Welcome to *iCopy*:

Automated Copier Solutions Developed by

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Introduction

iCopy is an ingenious outlook on data management and duplication services, but what makes it ingenious is its ability to use industry technology like Optical Character Recognition (OCR), transmission of data using Server Mail Block (SMB), pre-defined email services and the latest in Bate Stamping technology to produce a software application that will revolutionize the copier services for our clients and further establish Berney Office Solutions' as an industry leader in image duplication software and services. In order to best accomplish this goal, however, we will need to ensure that he features are functional, and the best manner to product that functionality lies within the construction of the software. Our software team is fully aware of this, and they have utilized the tools of Use Case Modeling to provide a snippet of how the application will be developed. This document will review some of the details for the application as well as provide some insight into their logic process.

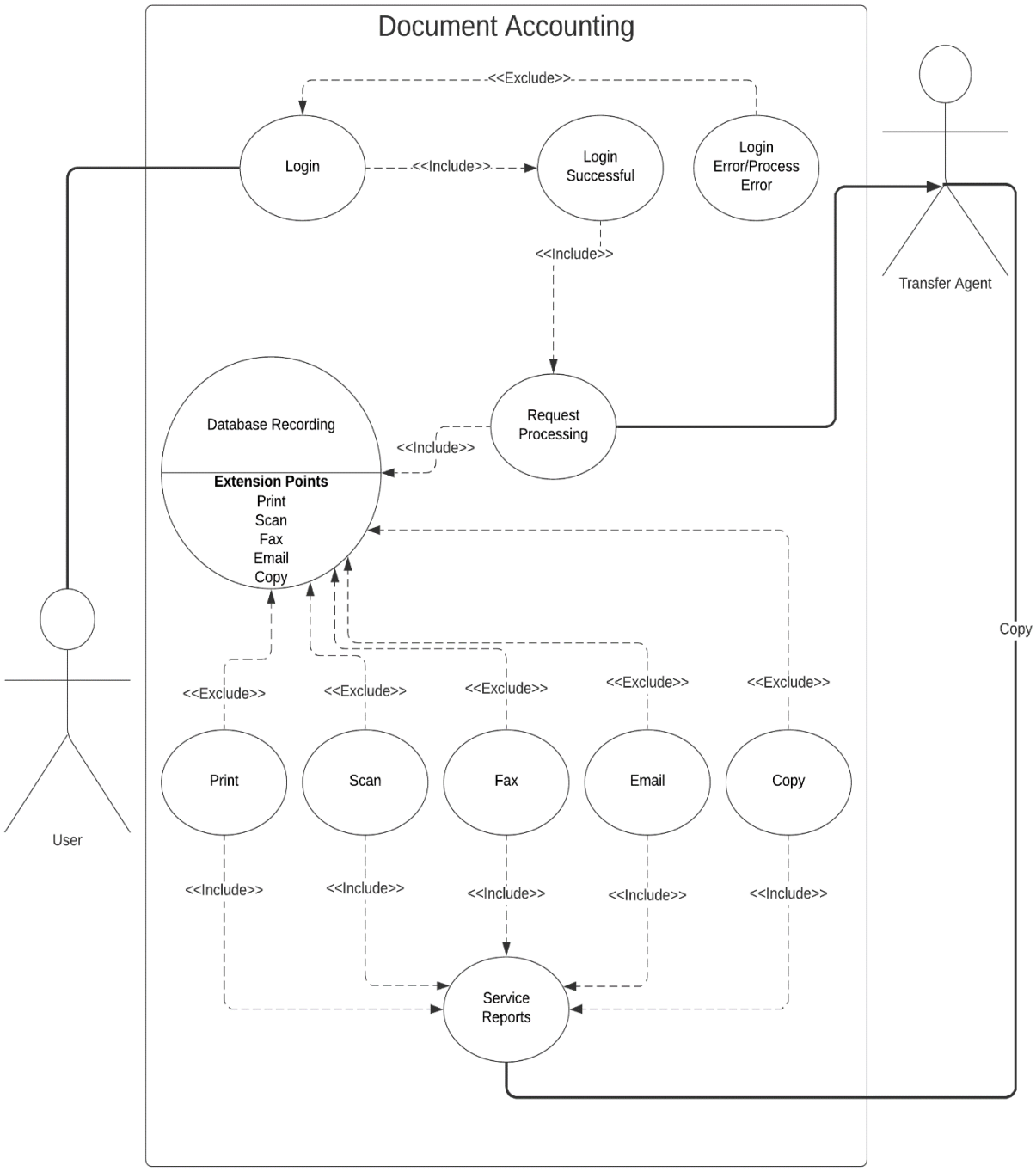
Use Case Modeling

The purpose of Use Case Modeling is to provide a realistic visual representation of how the application should work upon development. It utilizes key features that represent both users and actions in manner that be interpreted by anyone reading the diagram and descriptions. These features include the designations of Systems, Actors, Use Cases and Relationships. A System is, typically, a specified component of the overall application. The Actors, usually people, are the initiators of these Systems by providing input or data that they can work off of. Use cases are the driving forces of the internal System make-up. They direct the flow of actions as a single element. Every System will have at least one Use Case, but there can be many Use Cases working in conjunction with each other. What binds all of these elements together are the Relationships that connect them all together and create a flow of events for those reading the

diagram as it is created. As discussed earlier, our software team identified three significant Systems that would make up the inner workings of *iCopy* and they are sharing some of their product expectations.

Document Accounting

One of the major suggestions provided to us, by our reactions from stakeholders, is the need for a software client that has powerful accounting capabilities. Our software team took that element into account when developing *iCopy*. The System called Document Accounting details the various accounting capabilities that stakeholders desired. One major concern was the ability to track the name, date and time, destination and even an image of the file being sent or copied from their onsite units. *iCopy* is being designed with that element in mind. The idea is to have the user provide valid login credentials that can be verified against a connected user database. Once the identity is verified, the user's unique homepage will display on the control panel and allow them to select a tier of services to perform. These services include Scanning, Faxing, Emailing and Copying. As stated earlier, the big element that stakeholders desired was the ability to track documents exchange using digital media or a documentation of copied material. When a user submits a job, via the control panel, he/she, based upon their selections, will submit their document and the Accounting software System will record this information to one of various databases: Print, Scan, Fax, Email or Copy. As it copies this information to the database, the job is submitted to the next System, Document Transmission, for evaluation via the installed Transfer Agent. This is important to note in the context of copies. Below is a use case diagram of the Document Accounting feature and its expected pathways/relationships.


Document Accounting
<<Exclude>>
Login
<<Include>>
Login Successful
Login Error/Process Error
<<Include>>
Transfer Agent
Database Recording
Extension Points
Print
Scan
Fax
Email
Copy
<<Include>>
Request Processing
User
Copy
<<Exclude>>
<<Exclude>>
<<Exclude>>
<<Exclude>>
<<Exclude>>
Print
Scan
Fax
Email
Copy
<<Include>>
<<Include>>
<<Include>>
<<Include>>
<<Include>>
Service Reports

Document Transmission

The System routine Document Transmission is, by far, the most important aspect of *iCopy* as an application. This system is where everything the application actually initiates the services that are requested by the user. In the introduction of this document, we discussed the industry features of OCR and SMB services. These services are so powerful in that they can create the ability for easy filing options or secure data transmission services. To better understand how they are integral in *iCopy*, it is beneficial to understand their part in the software development.

Optical Character Recognition (OCR)

For many of us, we think of OCR technology as being a some new and highly innovative concept in the dawn of the modern computing; however, we would be mistaken. Surprisingly, OCR is a pre-War invention and by pre-War, we're not talking about World War II – we're talking about the Great War – World War I (ScanMarker, 2019). This means that since its creation, the development of the technology has only improved over time. OCR is now used to scan whole documents and/or books into audio for text-to-speech technology. It can take that same document and/or book and make it searchable document. This is beneficial when researching key phrases or information within a large document's text.

For *iCopy*, this dynamic technology will allow the program to scan and search documents for key text and/or tags that may pose security concerns within duplication and/or transmission of the document other individuals. The Document Transmission component System will feature this technology for exactly that purpose and more. The technology can scan for key tags/phrases in the document itself and apply those requests within the transference of the document to other individuals. For instance, if the document had a statement that read, "all copies of this document

should be immediate reported to the department chair of the department of Human Resources and the department of Technology Management". The OCR technology can capture that statement and cross reference it with stored profile information and ensure that these departments are provided the reproduction and/or transmission of the document without additional intervention from the original user.

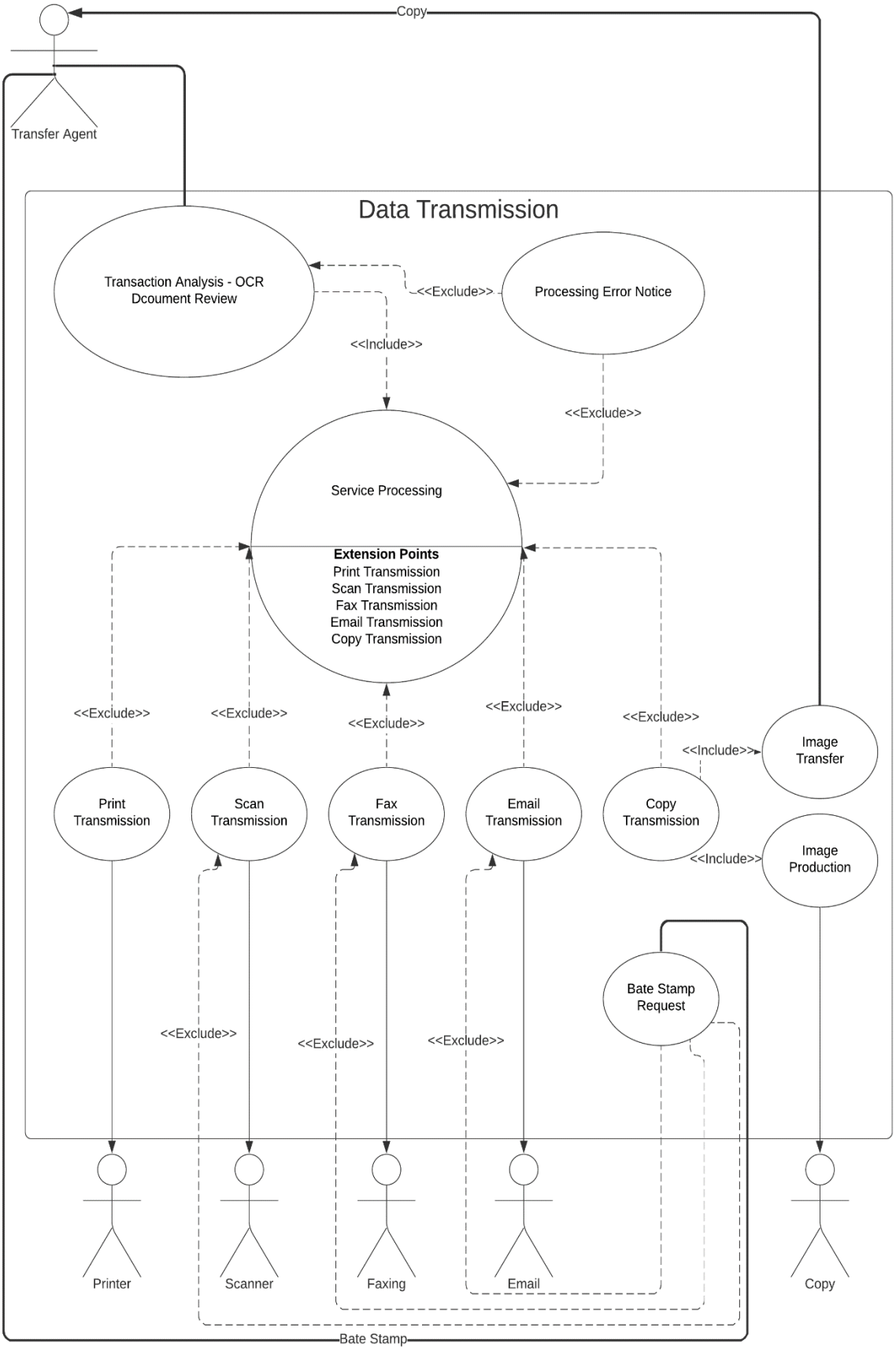
Server Message Block (SMB)

One of the additional concerns that our stakeholder's shared was the ability to, safely and securely, transfer documents to computer desktops. The user of File Transfer Protocols (FTP) have usually been the medium of doing so; however, most stakeholders desired something that was more built in and required little to no additional software purchases. Fortunately, SMB is a network protocol used by Windows-based computers that allows systems with the same network to share files (TechTerms, n.d.).

This ability to share files over the network provides a level of safety that was requested due to the fact that no new software was installed and the SMB services are constrained to the network in which the devices are connected to. More importantly, SMB works through a client-server approach, where the client makes a specific request and the server responds accordingly (MiniTool, 2020). That means that *iCopy* can be configured for a one-way directional connection to each user based upon their profile development. All of this equals security for our stakeholders and application power this incredible software package.

Document Transmission Use Case Diagram

The use case diagram for Document Transmission is uniquely powerful as it documents the transactional hand-off of the user's input during the accounting phase while interacting with multiple network devices and/or software applications.

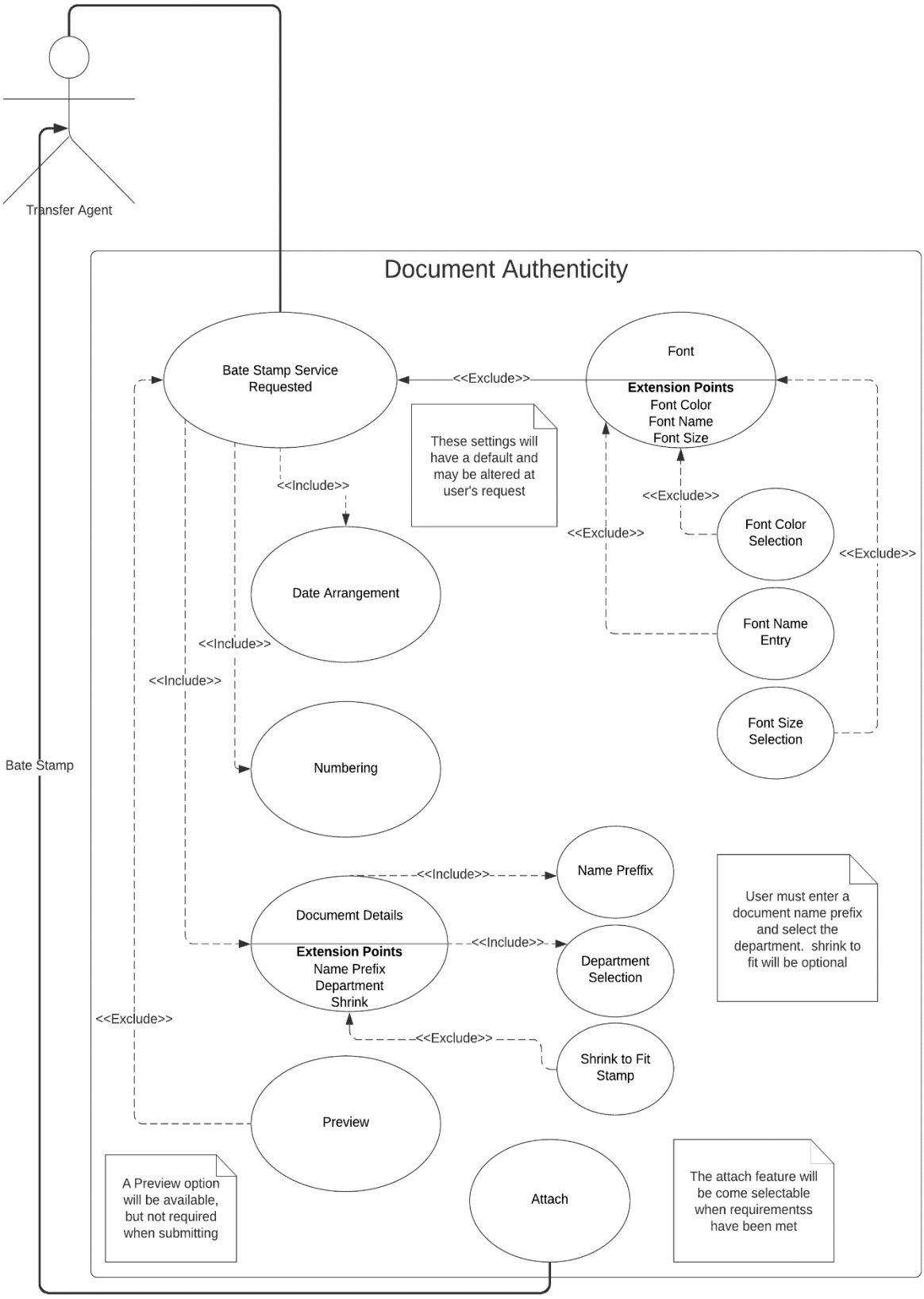

Copy
Transfer Agent
Data Transmission
Transaction Analysis - OCR
Dcoument Review
<<Exclude>>
Processing Error Notice
<<Include>>
<<Exclude>>
Service Processing
Extension Points
Print Transmission
Scan Transmission
Fax Transmission
Email Transmission
Copy Transmission
<<Exclude>>
<<Exclude>>
<<Exclude>>
<<Exclude>>
<<Exclude>>
<<Include>>
Image
Transfer
Print
Transmission
Scan
Transmission
Fax
Transmission
Email
Transmission
Copy
Transmission
<<Include>>
Image
Production
Bate Stamp
Request
<<Exclude>>
<<Exclude>>
<<Exclude>>
Printer
Scanner
Faxing
Email
Copy
Bate Stamp

Document Authenticity

Many of the stakeholders that were queried in this process shared a unique concern that they desired all units to possess the power to perform: Bates Stamping. In many ways, some entities have considered Bate Stamping as an outdated practice due to the development of computing power and conventional file transfer services like email and document scanning; however, that would not be the case for many agencies such as legal firms, military vendors and even scientific researchers are likely to continue to use Bates Stamps due to its unique way to identify every specific piece of a production by assigning a unique, sequential identification number to each page, file, or image (Zapproved, 2018).

Law firms, one of our valued stakeholders, rely heavily on the various types of devices we provide and many of these stakeholders have asked if there is a way to customize the ability to Bates Stamp documents in unique manner that meets their individual needs while meeting the jurisprudence requirements for legal documentation? Our answer at the time was, "let us get back to you on that." *iCopy* has an answer for that request. It is very common, according to Zapproved, that in a modest 30,000-page ediscovery production, in which 5,000 pages are tables, lawyers and courts need a way to refer to the exact table found on the eleventh page of the defendant's eighteenth production (Zapproved, 2018). This application will allow stakeholders to better construct and modify their Bate Stamps for authenticity and research purposes.

Our software development team is working to design the Document Authenticity System in a manner that gives its users greater control to modify their Bate Stamps with file details and even with logo branding. Here is a use case diagram that shows how they plan to achieve this goal.


Transfer Agent
Bate Stamp
Document Authenticity
Bate Stamp Service Requested
<<Exclude>>
Font
Extension Points
Font Color
Font Name
Font Size
These settings will have a default and may be altered at user's request
<<Include>>
<<Exclude>>
<<Exclude>>
Font Color Selection
<<Exclude>>
Date Arrangement
Font Name Entry
<<Include>>
<<Include>>
Font Size Selection
Numbering
Name Preffix
<<Include>>
Documemt Details
Extension Points
Name Prefix
Department
Shrink
<<Include>>
Department Selection
User must enter a document name prefix and select the department. shrink to fit will be optional
<<Exclude>>
<<Exclude>>
Shrink to Fit Stamp
Preview
A Preview option will be available, but not required when submitting
Attach
The attach feature will be come selectable when requirementss have been met

Use Case Descriptions

At the beginning of this document, we discussed Use Case Modeling as part of the review of the development of *iCopy*. What we did not discuss is that the use case model consists of two artifacts: the use case diagram, which is a graphical representation showing which actors can operate which use cases, and the use case description (sometimes called the use case narrative), which is the text-based, detailed, step-by-step interactions and dialogue between the actor and the system (Kupersmith, Mulvey, & McGoey, n.d.). The first aspect, the diagram, shows a visual representation of the application's inner workings; however, it is meant to be void of any detail as to keep the imagery as simplistic as a possible. This is great if you just need a relative idea of how the application will function; however, if you have questions on its specific actions, that is where the use case descriptions will come in handy. Our software development team has created a couple of use case descriptions to give us an idea of how the application is expected to function.

Use Case Description: LOGIN

One of the first, yet most important, use case descriptions we will follow is the use case **Login**. This use case is part of the Document Accounting System and starts the process for which a user can access the devices. Within the description, it notates key elements that the use case will perform as well as the reactions from other use cases that relate to it. Here is the current use case description deliverable for **Login**.

Use Case Title	LOGIN
Brief Description	The use case allows the user to login to the application to access all relevant functions based on the user's access role. The variant user roles are staff, administration and system administrator. User will have a maximum of 3 login attempts before the account is locked. The user must contact the system administrator to unlock and access the account.
Main Flow of Events	1. The user Select their LoginID 2. The user enters their password 3. The system validates the LoginID and password 4. The system verifies the LoginID and password 5. The system validates user's profile permissions 6. The system displays the user's homepage or Computer Terminal access approved. 7. The use case ends
Precondition	1. User must have a valid account.
Postconditions	1. Document Submission Categories A. Image Production Control Panel i. User-defined home page is accessible B. Computer Terminal Submission i. Job submission is accepted and processed
Extensions	3a. Missing LoginID and/or password 1. The system prompts to select LoginID and enter password 2. Use case remains at main flow step 1 3b. Maximum of 3 attempts exceeded 1. System displays "Max attempts reached. Contact System administrator" message. 2. System locks user's account 3. The use case ends 4a. Invalid LoginID and/or password 1. The system displays "Invalid LoginID and/or password" message 2. They system prompts to check LoginID and re-enter password 3. Use case resumes at main flow step 2
Relationships	1. User to use case direct relationship 2. Use Case has include relationship with login data base 3. Use Case has exclude relationship with login error

Use Case Description: TRANSACTION ANALYSIS – OCR DOCUMENT REVIEW

Just as we saw the amount of detail used to define the actions of the **Login** use case, the **Transaction Analysis – OCR Document Review** use case maintains an equal amount of details as to allow the reader to gain a better, and fuller, understanding of how that particular use case was created and implemented into the overall application. Below is a review of the use case descriptions for the **Transaction Analysis – OCR Document Review**.

Use Case Title	Transaction Analysis - OCR Document Review
Brief Description	The use case collects data provided by the user selection and/or document analysis for digital document submissions. The information will be captured as prescribed in the assigned document locations. The document transcript, along with document content, will be submitted to the "Service Processing" use case for execution of document transmission services.
Main Flow of Events	1. Collect data from Transmission Agent 2. Scan assigned transmission tag(s) 3. Scan document for key phrases 4. Access stored user database for transmission tag(s) association 5. Access stored service log and attach additional services as pre-recorded in database 6. Review document for security concerns using key phrases 7. Submits data to "Service Processing" use case. 8. The use case ends
Precondition	1. User must be validated through "Login" use case. 2. Account must have access permissions for services requested. 3. Document must have transmission tags 4. Security concerns must be cleared
Postconditions	1. Document submitted for processing 2. User notified of completion via email.

Extensions	2a. Missing transmission tag(s) 1. Document transfer halted 2. Error notice submitted to Service Processing and routed to user's email 2. Use case ends 3a. Key phrases found in document 1. Add to transmission tag(s) for processing 4a. No association in database 1. Notate tag in confirmation email 2. Process valid tag associations 6a. Security Concerns Found 1. Document transfer halted 2. Error notice submitted to Service Process and routed to user's email 3. Email submitted to Service Processing and routed to Records Security Team 4. Use case ends
Relationships	1. Transfer Agent to use case direction relationship 2. Use case has include relationship with Service Processing use case 3. Use Case has exclude relationship with Processing Error Notice use case

Conclusion

There is so much that can be gained from the use of Use Case Modeling when it comes to any application creation; however, we are fortunate to see how valuable this modeling feature is for *iCopy*. We have been given a visual representation of how the program will create structured flow between application components, but more so we have a documented activity to understand how the application will work. Having these features and processes document in such a manner will make it tremendously easier to modify and update them in the future. We are well on our way to making this application a stellar success, and Use Case Modeling will help us on that journey.

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