with limitation. A majority of today's society uses PC's for everyday use whether at home use or for work purposes. What we want to do at Custom Rigs is give the consumer the option to completely customize their rig for the requirements they need whether video editing or gaming, from internal to external customization and accurate data that shows what consumer is gaining from specific parts and what they are losing. The Custom Rigs system will be able to offer the user the options and customization options for building their PC from the ground up, Starting from the fundamental hardware such as the Motherboard, RAM, CPU, heatsink, GPU, ETC. All while offering insight on how different hardware is needed for the uses they are demanding. In the Custom Rigs Company we have 7 locations in major Cities of the US, New York City, Chicago, Austin, San Francisco, Charleston, Miami, Seattle , we have over 200 employees ranging from Customer Support, Building Technicians who are the ones that are licensed and qualified for building all of our premium custom PC's, A marketing team located in our New York City location as well as an accountant in every physical Custom Rigs location and financial department that runs the overall sales that are located in the Austin, Texas location. The orders per day can vary depending on the season. The holiday season and the winter season is our most busy time of the year, our sales average 220 PC Sale transactions daily for all locations. The prices of a Custom Rig can range from $600 to $1000. The typical client for a Custom Rig wouldn't normally be someone who uses his/her PC for social media browsing but someone who is need for a higher processing and a more efficient "Rig", We target gamers, business owners, electronic stock traders, and other individuals who require the need for a custom power PC. Our suppliers are big name PC components manufacturers such as Intel, Nvidia, AMD, Gigabyte technology, PnY. We are dependant on all of these suppliers due to them having the manufacturing resources that we lack.

Scope Definition (FAST Phase 1)- Transaction processing system will be used. The company will be better off with this information system because the speed of productivity will increase and the consistency, while also decreasing errors such as wrong parts being chosen that are not compatible with each other. The direct interconnection with consistency and less errors in the processing component of the Company will have a direct relationship with customer ratings and increase sales as well as assurance in the products we deliver. The Will take about 4 months to design the system and 2 weeks to install and implement in every Custom Rigs location totaling 7 and ½ months. The design, implementation and installation will cost about $200,000 for the initial contract for the system + $10,000 monthly for employee salaries that we will have to hire throughout the installation etc.. Total will be about $800,000, There will be a system building team , etc. Total of 8 employees in the system building team plus another 4 employees at every location that will help implement and install the system with their being 7 locations and 3 employees at each location that would be 21 employees + 8 employees building the system, totals 29 people needed to carry out everything.

Problem Analysis (FAST Phase 2)-The limitations are

- Processing and delivery times due to having to order the parts from the supplier after the customization is made by the consumer.
    - System improvement objective- Keep the components constantly stocked by having a shared database that is consistently updated.
- Another challenge is inventory waste in which a certain piece of hardware may be over ordered and after an indefinite amount of time will become obsolete and because Custom Rigs is nationally recognized for creating quality products, including obsolete technology would jeopardize the business model.
    - System improvement objective- Having the items constantly stocked is correlated to the employees filling out what parts they used. The more components that are frequently ordered will constantly be in stock and the rarely ordered won't. This will eliminate the waste rather than just ordering "x" amount of everything.

- Customer ordering incompatible parts which leads to an inoperable product which leads to more employee hours, longer wait time for the client.
    - System improvement objective- Using the compatibility verification process eliminates incompatible parts due to the client only being able to order parts that are compatible with the prior component chosen.
- Lack of sales creates financial stress on Custom Rigs which leads to losing valuable and much needed employees. Waste of product is another financial hindrance with our current system which is caused by two of the other current issues with information system- Incompatible parts being ordered and being over stocked on certain components.
    - Sales will be increasing dramatically due to the elimination of the long wait times prior to the implementation of the new system. With a compatibility verification, constant stock of components, and prioritization techniques CustomRig will be able to provide a custom and exceptional product without the long processing and delivery time.

What PC parts are the majority of the consumers adding to their rigs? What is seldom added? System improvements goals is to eliminate the third party when evaluating the processing and delivery times. Keeping a substantial and consistent stock of the parts that are frequently added. E.G. i7 CPU's, RAM , etc. Custom Rigs housing the stock in our own warehouses will eradicate the time from ordering the parts from the third party to having them deliver it to Custom Rigs, To keep track of overstock and understock we will have the database consistently updated so that we know what's in stock and what's not in stock as well as what parts are being ordered more often that way we are able to order those more frequently. Sales will be increased with the system because rather than an order being placed in person, it will be placed online and in person therefore allowing individuals that aren't close to a Custom Rigs store the ability to order one. Incompatible parts being ordered will be cut down because the system goes through a verification process where each part will have to be compatible with the previous one to be able to continue.

Requirements Analysis (FAST Phase 3) -

Client Features- The system should be able to offer the user the options and customization options for building their PC from the ground up, Starting from the fundamental hardware such as the Motherboard, RAM, CPU, heatsink, GPU , ETC. All while offering insight on how different hardware is needed for the uses they are demanding.

2) The system will also have a compatibility list in which it can determine and will only offer the next hardware piece based on the previous one that was chosen, to make sure the PC is flawless and in unity with each other.

Administrator Features- A feature to analyze the quality of company's operations and assist the administrators of the system with future ordering, is by allowing the system to receive feedback from the customer As well as a success to failure rate chart that is dependant on how many clients return the PC's for damages, or other issues and also able to document the time period of when these returns are received (Example: 80% of clients that return their Custom Rigs at around the 5 Month period, then we can use that information to find out what parts are similar in those rigs and if they are subject to failure at a 5 month point, which will help the team test those parts etc.)

2)Another administration feature will be that the system will be able to prioritize certain PC's depending on which PC's have parts that are all located in the warehouse and not waiting for a supplier's delivery, therefore pushing out the easily buildable PC's out first.

Supplier Feature- A feature to assist supplier coverage on consistent stock of components, The system will constantly update the shared database to notify suppliers on what will need to be ordered so that we at Custom Rigs limit the wait time between us ordering a component from the supplier to it being delivered to our facility. By keeping a well maintained database we will have instantaneous updates on the components being used rather than a weekly stock update.

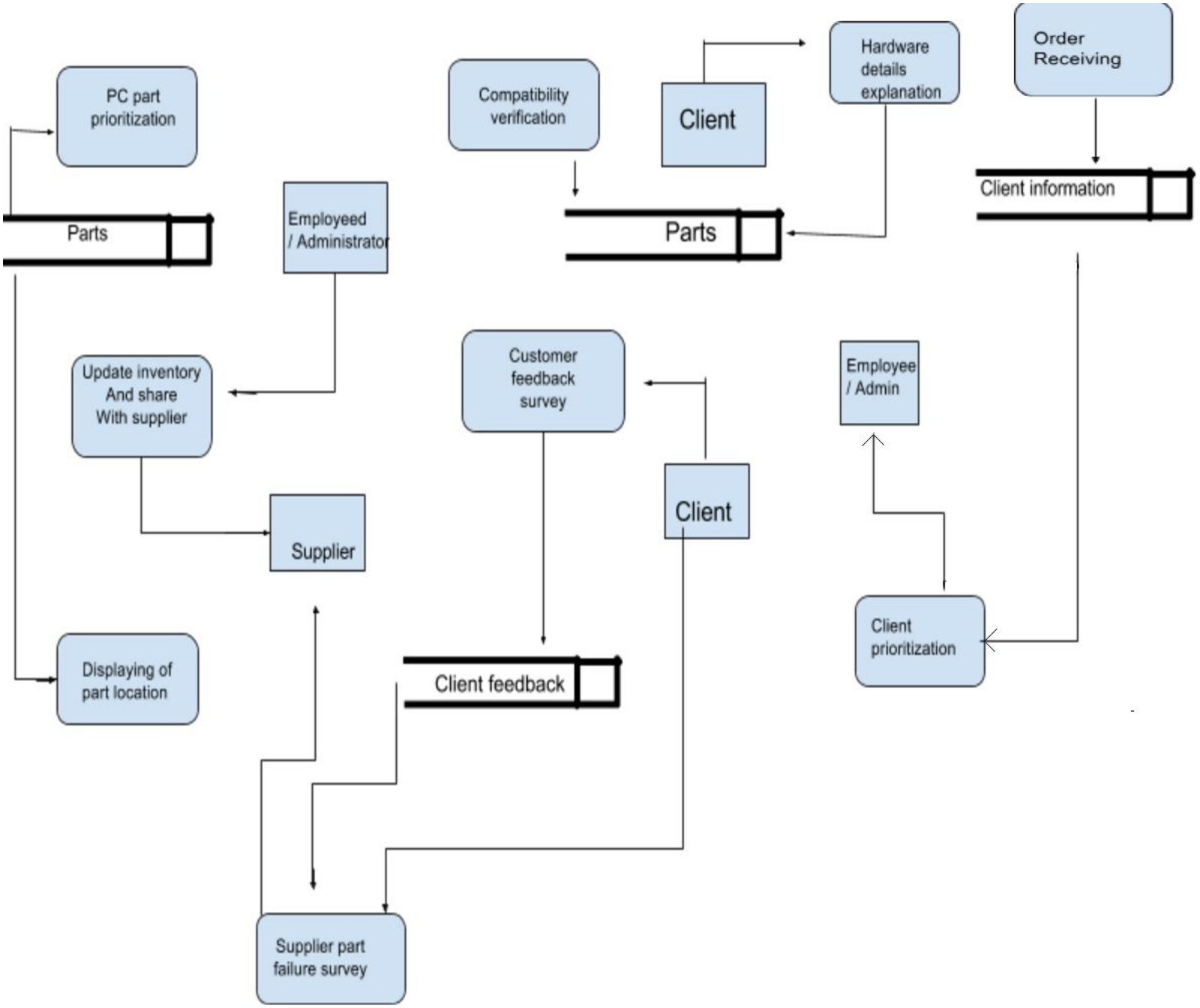
2) Another supplier feature will be when the client submits a complaint there will be an option to choose failure of part etc. This will be forwarded to Custom Rigs and the supplier that the component came from which will notify suppliers what parts are defective. This will help Custom Rigs determine liability and assist them when attempting to get a refund on certain components that may have been DOA (Dead on Arrival).

Employees Features- The system will have a feature to help the builders with where the part is located in the warehouse or the estimated time till its delivered by the supplier.

2) The ability to show prioritization of a certain client

will also assist employees, depending on the client there is a range of Low priority, medium priority, high priority which will display the priority specification to the employee.(A high paying client, or frequently ordered client will be prioritized first to help maintain a reliable business relationship with those clients in the future)

Logical Design (FAST Phase 4)- Data flow diagram with External agents, processes, and data stores. All in relation to the features in the requirement analysis phase.



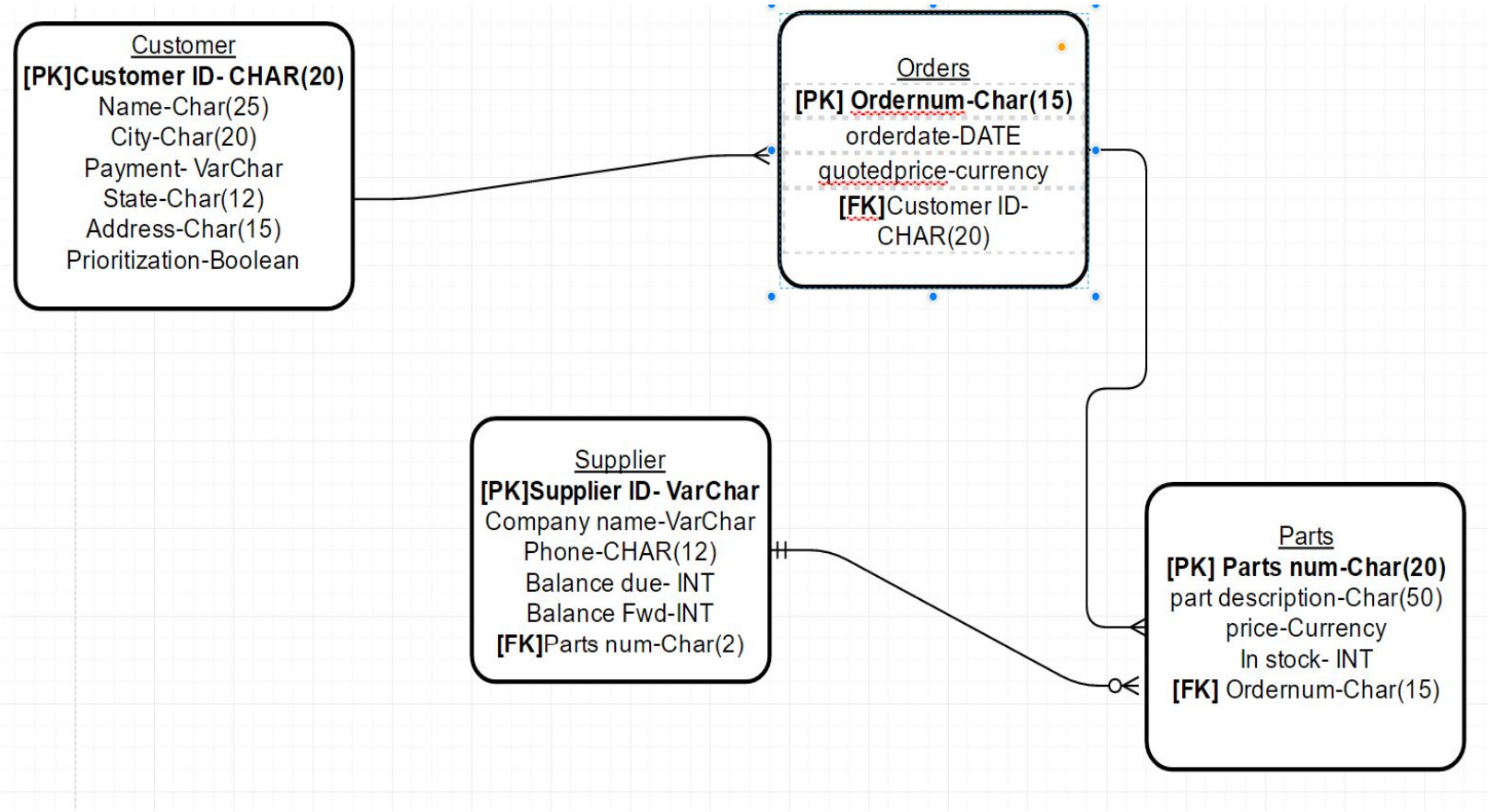
Decision Analysis (FAST Phase 5)-

Technical feasibility- The solution is technically practical because with the use of the systems technological advances such as a compatibility verification for the components it will help maintain a consistently operable product and dramatically reduce processing errors. The staff does have the technical expertise to design and build this solution, the solution does not contain any out of the ordinary components in which will hinder the system building process.

Operational feasibility- The solution will fulfill the user's requirements to the degree of allowing the user to be able to dramatically increase productivity and simplicity on their end. Instead of the User scavenging in hopes to finding the components needed to complete the rig , all the information is at their fingertips from where the parts are located in the warehouse to which rig should be prioritized not only keeping the user in good standings but pleasing the production managers in charge. The work environment will be overall improved by creating a more relaxed and organized environment. The users will at the commencement of the implementation feel overwhelmed with all the changes but once they realize the simplicity and organization that comes with the system they will thoroughly enjoy the new system.

Economic feasibility- The solution is immensely cost-effective. Prior to the new system being in place, Custom Rig was losing approximately $400,000 a year in unusable parts, labor due to mistake, waste of parts, and other system related issues. With the new system in place the amount of loss will be down to $35,000 annually. A difference of $365,000 in annual waste. In 2 years and 1 month of the system being in place the system will pay for itself.

Physical Design and Integration (FAST Phase 6)- Primary key stated, every non-primary-key attribute is dependent on solely the primary key.



Method Signatures-

1. INT calculateInventory (INT CPU, int numberUsed,,
   CPU - numberUsed)
2. Boolean clientPrioritization (boolean purchaseBefore, Customernum) //Boolean= True or false Is cust prioritized
3. Boolean rigPrioritization (boolean PrioritzationRigNum) // Boolean= True or false if rig is prioritized
4. Boolean compatibilityVerification (Boolean Priorpart) // Returns a True or false to the client whether part is compatible with prior part
5. Char Customerfeedback (Char Customernum, feedbackid)
6. Char partFeedback (CHAR partchosen, partdescription)
7. Char supplierComplaint(Char customernum, feedbackid)
8. INT partLocation (Partnum, Islenum)

Construction and Testing (FAST Phase 7)-

1. For functional requirement number 1 which is showing the client side information on the hardware they choose in terms of details and the first test will choose a GPU for gaming but the client actually wanting to build a Rig that is dedicated to business, the program should then explain to the user that the GPU is not detailed as something necessary for a business and display an alert. The test will then fail, and then add code, after the code is added we will test it out by choosing multiple parts and expecting a detailed alert for each one and how it will help or not help the build of the system for the purpose desired.
    a. Second way to test it would be to pick a component that can benefit a PC whether its for business use or gaming use an example would be a powerful CPU. Which should be detailed as a component needed for every type of CustomPC.

2. Way of testing the customer feedback would be to write a review and click on the drop down list an option that chooses a part malfunction. This feedback should then be processed and sent to the supplier's complaint center to help determine liability.

3.TDD can be used in the employees search for parts processing model, by changing the part ID to another Aisle and seeing if the previous Aisle is recommended to the employee.

Installation and Delivery (FAST Phase 8) - The installation and delivery of the system will easily help the users of the system adapt to the new implementation of a new information system. The process in which each feature of the functional requirement described earlier is being used properly. Initially the client will go on CustomRigs.com and start by entering his/her information and start the building process, starting from the ground up. The client will first choose what the purpose of building their rig is, whether it be gaming, video/photography editing, business use

(E-trading), etc. The client will then start by choosing A motherboard and then have the choice of choosing a CPU, this is where the compatibility verification will come into play and only offer the CPU's that are compatible with that motherboard, as well as where the system will notify the client of why the specific component they picked is convenient/inconvenient for the uses the client desires. Next the client will choose RAM and again the compatibility verification will only allow the components compatible with the motherboard and the CPU previously picked, this process of compatibility verification is continuous until the build is finished. Once the order is received and the compatibility verification is finished the order is sent to the building team with a priority level listing that shows whether the client is low priority - high priority, allowing the team to prioritize said client. After priority is determined the components are then gathered. Part gathering is made simple with this system because every Custom Rig sent to the building team now has a list of parts with their location in the warehouse. During and after the order being processed and the PC being built perpetual testing is done. After the Order building, ,the building team will scan each item which will instantaneously update the inventory database which will notify the suppliers on the amount of each component Custom Rigs has left in their warehouse. Once all the previous steps are done the final product is then shipped to the consumer. Approximately 3 days after the product is delivered the system will have a customer satisfaction survey is sent with general questions and a checklist of possible issues if any such as part DOA or malfunctioning part such as a graphics card overheating. This will then not only be forwarded to the complaints center but also to the supplier who provided the malfunctioning or DOA part.