*MIS 312 Term Paper*

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**Table Of Contents**

**1. Introduction**

**2. Analysis Section**

**2.1 -** Use Cases

**2.2 -** Data Flows

**2.3 -** Entity Relationships

**2.4 -** Human Computer Interface Design

**2.5 -** Structure Design

**3. Design Section**

**3.1 -** Design Elements

**3.2 -** Requirements for Project Design

**4. Conclusion**

**Introduction**

APC needs to expand and capitalize on their current standing in the publishing house market. The goal of APC to increase their business growth by 85% over the next 3 years. This will be achieved by creating better tracking then the current system has to offer, create better relationships with authors, creating a better outreach process to help their appearance to outside authors, and to adjust there “ideal market image” by what is trending.

The new system not only has to upgrade hardware components of their current system but also the functionality of it. In order to streamline their new business processes, they need to shift from a paper-based system to digital in order to keep accurate and better track of their projects. This will help with efficiency, but also information loss which they detailed as a huge problem in their current system. Since all projects will be digital, they can be further organized and categorized by genre and trend to make decisions for the collective easier. Below are the main requirements that APC has made important and will be taken care of in this new system.

* Submit manuscripts electronically.
* Track manuscripts progress through review process
* Categorize manuscript by genre, subject, and publication type (print or eBook).
* Contracts and their progress
* Pre publish book ISBN assignment.
* Sales from published books
* Author’s sales and publications
* Distribution of published books

APC’s new venture into their system update will increase their value as a business in several key areas. First it will solve their most notable problems that all involve lack of organization through not having a digital ecosystem. By creating a digital environment to take in manuscripts and store information about them as well as authors, trends, and published books there will be more information to look over and analyze for the future. This will not only help them after the initial upgrade, but it will also enable them to be in a better position in the future when they have more expansion or change.

Given APC’s current position in the market as a publishing house with very little overhead they can initiate these changes with the opportunity to bring in more revenue with almost no increase to their current overhead discounting the potential hiring that would give them 11 total employees.

*Constraints:*

* Changes will have to be made to the current office ecosystem.
* New contracts will have to be created for different types of print faces (hardcopy, digital, eBook)
* The overall system instillation will have to start soon in order to keep up with market growth and APC’s potential in that market.
* Many stakeholders have similar needs and therefore need co-existing systems.

In the following document information, there will be explanation of all the different tools and design elements that were used in creating this project. As shown in the table of contents there are 5 sections of analysis which will detail the different tools that were used and why to achieve the goals of the functional and nonfunctional requirements. Then after that there are 2 sections that explain the design elements of this project along with physical requirements that APC would have to implement for this project.

**Analysis**

***2.1 Use Cases***

The idea of this section is to take the broad business processes that are listed in the introduction and turn them into working use cases. This mostly cleans up and combines multiple processes into one use-case, but it also refines the details about how a process will be used in a use-case.

Business processes are a collection of linked tasks that together will create a service or product that the business will then give to the customer. These are normally small activities that works will do on a daily basis to fulfill the companies working needs. Now the level of these processes can differ based on the employee level, but they are always important to completing day to day tasks for an end goal of the business. For example, APC has many business processes that revolve around paperwork, and each of those instances where an employee files, or completes paperwork they have being using a business process.

These cleaned up use-cases will be the solidified system functions that need to take place in creating the final version of this project. Or in other words these are the main needs of the APC team in order for them to function better and achieve their growth goals without overextending themselves with too much system infrastructure.

Every use case is used as a combination of processes that are were brought to my attention by the employee testimonies about their individual roles at APC. These testimonies stated there day to day routine along with known problems that they had during those day-to-day routines. These problems and overall routines were then listed out as processes and then converted into use-cases. Many of the processes that were stated individually by employees could be resolved and updated to the new system through a single use-case. There were multiple instances where this was the case and often, they had to do with the digital record keeping system that will part of the overall system.



Figure : Use Case Diagram

***2.2 Data Flows***

A Data Flow Diagram is a system that is graphically represented. It can contain data flows, processes, sources, destinations, and stores. A Use Case Diagram shows you some of the use cases in your system, some of the actors in your system, and the relationships between them. Since data flows show what the users will be putting into the system and taking out it’s a much more detailed representation of the system.

By creating both different levels of data flow diagrams you are able to convey major tasks that are expected of employees through the new system, and also how they will connect to the different processes. The level 0 data flow diagram shows the employees right away what their main tasks will be and whether or not they are inputting information into the system or taking out information. Level 1 then will allow them to see where that data is going specific to their instance of work. Having this will allow APC’s team to learn their new system and its processes much faster and can clear up miscommunications that would arise if there were no visual representations.

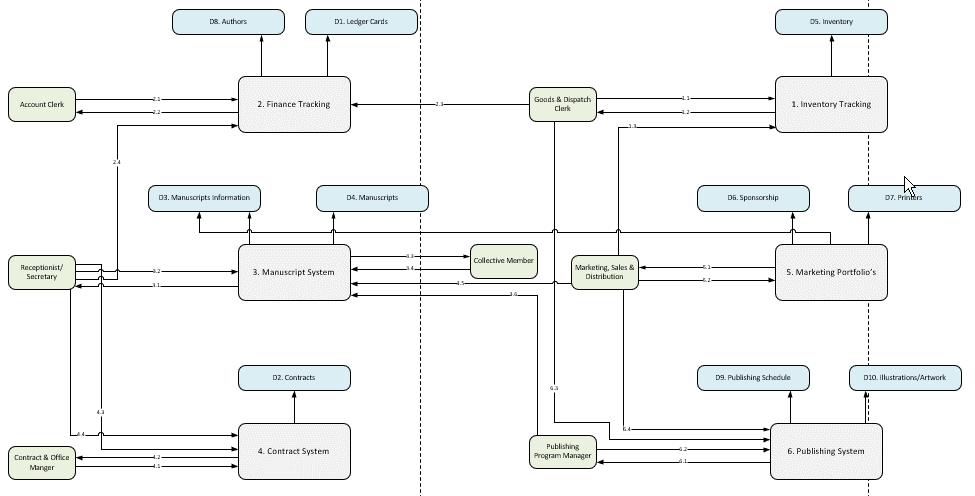


Figure : Data Flow Diagram

***2.3 Entity Relationships***

An entity relationship diagram allows you to show the relationships of entity sets stored in a database. An entity in this context is a data component that is used in the systems and processes that have been developed by the data flow diagram. Think of this diagram as the more refined data flow diagram that shows exactly what kind of data is passing through the systems.

Some important parts of the Entity diagram are the elements that are inside the entities. These are referred to as data types. This is important to note because this is what signifies what kind of data is going into the entity and then into a database. Noting these data types is also very important for the creation and editing of a systems database since databases all have set fields that require a single data type. See figure 3 below.

By defining the entities and attributes along with showing the relationships between them this diagram can illustrate the structure that is implemented in the database systems. This would be very important for figuring out data transmission from process to process and could be helpful for employees to know where data should be going.

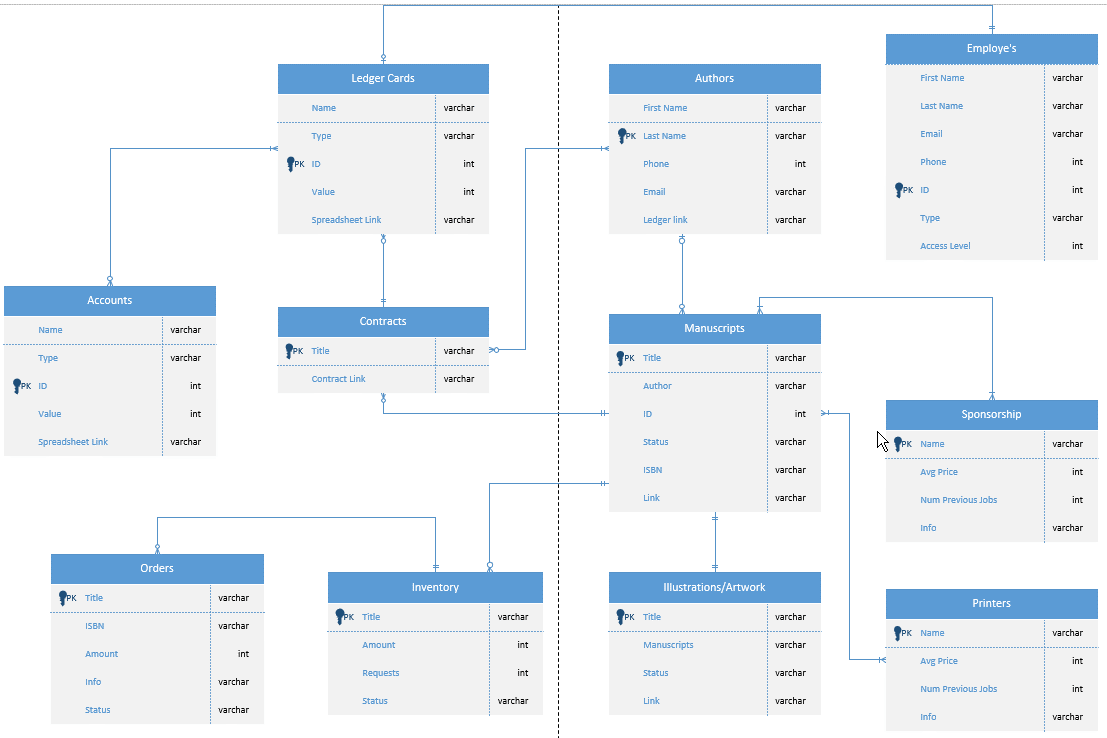


Figure : Entity Relationship Diagram

***2.4 Human Computer Interface Design***

An HCI or human computer interface is what connects the user to the system that has been created. It will be in charge of relaying information from that system to that user and then from that user back to the system. This design element as a strong connection to the entity relationship diagram since the HCI needs to show all those entities and data types to the user. This design also has to pull from the data flow diagram when designing pages that need to connect to other systems and databases in the overall APC system. This design is the first of the different SDLC processes that works to specify how a system will accomplish its tasks, in other words HCI is a non-functional requirement of the APC project.

Now to show the HCI design and how the human interface will look, and function wireframe diagrams are used. These are typically 2 dimensional designs of applications or webpages that show the different elements that will be employed. Overall design athletics like pictures and shapes are not included in these diagrams are instead replaced with squares or circles that represent where an element of the HCI will be. This is then labeled so that the view knows what it is or is given a figure number that is then referred to in a text document. See figure 4 below.

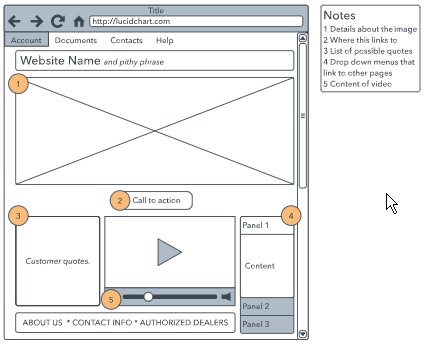


Figure : Wireframe Diagram

***2.5 Structure Design***

The structure design of a system is in close connection to the human computer interface and deals with what is expected when a user performs and action in the systems interface. As shown in the human computer interface design of the physical applications and system interface is the main concern but with structure its more of the behind the scenes. All the information from the interface design is taken into account when creating the structure design. Looking at those design elements and then thinking what should happen when a user clicks a button is a huge part of the overall system design and is what goes into structure diagrams. This is another non functional requirement for the project but key to a working user interface.

As far as the actual chart goes the components are referred to as modules which will represent different components in the system. Each module of the chart is shown in a level format from top to bottom. Level 1 being at the top and level 3 at the bottom. Then there are the subroutines of the system which live under each module. These are typically after level 2 and are organized left to right as in order of occurrence. In between levels 2 and 3 you will see arrows which represent data transfer between each module. The arrows direction represents the direction of the data, and the text will explain the purpose of the transfer.

You will see simple line connections that connect module to module and represent the connection to the overall system parts. There is also a rhombus shape that is used to represent a two-way decision such as true or false, or yes or no. This shape is located under a module where the decision would occur. See figure 5 below.

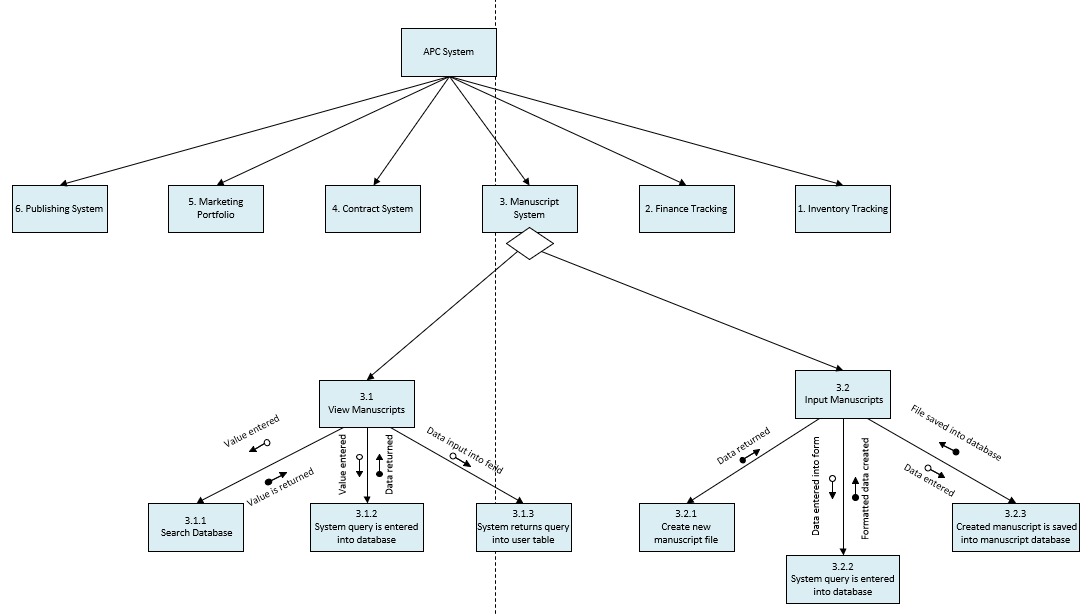


Figure : Structure Chart

**Design Proposal**

***3.1 Design Elements***

The following high-level business processes will be what the APC system will focus on and strive to accomplish. Overall, these 6 processes are combinations of smaller low-level processes that could be fixed/solved by creating a single process. For example, a single low-level problem that APC was having was lack of information when presenting manuscripts to their Collective Members. In order to solve this the Digital Manuscript system was created where all important documents from other processes will be combined into a single portfolio.

*Digital Finance system:* This will cover all the financing operations for APC through multiple spreadsheets and finance tracking systems. All the important business processes that are taken care of by this system are detailed in the APC requirement log. The key element of this high-level business process is that there will be digital ledger cards instead of the paper ones that APC was originally using. Since the ledger cards are digital, they can be connected to other business processes like the manuscripts in the manuscript system.

*Digital Inventory tracking:* This will cover all the inventory operations for APC through multiple spreadsheets and tracking software. All the important business processes that are taken care of by this system are detailed in the APC requirement log. The key element of this high-level business process is that there will be digital tracking system that can have alerts setup for lack of inventory, or alerts that will be sent to other employee members. This will enable easy work between the inventory workers and the Finance workers because as soon as a receipt is created it can be sent to the finance system.

*Digital Marketing portfolio's:* This will cover all the marketing operations for APC using a business operations system that keeps track of APC clients and there outside sources for marketing, printing, etc. This means that there will be a large list of all identified businesses or people with important and relevant information that APC sees as important. Think of it as a contact system with extra information stored like past interaction whether that be for the authors or for the printing companies that APC has used.

*Digital Contract system:* This will cover all the contract operations for APC through a stored database of all relevant contracts and past/signed contracts. This means there will be a list of pre-made contracts for authors to sign, and then can be adapted for the particular case. Then those contracts will be labeled for that instance and then kept with each revision being saved and tracked back to the database. This database can also be accessed by all employees and then linked to the manuscript system so that contracts for particular manuscripts can be included in the active manuscript.

*Digital Manuscript system:* This will cover all the Manuscript operations for APC through a stored database where all information pertaining to a certain manuscript is stored. So not only will there be the manuscript but there will also be contract information, marketing, inventory, and finance. This will allow other employees to look up particular manuscripts and then view all the important relevant information for that manuscript.

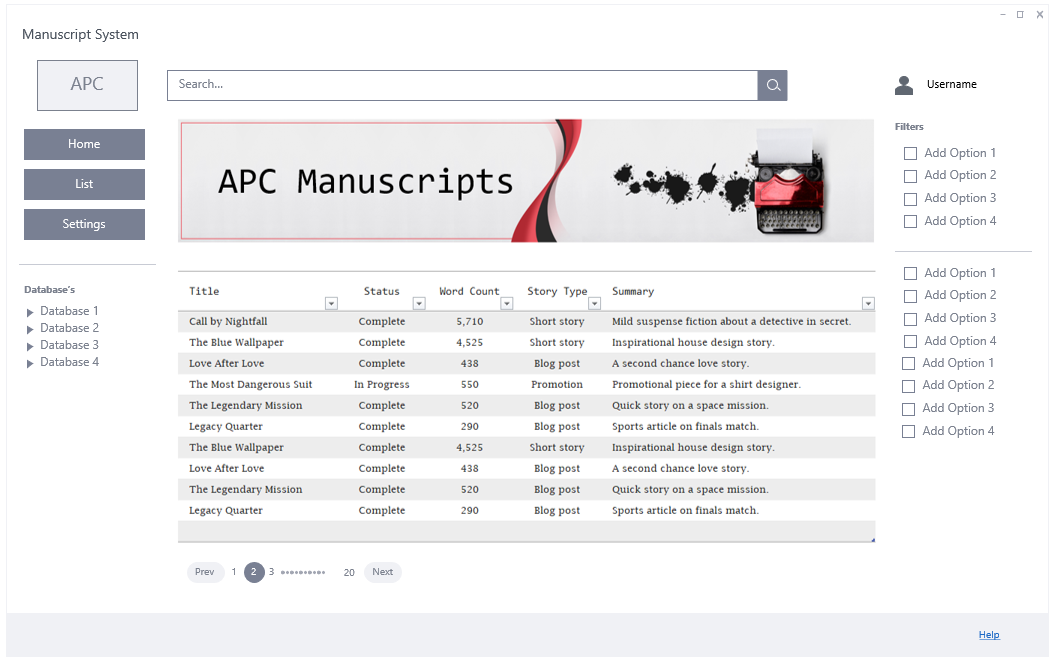


Figure : Manuscript Search Wireframe

*Digital Publishing system:* This will cover all the Publishing operations for APC using an agile based timetable system which allows for employees to submit their finished tasks and mark as complete. Then when a process of the timetable is complete alerts will be sent to the Publishing team and then the next relevant party so that they can start their next task. This will help in office workflow. To give you a better idea of the system here's an example: The timetable lists an element of "finish contract negotiations with author" when this element is completed the next process needs to take place. So, an alert will be sent to that next elements assignee. This could mean that an alert is then sent to the manager with the contract that has been signed pending approval.

***3.2 Requirements for Project Design***

In order to implement all the systems and processes listed in the introduction and design element sections there are several requirements that will need to take place for this proposed project. These requirements are physical needs that will have to be implemented to support the systems that have been designed and would be implemented in this project. As a reminder the 6 systems are: Inventory tracking, Finance tracking, Manuscript system, Contract system, Marketing Portfolio, and Publishing System. All of these systems will require addition server and application support in order to work. The following information is the APC system requirements for those internal systems with current employee and system demands. If employee’s increase devices will be added but networking is already created to handle more employees.

*Physical Devices:*

8x Dell 27-inch monitors

8x Windows 10 installations

1x xerox versalink c505/s printer

*Applications:*

kintone database software/system

*Networking:*

1x Synology RT2600ac router

1x 200 Mb/s synchronous ISP service

1x 24-port NETGEAR GS324TP – Switch

2x Cat5e solid PVC cable 1000ft

20x Cat5e punch down keystone jack

1x hosted azure data storage servers (1tb upgradable)

**Separate Conclusion** for instructor

Through this project I have felt several different ways about the different elements of the SDLC process. Overall, I think it’s a great way to implement a project and make sure that everything is detailed and has the correct functionality. There is of course going to be problems where you will have to go back and change certain design elements but that’s the same with any system design. For me personally though I definitely figured out that I would never want to be in a business that has to create a SDLC for another business that doesn’t know anything about the SDLC process or technology. The thing I hate most in the world is explaining why I did something when I am in a position as the professional I the situation. This is the main reason why I could never work in tech support. I just don’t have the patience to explain things that are so basic.

Aside from that though I found this project sequence for this class a great way to show students the correct ways around designing projects. I also felt that the overall natural progression of SDLC is a great system to use for any project. It has a great system to take the requirements and build upon them to try and work out the problems and details through thorough analysis.