

DIRKS

A Methodology for the Design and Implementation of Recordkeeping Systems

Audit Subject: Kelly Ellis

**Erin Allen
Linna Dean
Kelly Ellis
Kaley Jones**

**Introduction to Records Management
Professor Ciaran Trace**

Fall 2018

Table of Contents

Table of Contents	i
Step A – Initial Assessment	1
Introduction	1
Sec. I – Existing Systems	2
Sec. II – Functions	8
Sec. III – Business Case	14
Step B – Analysis of Business Activity	15
Introduction	15
Business Classification Scheme Tables	21
Conclusion	42
Step C –Identity Requirements for Records	43
Sec. I – Recordkeeping Requirements	43
Sec. II – Activity Investigations	51
Sec. III – Retention Schedule	73
Step D – Assess Existing Systems	77
Introduction	77
Sec. I – Exploration of Existing Systems	78
Sec. II – Gap Analysis	106
Conclusion	117
Step E – Strategies for Recordkeeping	119
Strategies for Laptop	120
Strategies for Google Drive	131
Conclusion	142
Step F – Guidelines and Suggestions for an Improved Recordkeeping System	143
Sec. I – Accessibility	145
Sec. II – Fixity & Integrity	147
Sec. III – Identity	150
Sec. IV – Organization, Classification, & Metadata	152
Sec. V – Authentication	158
Sec. VI – Protection	161
Sec. VII – Backup & Archiving	163
Sec. VIII – Obsolescence	166
Sec. IX – Conclusion	168

Step A: Preliminary Investigation

Initial Investigation and assessment

Our subject is Kelly Ellis, a 26-year-old female who works part time for a non-profit organization and is in her second year of graduate school at the University of Texas at Austin. She describes herself as being generally messy and was unable to articulate a clear structure within her current recordkeeping practices. She expressed that she would like to have a more organized and orderly laptop and hopes that the skills gained from participating in a DIRKS audit will improve her organization in many areas of her life.

“Sometimes I feel like my desktop looks like my floor when I haven’t done laundry is several weeks”

Our subject expressed the following concerns regarding her current recordkeeping practices:

- Inability to locate documents in a timely manner
- Uncertainty that critical documents have been saved
- Frequent file duplication when original document cannot be found in time
- Data loss
- Difficulty managing sharing permissions with colleagues on Google Drive
- General inefficiency through lost time and wasted storage

In this first step of the DIRKS audit, we seek to understand our subject’s current recordkeeping practices and needs, the systems she is using to generate and maintain her records, and the inadequacies and obstacles within her current practice. This initial evaluation illustrates Ellis’s particular need for revised practices while providing a foundation for the subsequent sections of this audit. We begin with an overview of the

issues we identified with Ellis's recordkeeping practices. Section 1 then assesses the two systems which have been selected for this audit, Ellis's laptop and her Google Drive account, as well as her current recordkeeping practices within these systems. In Section 2 we look at the various roles, or functions, that Ellis performs in life and the record-generating activities associated with them. Finally, Section 3 will synthesize the information gathered in the previous sections to make a case for the performance of a full DIRKS audit.

Overview of Findings

The areas of Ellis's recordkeeping practices that showed the greatest need for improvement were as follows:

Organization and Identity

Ellis lacks naming conventions or consistent file classification schemes in both her laptop and Google Drive.

Fixity, Integrity, and Privacy

Ellis does not utilize two-factor authentication in any context aside from the login to her Gmail account. Her laptop is not password protected beyond the initial login.

Backup and Preservation

Ellis has not performed a backup of either her laptop hard drive or Google Drive. In the case of a full system failure, records from these systems would be unrecoverable.

Section I – Overview of Current Systems and Practices

Laptop

Ellis uses a 2015 MacBook Air. The operating system is macOS Sierra, version 10.12.6, with a 1.6 GHz Intel Core i5 processor and 8 GB of memory. She has ample storage available which could be utilized for backups, but Ellis had not utilized the Time Machine function, nor does she use an external hard drive. This illustrates a need for better backup and archiving processes.

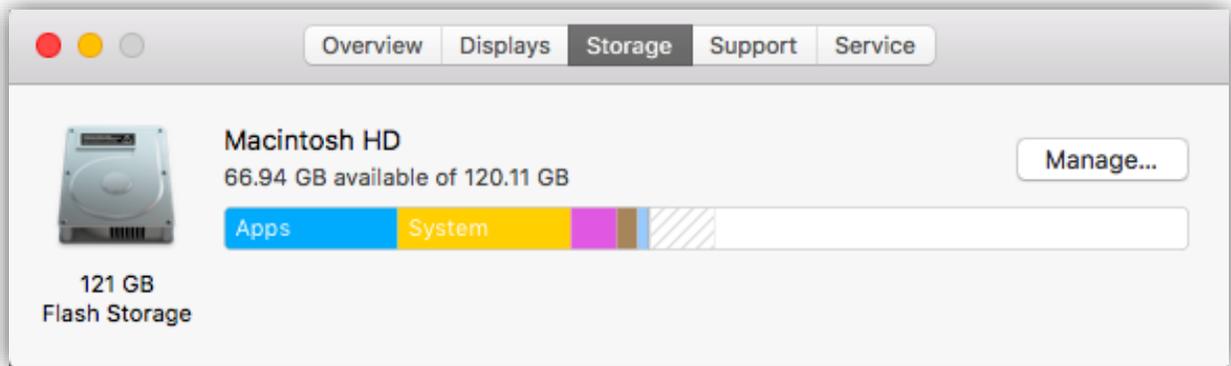


Figure 1: Ellis's current laptop storage

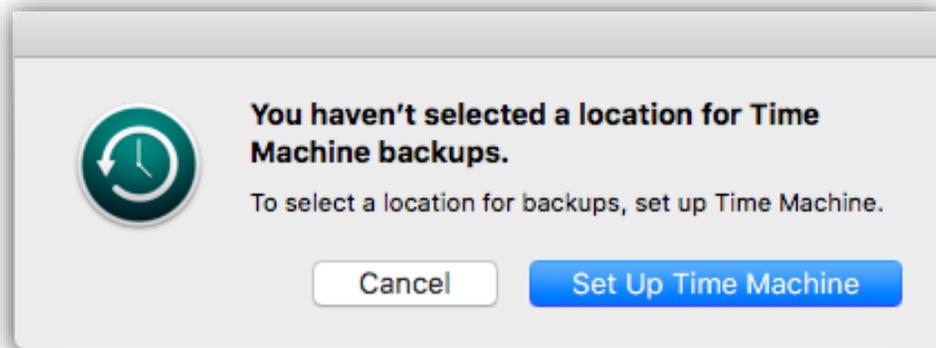


Figure 2: Time Machine as a backup option

When looking through the contents of her hard drive, Ellis revealed that there were a number of applications that she had downloaded that she has never used and likely never will use, such as Tableau, Python, Steam, and Open Any Files (See Figure 3).



Figure 3: Applications that Ellis has downloaded

Concerning privacy on her laptop, Ellis's system requires a single-authentication factor password to open the desktop after it has been in sleep mode or powered off but does not have any further password protection individual records. Given the likelihood that she has unprotected PII (personally identifiable information) on her hard drive, we have assessed her current privacy practices to be inadequate. The lack of password protection on documents also suggests issues with identity, integrity, and fixity, as Ellis currently utilizes no tools to ensure there have not been unauthorized changes to her records aside from physically monitoring use of her laptop.

A cursory glance at the desktop (See Figure 4) indicates there has been an attempt to classify and index records by subject matter, but it is neither consistent nor comprehensive. This speaks to issues with identity, accessibility, and organization.

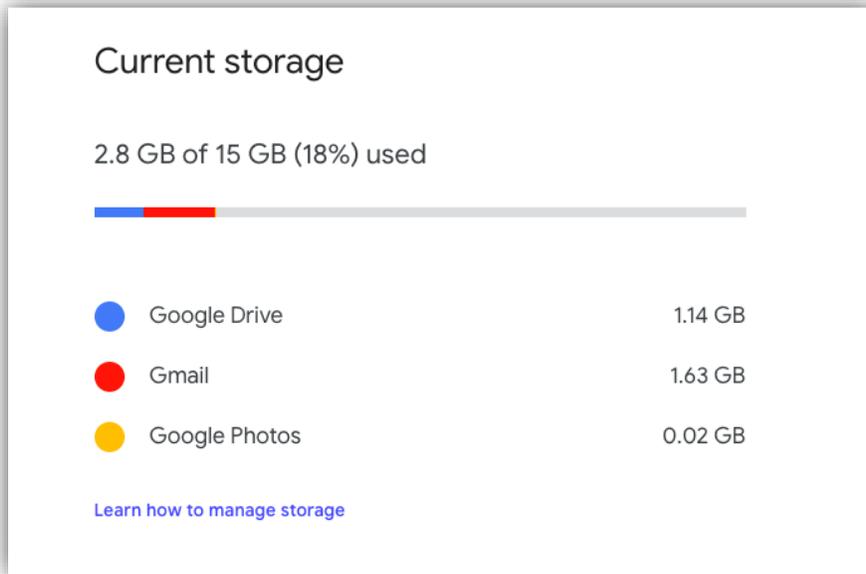


Figure 5: Ellis's current Google Drive storage

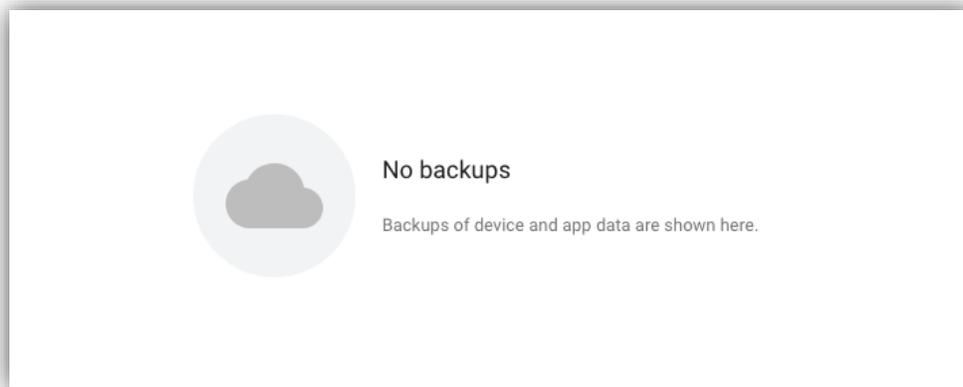


Figure 6: Google Drive backup

At first glance, her Drive homepage (See Figure 7) suggests issues with identity, organization, and accessibility similar to her laptop. We found a large number of ambiguously named files, as well as a number of files with “(copy)” and “(1)” or “(2)” in their name, suggesting that there are a number of duplicate files in the Drive. This suggests a need for better appraisal and retention practices, as many of these files could likely be disposed of.

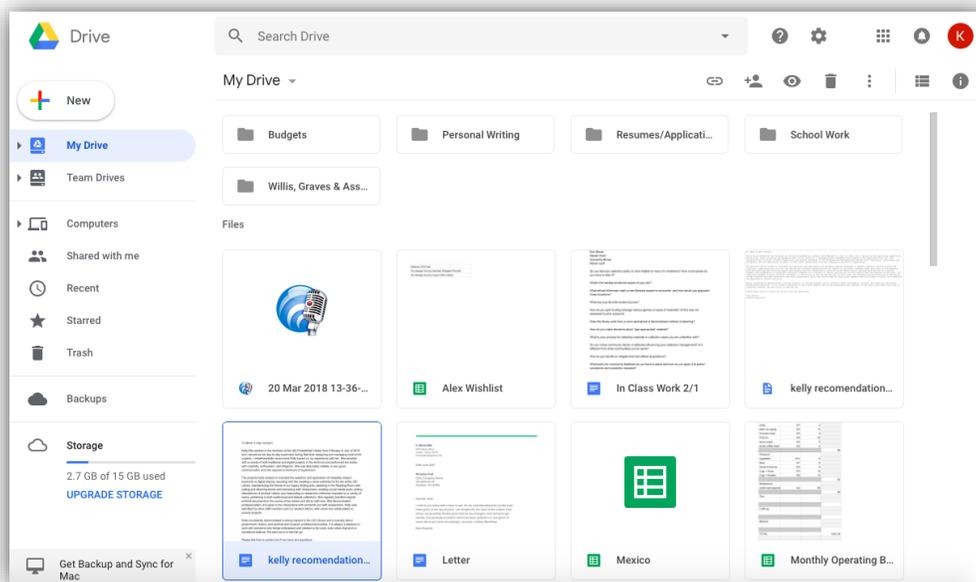


Figure 7: Google Drive homepage

Ellis revealed that she does not have any standard practice when it comes to naming conventions or filing structures. The five folders she has created indicate an attempt at nesting, but this is not a consistent practice, and the majority of her records were “loose” or unsorted on her “My Drive” homepage (See Figure 7).

Ellis utilizes two-factor authentication password protection for her Google account. While no records within the Drive are password protected, Ellis has the ability to manage sharing permissions with her records on the drive. Concerning privacy, we found Ellis’s practices on her Google Drive to be adequate.

Findings

Ellis’s current recordkeeping practices leave much to be desired. The lack of consistent naming conventions or filing structures, and the absence of any backups for her systems stand out as practices that have the greatest need for improvement. We also found that Ellis could benefit from improved retention and disposition practices on both of her systems, as well as improved privacy practices. Steps C, D, & E of this audit will examine these systems in the context of Ellis’s roles and responsibilities in greater detail in order to provide tactics and actionable recordkeeping strategies.

Section II - Functions

Our subject plays a number of distinct roles in the course of her daily life, such as student, employee, partner and friend. In this audit, we define these broad roles as “functions”. Ellis must perform numerous activities to fulfill the requirements and responsibilities of these functions. Some functions, such as student and employee, can be broken down further into subcategories or “sub-functions” that give greater specificity the nature of Ellis’s responsibilities and the actions she must perform to fulfill them. The performance of actions often generates records. We refer to these as activities with record-generating transactions. For example, one of Ellis’s responsibilities as an employee of Healing with Horses Ranch is to publish the newsletter each month. This requires her to collect and edit copy from the contributors, which generates a number of newsletter-related files on her laptop and Google Drive each month. In this example, managing the newsletter is an activity which requires multiple record-generating transactions, such as editing copy and downloading images.

The following table describes the functions, sub-functions, and related activities that we have identified for Ellis, as well as associated records. This table will not, however, examine her functions at the transactional level. Understanding Ellis’s functions and resultant records will allow us to better assess the adequacy of her current practices and the risk these practices pose to our subject and external stakeholders, that is individuals who may affect or be affected by Ellis’s recordkeeping practices. Well-defined functions also give us a template with which to organize our subsequent findings and suggestions in Steps B & C. The activities and records listed in Step A are intended only to give context to Ellis’s functions and sub-functions, and do not represent an authoritative list. A comprehensive analysis of Ellis’s record-producing activities and records series at the transactional level is provided in Step B. It is also important to note that this audit only concerns itself with the materials that are considered “in scope”. That is, records which are stored on Ellis’s Laptop or Google Drive. Her various functions produce a great many more records in paper and email form. For instance, as a “Social Being”, Ellis saves a number of sentimental cards and letters each year that she has received. These cards are indeed records, but because they are not stored on her Laptop or Google Drive, they will not be included in subsequent analysis.

STEP A: KELLY ELLIS

Student		
<p>Ellis is a second-semester graduate student in the School of Information at the University of Texas at Austin. While the majority of her record-producing activities are related to this current role, Ellis has performed the role of student for many years and has generated many records as a result, some of which continue to be of value. Ellis's relationships with her professors and the team-based nature of many of her projects create a number of external stakeholders for this function, such as faculty, classmates, and scholarship providers.</p>		
Sub-Function	Activity	Examples of Records
Actively Enrolled Student	Attending Class	Timetables and Schedules
	Reading Assigned Materials	Syllabi and assigned readings, such as journals or articles
	Taking Notes	Typed note documents
	Completing Assignments and Projects	Reference materials, drafts, finished products
	Archiving Past Schoolwork	Copies of notes and completed assignments
Team Member	Collaborating on Projects and Assignments	Reference materials, notes, drafts, finished products
Scholarship Recipient	Performing Requirements for Acceptance	Scholarship guidelines, thank-you-letters

STEP A: KELLY ELLIS

Employee		
<p>Ellis is currently employed as the development manager at Healing with Horses Ranch. She works fifteen to twenty hours per week in this role, and often works remotely. Her responsibilities include planning the annual fundraiser, sending out a monthly newsletter, submitting hours for payroll, and assisting in horse care and the management of the volunteer database. The function of “Employee” also encompasses Ellis’s past and future employment. Her role as a research associate at the oil and gas consulting firm, Willis, Graves, & Associates, had a number of record-generating activities within our scope. Ellis’s desire to pursue further employment after graduate school also entails record-generating activities, such as maintaining a resume and saving materials that might have value in future job searches. Much like her “Student” function, the team-based nature of Ellis’s role as an employee means there are a number of external stakeholders, such as her coworkers, managers, and former employers.</p>		
Sub-Function	Activity	Examples of Records
Development Manager	Planning Annual Fundraiser	Mailing lists, meeting minutes, staff memos
	Management of Volunteer Database	Database tables
	Managing Monthly Newsletter	Documents containing copy, images to be used in newsletter
	Being Compensated	Timesheet
	Horse Care	Medication lists, feeding schedules
Research Associate (Former)	Litigation Project Research	Downloaded reports, notes
	Assisting in Website Design	PowerPoint containing layout and image samples
	Being Compensated	Timesheet and contractor billing form
Prospective Employee (Future)	Maintaining Resumes	Role-specific resumes
	Storing Supplemental Materials for Applications	Letters of recommendation

STEP A: KELLY ELLIS

Consumer

The consumer function encompasses the responsibilities and roles Ellis has as an individual who uses currency to meet material needs and wants. Broadly, this function would include common activities such as holding a bank account, purchasing goods online and in-person, and transferring and receiving money through software such as Venmo, just to name a few. The majority of Ellis’s consumer records, however, exist only in paper form or in emails, and are thus outside of the scope of this audit. While the information collected below does not represent the scale or variety of Ellis’s total consumer records, it does allow us to get a sense of Ellis’s recordkeeping practices as they relate to the consumer function. External stakeholders within scope for this function are Ellis’s roommates.

Sub-Function	Activity	Examples of Records
(No distinct sub-functions within scope)	Renting a House	Images for “roommate wanted” classified ad
	Tracking Expenses	Table of individual purchases and expenses

Author

Ellis enjoys creative writing and has, overtime, developed a function as an “Author”. Though this role is a purely personal one with no external stakeholders, it is emotionally significant to Ellis and includes a number of record-generating activities as Ellis enjoys saving her work for its sentimental value. There are no external stakeholders for this function at this time.

Sub-Function	Activity	Examples of Records
(No distinct sub-functions within scope)	Creative Writing	Poems, diary entries, drafts, lists of ideas

STEP A: KELLY ELLIS

Social Being		
<p>The “Social Being” function includes the many roles and responsibilities that come about as a result of Ellis’s personal connections to friends and family. Much like the consumer function, many of the records generated through this function fall outside of this audit’s scope. The record-generating activities within our scope and be grouped under two sub-functions: Daughter and Friend/Partner. By its nature, the social being function includes many external stakeholders that can be grouped into the categories of friends, partner, and family.</p>		
Sub-Function	Activity	Examples of Records
Daughter	Traveling with Family	Shared itinerary
	Helping with Grandfather’s Funeral	Obituary copy
Friend/Partner	Planning Group Activities	Spreadsheets
	Traveling	Images
	Celebrating Birthdays	Wish list spreadsheets
	Sharing Images	Downloaded images

Citizen		
<p>The “Citizen” function encompasses the roles and responsibilities relating to Ellis’s citizenship in the United States of America. These include being a voter, a resident of Texas and of Travis county, paying taxes, participating federal programs such as social security, and being a passport holder. The majority of records associated with these activities fall outside of the scope of this audit. External stakeholders within this function are the municipal, state and federal government.</p>		
Sub-Function	Activity	Examples of Records
(No distinct sub-functions within scope)	Filing 2017 Taxes	Copy of H&R Block summary

STEP A: KELLY ELLIS

Patient		
<p>The “Patient” function encompasses the record-generating activities associated with receiving medical care. Ellis receives medical care from her primary-care physician and rheumatologist. The majority of Ellis’s records relating to the patient function, such as bi-annual bloodwork records and appointment reminders, are outside of the scope of this audit. There are no sub-functions or external stakeholders at this time.</p>		
Sub-Function	Activity	Examples of Records
(No distinct sub-functions within scope)	Compiling Medical Records	Visit summary

Leisurite		
<p>The “Leisurite” function encompasses the record-generating activities associated with entertainment, hobbies and pleasure-seeking. Ellis regularly enjoys consuming various forms of media and partaking in hobbies such as image editing and gaming. Very few of the records generated by Ellis’s function as a leisurite are within the scope of our audit. There are no external stakeholders within this function.</p>		
Sub-Function	Activity	Examples of Records
(No distinct sub-functions within scope)	Downloading Media	Images, E-books
	Pursuing Computer Dependent Hobbies	Various software

Section III - The Need for DIRKS

As demonstrated in this initial assessment, we find Ellis's present recordkeeping system to be inadequate, and the level of risk she is operating with to be unacceptable. Issues relating to accessibility, fixity, integrity, and loss are the most prominent, though there are a number of other recordkeeping principles, such as privacy and retention, that need to be addressed.

In light of this, we feel Kelly Ellis is a good candidate for a full DIRKS audit because she demonstrates both a need for revised practices and the ability to implement the changes we suggest. With her current system capability, she has the material means and tools to enact better recordkeeping, and a full DIRKS audit would provide the guidance and structure she needs to actualize better practices.

Step B: Analysis of Business Activity

Introduction

DIRKS Step B provides a more detailed look at the functions, activities, and transactions of our subject introduced in Step A. Step B also ties the records associated with each function and activity to their file format and location within Ellis's hard drive and Google Drive. Through this step, a business classification scheme was created which provides a conceptual model of Ellis's functions, activities, transactions, and record series. Another major aspect of this step is the assignment of a risk assessment label to each individual activity within the business classification scheme tables.

We used both a hierarchical approach and a sequential approach to ensure a thorough level of detail was gathered to complete this step. In our hierarchical analysis, we determined the overarching functions performed by Ellis that result in recordkeeping. We then broke these functions down into Ellis's activities. In our sequential analysis, we looked at Ellis's hard drive and Google drive records and determined, through interviews with Ellis, the transactions that generated those records. These transactions were then sorted into the appropriate activities. As we parsed Ellis's Google Drive and hard drive, we came across documents that did not fit into any of the activities we had already established. For these documents, we created new activities to contain the transactions that produced the various documents we discovered.

Step B provides definitions for certain terms used throughout the project. This section also includes information describing our risk assessment model and the external stakeholders addressed within the business classification scheme tables. Further discussion of risk mitigation can be found in Steps E and F.

Definitions

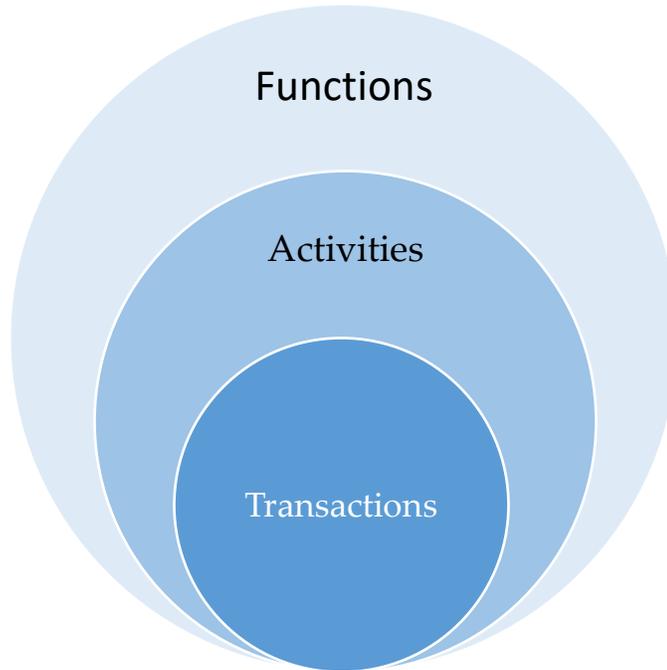


Figure 1: Relationship of Function, Activities and Transactions

Functions – The major responsibilities that are managed by the subject to achieve their goals (See Figure 2).

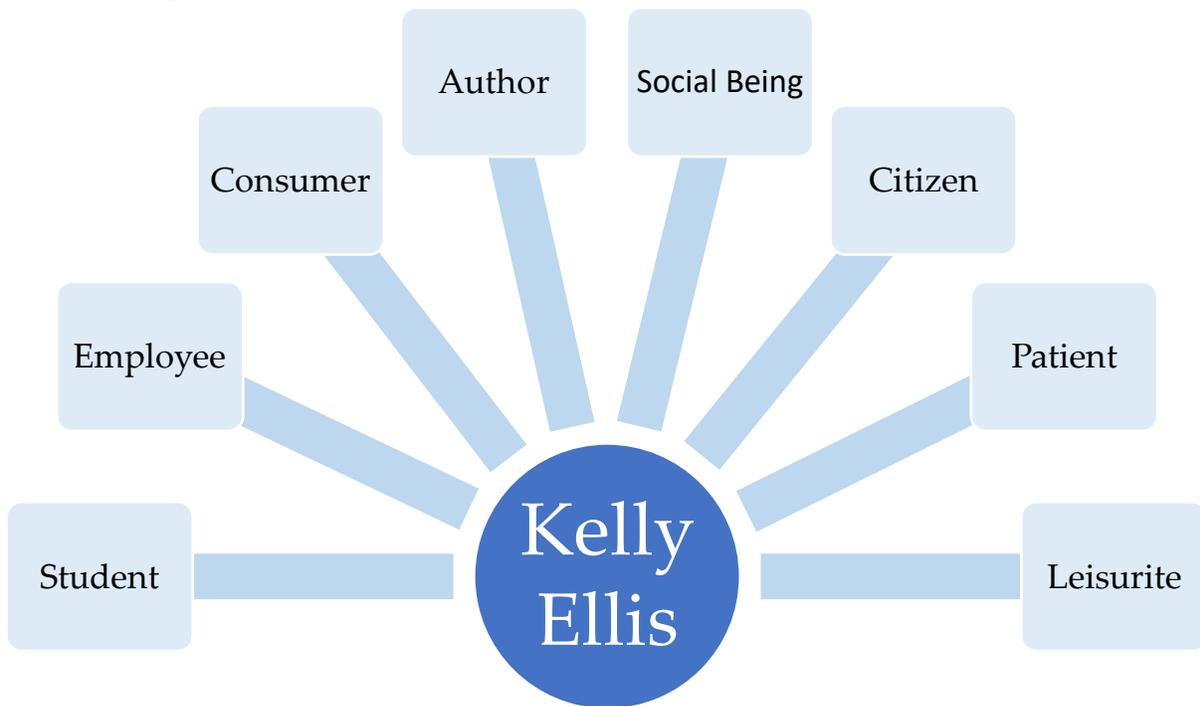


Figure 2: Kelly Ellis's Functions

Activities – The major tasks performed by the subject to fulfill their functions (See Figure 3).

Transactions – The smallest unit of business activity. These are the actual record producing events that together make up an activity.

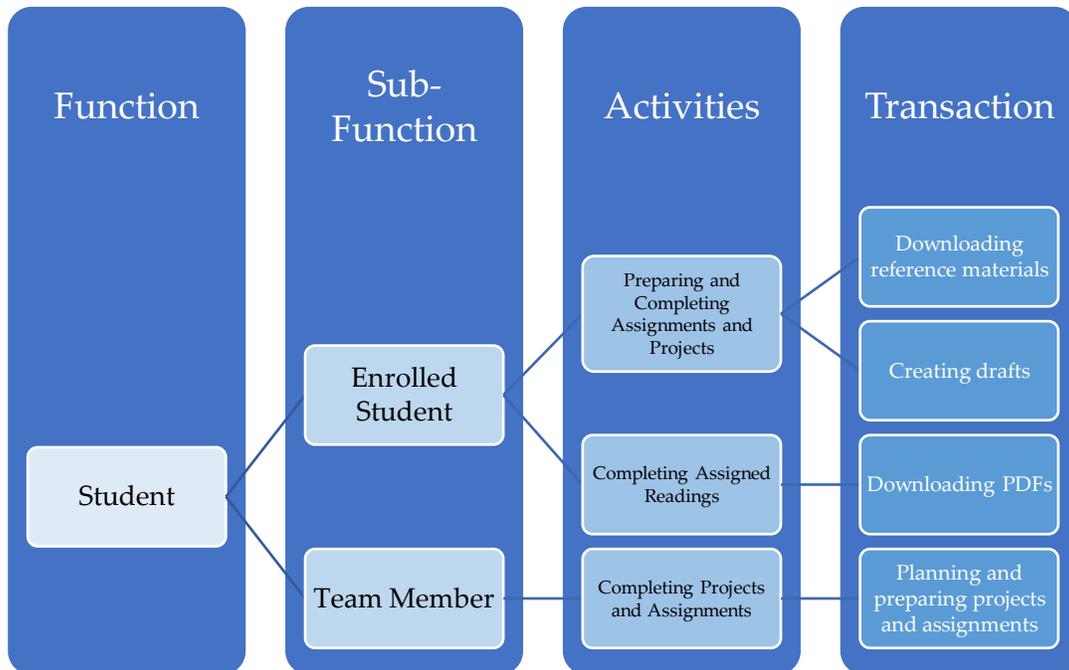


Figure 3: Visual breakdown of a function, sub-functions, activities and transactions

Risk Assessment Definitions:

For our risk assessment, we have borrowed the risk assessment matrix from Patricia C. Franks’ book *Records and Information Management: Second Edition* (See Figure 4). The matrix uses categories for the severity of the consequences associated with a negative event concerning the subject’s records, like data loss or destruction, as its X-axis, while categories for the probability that a negative event would occur serve as the Y-axis. The intersection of the severity of consequences value and probability of outcome value determined the risk-assessment label that we assigned to each activity.

		Severity of Consequences				
		Insignificant	Minor	Moderate	Major	Catastrophic
Probability of Occurrence	Almost Certainly; In Most Circumstances	High	High	Extreme	Extreme	Extreme
	Likely & Frequently	High	High	High	Extreme	Extreme
	Possible & Likely at Some Point	Significant	High	High	High	High
	Unlikely but Could Happen	Moderate	Moderate	Significant	Significant	Significant
	May Occur Rarely or In Exceptional Circumstances	Low	Low	Moderate	Moderate	Significant

Figure 4: Risk Assessment Matrix [Source: Franks, *Records and Information Management*]

Stakeholders:

The following stakeholders were identified in interviews with Ellis and the findings of the initial assessment in Step A. We have assigned these stakeholders to Ellis's activities in the business classification scheme tables.

- Ellis (Subject)
- Faculty/Professors
- Classmates
- Team Members
- Scholarship Providers
- Employer (Current Employer – Healing with Horses)
- Willis, Graves & Associates (Former Employer)
- Co-Workers (Current Co-Workers)
- Roommates
- Family
- Friends
- Partner
- State and Federal Government

This page intentionally left blank

Business Classification Scheme

Function: Student

Being a student entails attending classes, completing assignments, such as readings and projects, participating in group work as necessary, and communicating with classmates and professors. Ellis performs all these activities within her function as a student. Ellis's student function is divided into three sub-functions: **Enrolled Student**, **Team Member**, and **Scholarship Recipient**. As a currently enrolled student, Ellis performs activities such as taking notes and preparing and completing assignments and projects. As a team member, Ellis's only activity within the scope of the DIRKS project is completing group projects and assignments. Ellis's third sub-function, scholarship recipient, has a single activity, accepting the award, within the scope of the project. Ellis's communications with classmates and professors are out of scope for this project as they are all within Ellis's email account and phone.

The records generated under this function are predominantly found in Microsoft Word document, Google Document, and PDF formats, though there is a Google Sheet, a Microsoft PowerPoint, and several Google Slides documents as well. The Google Documents, Google Slides and Google Sheet are all found exclusively on Ellis's Google Drive. PDFs are found on both the Google Drive and the Hard Drive. The Word documents and the PowerPoint file were found exclusively on the Hard Drive. Most of the Google documents and Google sheets are located on Ellis's Drive homepage, not in folders. However, many of her Hard Drive documents are in folders on the desktop.

The goal of Ellis's function as a student is to complete courses and assignments, get good grades, and eventually graduate. Loss of records under this function would seriously impair Ellis's ability to reach these goals and could create unacceptable delays in completing or turning in assignments. We have assigned a high-risk label to three out of the seven activities in this function, and two have an assessment of significant. In light of these results, we wish to emphasize the need for greater risk mitigation for activities within the student function.

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
Student Sub-Function: Enrolled Student	Attending Classes	Creating timetable to avoid school and work conflicts	Google Sheet (on Google Drive homepage – loose on homepage)
	Stakeholders: <ul style="list-style-type: none"> • Ellis • Faculty/Professors • Classmates 		
	Risk Assessment: Significant <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Moderate 		
	Completing Assigned Readings	Downloading PDFs	PDFs (laptop/ desktop/ within a class specific folder)
		Downloading Syllabi	Word Documents (laptop/ desktop/ within a class specific folder)
	Stakeholders: <ul style="list-style-type: none"> • Ellis • Faculty/Professors • Classmates 		
	Risk Assessment: Moderate <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Minor 		
	Taking Notes	Creating and typing documents in class	Word documents (laptop/ desktop/ within a class specific folder)

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
			Google documents (Google Drive/ homepage – loose on homepage)
Stakeholders: <ul style="list-style-type: none"> • Ellis • Classmates 			
Risk Assessment: High <ul style="list-style-type: none"> • Probability of Occurrence: Possible and likely at some point • Severity of Consequences: Moderate 			
	Preparing and completing assignments and projects	Downloading reference materials	PDFs, Word documents (laptop/ desktop/ within a class specific folder)
		Creating drafts	Word documents (laptop/ desktop/ within a class specific folder)
		Finalizing product to turn in	Word documents and PowerPoint (laptop/ desktop/ within a class specific folder)
		Sharing draft for peer review	Google documents (Google Drive homepage – loose on homepage)
Stakeholders: <ul style="list-style-type: none"> • Ellis • Faculty/Professors 			

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
	Risk Assessment: High <ul style="list-style-type: none"> • Probability of Occurrence: Possible and likely at some point • Severity of Consequences: Catastrophic 		
	Archiving past schoolwork	Creating copies of notes and assignments	Google documents (Google Drive/ homepage/ "Schoolwork" folder)
	Stakeholders: <ul style="list-style-type: none"> • Ellis 		
	Risk Assessment: High <ul style="list-style-type: none"> • Probability of Occurrence: Likely and Frequently • Severity of Consequences: Insignificant 		
Student Sub-Function: Team Member	Completing projects and assignments	Planning and preparing assignments and projects	Google documents, PDFs, PowerPoint & Google slides (Google Drive/ Team Drive/ within a class specific folder)
		Uploading finalized project/assignment	PDFs, Google slides (Google Drive/ Team Drive/ within a class specific folder)
	Stakeholders: <ul style="list-style-type: none"> • Ellis • Team Members • Faculty/Professors 		
	Risk Assessment: Significant <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Catastrophic 		

Function	Activities	Transactions	Record Series
<p>Student Sub-Function: Scholarship Recipient</p>	<p>Accepting the award</p>	<p>Downloading guidelines</p>	<p>PDF (laptop/ desktop – loose on desktop)</p>
		<p>Writing thank you letters</p>	<p>Word document (laptop/ desktop – loose on desktop)</p>
	<p>Stakeholders:</p> <ul style="list-style-type: none"> • Ellis • Scholarship Providers 		
	<p>Risk Assessment: Moderate</p> <ul style="list-style-type: none"> • Probability of Occurrence: May occur rarely or in exceptional circumstances • Severity of Consequences: Major 		

Function: Employee

The next function is that of an employee. As an employee, Ellis collaborates with co-workers, completes individual projects, and coordinates events and volunteers when necessary. For Ellis, this function is divided into three sub-functions, **Former Staff Member**, **Staff Member**, and **Future Employee**. The Former Staff Member sub-function pertains specifically to Ellis's time as a research associate at Willis, Graves & Associates. Activities within this sub-function include being compensated and assisting in website design. The Staff Member sub-function relates directly to her role as a development manager at Healing with Horses Ranch and contains activities like planning the annual fundraiser and editing the monthly newsletter. The Future Employee sub-function is comprised of two activities, maintaining resumes and storing supplemental materials for applications.

File formats found in this function include Excel spreadsheets, Word documents, PDFs, Google documents, a PowerPoint, Google Sheets and even several PNGs and JPEGs. The Excel spreadsheets and Word documents exist solely on the Hard Drive, while the Google Sheets and Google documents are exclusively on her Google Drive. PDFs and PowerPoints are on both the Hard Drive and Google Drive. The majority of documents created through this function are on the Google Drive. As shown in Step A, they are loose on Ellis's Drive homepage and not within any kind of folders. The Hard Drive documents are mostly, though not consistently, in folders on her desktop.

The goals of Ellis's employee function are to complete assignments from work and to coordinate events. Loss of records under this function would certainly affect her ability to complete her work. Many of her records are shared with co-workers which could mitigate the risk of loss if the coworkers were able to provide copies of lost documents. However, this may also increase the risk associated with loss, as it means more stakeholders who would be negatively affected were the record not recoverable. Inability to locate needed documents quickly can come off as unprofessional and makes Ellis appear unorganized. This could lead her employers to believe she is incapable of handling more responsibilities or taking on new projects. For these reasons, we have assigned significant-to-high risk labels to the activities within the current employee sub-function, and recommend that she begin significant risk-mitigation relating to the

activities of this sub-function. The Former Employee and Future Employee sub-functions were found to have low to moderate risk labels associated with their activities.

Function	Activities	Transactions	Record Series
Employee Sub-Function: Former Staff (Research Associate at Willis, Graves & Associates)	Being Compensated	Filing out and submitting monthly payroll document	Excel spreadsheet, Word document (laptop/ desktop/ "Personal Document" folder)
	Stakeholders:		
	<ul style="list-style-type: none"> Ellis 		
	Risk Assessment: Low <ul style="list-style-type: none"> Probability of Occurrence: May occur rarely and in exceptional circumstances Severity of Consequences: Minor 		
	Researching for litigation projects	Downloading reports	PDFs (Google Drive/ "Willis, Graves & Associates" folder)
		Typing up notes	Google documents (Google Drive/ "Willis, Graves & Associates" folder)
	Stakeholders:		
	<ul style="list-style-type: none"> Ellis 		
Risk Assessment: Low <ul style="list-style-type: none"> Probability of Occurrence: May occur rarely or in exceptional circumstances Severity of Consequences: Insignificant 			
Assisting in website design	Reviewing website text and images	PowerPoint (Google Drive/ homepage – loose on homepage)	

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
	Stakeholders: <ul style="list-style-type: none"> • Ellis 		
	Risk Assessment: Low <ul style="list-style-type: none"> • Probability of Occurrence: May occur rarely or in exceptional circumstances • Severity of Consequences: Insignificant 		
Employee Sub-Function: Staff Member (Development Manager at Healing with Horses)	Assisting in management of volunteer database	Running background checks	Google sheets (Google Drive/ Shared with Me – loose in drive)
	Stakeholders: <ul style="list-style-type: none"> • Ellis • Employer • Co-Workers 		
	Risk Assessment: Significant <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Moderate 		
	Planning Annual Fundraiser	Creating mailing list	Excel spreadsheet (laptop/ desktop/ "Healing with Horses" folder)
			Google sheet (Google Drive/ Shared with Me – loose in drive)
	Reviewing meeting minutes	Google sheet (Google Drive/ Shared with Me – loose in drive)	
	Creating internal memos	Google sheet (Google Drive/ homepage – loose in drive)	

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
Stakeholders: <ul style="list-style-type: none"> • Ellis • Employer • Co-Workers 			
Risk Assessment: Moderate <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Minor 			
Editing monthly newsletter		Compiling and editing copy	Word documents (laptop/ desktop/ "Healing with Horses" folder/ "Newsletter" and "September Newsletter" folders)
			Google documents (Google Drive/ homepage – loose on homepage)
		Compiling images	PDFs, PNGs, JPEGs (laptop/ desktop/ "Healing with Horses" folder/ "Newsletter" and "September Newsletter" folders)
Stakeholders: <ul style="list-style-type: none"> • Ellis • Employer • Co-Workers 			
Risk Assessment: High <ul style="list-style-type: none"> • Probability of Occurrence: Possible and likely at some point • Severity of Consequences: Minor 			
Being compensated		Filling out and submitting timesheet	Google sheet (Google Drive/ Shared with Me – loose in drive)

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
	Stakeholders:		
	<ul style="list-style-type: none"> Ellis 		
	Risk Assessment: Significant		
	<ul style="list-style-type: none"> Probability of Occurrence: Possible and likely at some point Severity of Consequences: Significant 		
	Caring for horses	Being on the feed team	Google sheet (Google Drive/ Shared with Me – loose in drive)
		Providing medical care	Google sheet (Google Drive/ Shared with Me – loose in drive)
Stakeholders:			
<ul style="list-style-type: none"> Ellis Employer 			
Risk Assessment: Significant			
<ul style="list-style-type: none"> Probability of Occurrence: Unlikely but could happen Severity of Consequences: Major 			
Employee Sub-Function: Future Employee	Maintaining resumes	Creating role specific resumes	Word documents (laptop/ desktop/ "Personal Documents" folder)
	Stakeholders:		
	<ul style="list-style-type: none"> Ellis 		
	Risk Assessment: Moderate		
<ul style="list-style-type: none"> Probability of Occurrence: Unlikely but could happen Severity of Consequences: Minor 			
Storing supplemental materials for applications	Saving copy of letter of recommendation	Google documents (Google Drive/ homepage – loose on homepage)	

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
	Stakeholders: <ul style="list-style-type: none"> • Ellis 		
	Risk Assessment: Moderate <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Insignificant 		

Function: Consumer

A consumer participates in activities such as banking, renting a house or apartment, shopping, and engaging in entertainment like going to movies and eating out with friends. While Ellis participates in all of these activities, only renting a house and tracking expenses are within scope. Ellis's sub-functions, such as Bank Account Holder, Entertainment Purchaser, and Online Shopper are out of scope because the records are in Ellis's email account or are paper documents.

The documents related to the activities in this function are JPEGs and Google Sheets. The Google Sheets are loose on Ellis's Drive homepage and the JPEGs are within a folder on the desktop of her Hard Drive.

The goals of Ellis's consumer function that fall within the scope of the project are to successfully track her expenses and complete transactions related to renting her house. Loss of the records within the scope of this function do not pose a serious risk. The records are not in current use, would not seriously affect future transactions or activity, and are all reproducible. There is also not any potential financial loss associated with these records. Both activities received a risk assessment label of significant, so we do recommend that Ellis begin risk mitigation. Because these records are reproducible, however, mitigation is not a priority.

Function	Activities	Transactions	Record Series
Consumer	Renting a house	Searching for a roommate	JPEGs (laptop/ desktop/ "House pics" folder)
	Stakeholders: <ul style="list-style-type: none"> • Ellis • Roommates 		
	Risk Assessment: Significant <ul style="list-style-type: none"> • Probability of Occurrence: Possible and likely at some point • Severity of Consequences: Insignificant 		

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
	Tracking expenses	Recording spending at item level	Google sheet (Google Drive/ homepage – loose on homepage)
	Stakeholders: <ul style="list-style-type: none"> <li data-bbox="537 527 646 558">• Ellis 		
	Risk Assessment: Significant <ul style="list-style-type: none"> <li data-bbox="537 632 1344 709">• Probability of Occurrence: Possible and likely at some point <li data-bbox="537 716 1143 751">• Severity of Consequences: Insignificant 		

Function: Author

Though “Author” is often associated with published works, a broad interpretation of the term includes writers who remain unpublished and write for personal enjoyment. Ellis’s function as an author falls within this broader interpretation, as her writing is unpublished and solely for her own enjoyment. Ellis’s function as an author contains no sub-functions. Her only activity is writing creatively, which is constituted by transactions such as writing poems and recording ideas for future work.

Her transactions in this function generate records entirely in Google document format, and these records are located in a folder on her Google Drive.

The goal of the author function is to create and retain Ellis’s creative works. None of these works are for her job, school, or intended for general publication, but they are of sentimental significance to Ellis. Loss of these records would be personally upsetting to our subject, even if the loss would not affect any external stakeholders. In light of this personal attachment, we have assigned a risk assessment label of high to the single activity of this function. We suggest that Ellis begin risk mitigation for this function.

Function	Activities	Transactions	Record Series
Author	Writing creatively	Creating diary entries	Google documents (Google Drive/ homepage/ “Personal Writing” folder)
		Writing poems	Google documents (Google Drive/ homepage/ “Personal Writing” folder)
		Writing short story drafts	Google documents (Google Drive/ homepage/ “Personal Writing” folder)
		Recording ideas for future work	Google documents

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
			(Google Drive/ homepage/ "Personal Writing" folder)
	Stakeholders:		
	<ul style="list-style-type: none"> • Ellis <p>Risk Assessment: High</p> <ul style="list-style-type: none"> • Probability of Occurrence: Possible and likely at some point • Severity of Consequences: Moderate 		

Function: Social Being

As a social being, a person participates in activities that fulfill their roles as a friend, partner/spouse, family member, and community member. Ellis's sub-functions that are within the scope of the project are **Daughter** and **Friend/Partner**. The Daughter sub-function has two activities within scope: traveling with family and helping with grandfather's funeral. The Friend/Partner has multiple activities like planning activities and trips and celebrating birthdays. Both sub-functions have other activities that are out of scope because they are located in Ellis's email or because they contain paper documents only.

The file types in this function include Google documents, Word documents, Google sheets, and JPEGs. The Google documents and Google sheets are located in the Google Drive, though they are loose on the homepage, not in any folders. The Word documents are on the Hard Drive and in a folder on the desktop. The JPEGs are in both the Hard Drive and the Google Drive, but are only in a folder on the Google Drive.

The goals of the social being function are to organize family activities and to complete and maintain records relating to her actions as a daughter, friend and partner. Loss of records under this function would prevent her from completing these goals in some capacity. There is not a serious risk involved with unacceptable delays as there is not generally time sensitivity concerning these documents. Most of these activities have risk assessment labels of low or moderate, so we suggest risk mitigation for activities with a moderate or significant label.

Function	Activities	Transactions	Record Series
Social Being Sub-Function: Daughter	Traveling with family	Sharing itinerary	Google documents (Google Drive/ Shared with Me – loose in drive)
	Stakeholders: <ul style="list-style-type: none"> • Ellis • Family 		

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
	Risk Assessment: Moderate <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Minor 		
	Helping with grandfather's funeral	Writing obituary	Word document (laptop/ desktop/ "Personal Documents" folder)
	Stakeholders: <ul style="list-style-type: none"> • Ellis • Family 		
	Risk Assessment: Low <ul style="list-style-type: none"> • Probability of Occurrence: May occur rarely or in exceptional circumstances • Severity of Consequences: Minor 		
Social Being Sub-Function: Friend/Partner	Planning activities and trips	Planning 4 th of July party	Google sheet (Google Drive/ Shared with Me – loose in drive)
	Stakeholders: <ul style="list-style-type: none"> • Ellis • Friends • Partner 		
	Risk Assessment: Moderate <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Insignificant 		
	Traveling	Sharing vacation photos	JPEGs (Google Drive/ Shared with Me/ "Mexico 2017" folder)
Stakeholders: <ul style="list-style-type: none"> • Ellis • Friends • Partner 			

STEP B: KELLY ELLIS

Function	Activities	Transactions	Record Series
<p>Risk Assessment: Moderate</p> <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Minor 			
<p>Celebrating birthdays</p> <p>Creating wishlists</p> <p>Google sheet (Google Drive/ homepage – loose on homepage)</p>			
<p>Stakeholders:</p> <ul style="list-style-type: none"> • Ellis • Partner 			
<p>Risk Assessment: Moderate</p> <ul style="list-style-type: none"> • Probability of Occurrence: Unlikely but could happen • Severity of Consequences: Insignificant 			
<p>Sharing images with friends</p> <p>Storing images from email</p> <p>JPEGs (laptop/ downloads – loose in downloads)</p>			
<p>Stakeholders:</p> <ul style="list-style-type: none"> • Ellis • Friends 			
<p>Risk Assessment: Significant</p> <ul style="list-style-type: none"> • Probability of Occurrence: Possible and likely at some point • Severity of Consequences: Insignificant 			

Function: Citizen

A citizen completes activities such as filing taxes, voting, jury duty and keeping track of identifying information such as a driver’s license and passport. As a citizen, there is only one activity within the scope of this project, which is paying her taxes. The other documents within this function, like passport information and W-2s, are all out of scope because they are paper or in her email account.

The only file type within this function is a PDF that is located on the Hard Drive in a folder on the desktop.

The goals of Ellis’s citizen function are to be able to file taxes and keep track of important identification and tax information. Within the scope of this project, however, there is only one record that is applicable. This record does contain personally identifiable information (PII) and needs to be retained for some time though is not in current use. If the record is corrupted, then the PII does not need to be particularly worried about, but if Ellis were to get some kind of malware, then revealing of PII would be extremely worrisome. With that in mind, the risk assessment label assigned for this activity is high and we suggest risk mitigation.

Function	Activities	Transactions	Record Series
Citizen	Paying taxes	Storing record of filed 2017 taxes	PDF (laptop/ desktop/ "Images" folder)
	Stakeholders: <ul style="list-style-type: none"> • Ellis • State and Federal Government 		
	Risk Assessment: High <ul style="list-style-type: none"> • Probability of Occurrence: Possible and likely at some point • Severity of Consequences: Minor 		

Function: Patient

The role of patient is referring to a medical patient where the records created are related to medical appointments, lab results, etc. While most of the records under this function are out of scope because they are in Ellis’s email or are paper documents, there is one document that falls under this function and is in scope. It is under the activity called compiling medical records.

The record under this function is a PDF that is located in the Google Drive homepage, not in a folder. This record is, however, corrupted and not able to be opened.

The goals for the function of patient are to keep track of medical lab results and receipts. Loss of records under this function would be somewhat significant, however, within the scope of this project, there is only one record that has already been corrupted. The result of that corruption has not been significant as the previous contents were unknown. If an unauthorized user were to get access to Ellis’s computer, then her medical records and personally identifiable information (PII) would be at risk through her e-mail, but as her e-mail is outside of the scope of this project, those risks are not relevant. The risks for this function, within the scope of this project, are therefore non-existent as the only applicable record has already been corrupted and the information is no longer accessible.

Function	Activities	Transactions	Record Series
Patient	Compiling medical records	Downloading lab work summary	PDF (Google Drive/ homepage – loose on homepage) - corrupted
	Stakeholders: <ul style="list-style-type: none"> • Ellis 		
	Risk Assessment: High <ul style="list-style-type: none"> • Probability of Occurrence: Possible and likely at some point • Severity of Consequences: Moderate 		

Function: Leisurite

The leisurite role encompasses the hobbies and activities that the subject participates in. Ellis’s fulfillment of this function includes the activities of downloading media and pursuing computer dependent hobbies. Downloading media transactions include downloading books, downloading memes and downloading artwork. Pursuing computer dependent hobbies include only one transaction, that of downloading various softwares.

The file formats in this function include PDFs, JPEGs, and .app files. All of these records are found on the Hard Drive. The PDFs and JPEGs are within folders on the desktop while the software that has been downloaded is found in the Applications folder within the Hard Drive.

As a leisurite, Ellis’s goals are personal enjoyment of these records and activities. The loss of these records would in some cases prevent that goal and in other cases would not be an issue as the record is no longer significant to Ellis. While none of the materials that Ellis has downloaded in this section has been resold or used in any other publications, her intention for those documents was to post them for enjoyment by co-workers. In this circumstance, there could be issues with copyright as some documents on the internet do not allow for downloads or printing, so there is risk associated with this issue. The risk assessment labels assigned to these activities are moderate and low, so some mitigation is necessary.

Function	Activities	Transactions	Record Series
Leisurite	Downloading media	Downloading book	PDF (laptop/ desktop/ “The Web as History” folder)
		Downloading memes	JPEGs (laptop/ desktop/ “Images” folder)
		Downloading artwork	JPEGs (laptop/ desktop/ “Mr. Rogers Posters” folder)

Function	Activities	Transactions	Record Series
	Stakeholders:		
	<ul style="list-style-type: none"> Ellis 		
	Risk Assessment: Moderate		
	<ul style="list-style-type: none"> Probability of Occurrence: Unlikely but could happen Severity of Consequences: Minor 		
	Pursuing computer dependent hobbies	Downloading various softwares	.apps (laptop/ applications)
	Stakeholders:		
	<ul style="list-style-type: none"> Ellis 		
	Risk Assessment: Low		
<ul style="list-style-type: none"> Probability of Occurrence: May occur rarely or in exceptional cases Severity of Consequences: Insignificant 			

Validation of Analysis with Subject

This analysis was validated with our subject, Ellis, through routine checks as the narratives were written and as the tables were constructed. She approved the risk assessments and helped detail the functions, activities, transactions, and record series.

Conclusion

Step B allows us to decide which risks are most significant through consideration of both the risk assessment matrix and the subject’s personal tolerance for the risk. Additionally, Step B provided us with a detailed organization of Ellis’s functions, activities, and transactions, as well as locations for the records associated with these categories. These findings will help inform the strategies pursued and recommendations made in subsequent steps of this audit.

Step C: Identify Requirements for Records

Introduction

In Step C, we are investigating and defining Kelly Ellis's recordkeeping requirements for her Google Drive and MacBook Air. This step is broken up into three parts. The first part lays out specific requirements placed upon Ellis by both internal and external sources. The second part ties what we learned about the requirements to the activities from Step B. The third and final part is a retention schedule chart, so Ellis has a concise format with which to view her current records.

Part 1: Recordkeeping Requirements

Upon analyzing Ellis's functions at the activity level laid out in Step B, we researched and found the recordkeeping requirements for her functions. We used regulatory, business and community expectations to define our scope. The DIRKS Manual gives us clear definitions for these three categories of expectations.

Regulatory requirements are defined as those that “are *imposed* upon an organization by legislation, regulation, whole-of-government policy, standards or similar instruments. Determining *regulatory requirements* for recordkeeping involves looking at authoritative documentary sources (such as legislation and whole-of-government rules, guidelines, directives, standards, codes of practice and policies) and locating where there are requirements for the creation or management of records.”

A business requirement “supports the efficient and effective performance of an organization's day-to-day work and ongoing activities. Determining *business requirements* for recordkeeping involves looking at corporate documentary sources (such as business plans, corporate policies and procedures, and organizational reports) and locating where there are requirements for the creation or management of records.”

A community expectation “refers to a requirement from the general public or a stakeholder group within the community. It indicates what records they expect you to create and maintain.” They recommend getting guidance from those involved in the

record making process “who are aware of community expectations that should be considered in relation to their activities”.

Below are the various sources that we have found that make requirements to Ellis’s records. The structured format includes the governing documents or policies detailing recordkeeping obligations as well as detailing Ellis’s specific requirements.

SAMPLE

Source #	C.numerical - This will be referenced in Part 2.
Source Name	Authority with expectations placed upon Ellis’s recordkeeping
Source Type; Reference	Document or Policy; Specific section that is relevant to the records we are investigating
Date effective	Start date for when the policy became applicable for Ellis
Citation	
Link to document or policy	
The text that speaks to the requirements for Ellis’s specific records.	
Requirements	
<p>Refers to the recordkeeping requirements from this Source. It can be any or all the following:</p> <p>Creation: The creation of records should involve the creation of content and metadata that document the circumstances of their creation. [SOURCE: ISO 15489-1:2016]</p> <p>Form: Known not from a detailed reading of their contents nor from the physical medium upon which they are written, but from commonalities in their structure. i.e. letter, schedule, notes, correspondence, diary entry, applications, central registry files, etc. [SOURCE: Bearman & Lytle <i>The Power of the Principle of Provenance</i>, modified]</p> <p>Capture: A deliberate action which results in the registration of a record into a recordkeeping system. For certain business activities, this action may be designed into electronic systems so that the capture of records is concurrent with the creation of records. [SOURCE: AS 4390 Part 1 Clause 4.7]</p> <p>Maintenance: Digital records have to be actively managed as evidence of business activity, maintaining their authenticity, reliability, integrity and usability. [SOURCE: ISO 16175-3:2010]</p> <p>Retention and disposal: Records have to be kept and must remain accessible to authorized users for as long as required for legislative, community and business needs, and then disposed of in a managed, systematic and auditable way. [SOURCE: ISO 16175-3:2010]</p> <p>Access: The record can be located, retrieved, and is capable of being presented, exported, redacted and interpreted. [SOURCE: ISO 15489-1:2016]</p>	

STEP C: KELLY ELLIS

Source #	C.1
Source Name	Google Drive
Source Type and Reference	Terms of Service; Section 2
Date effective	2012
Citation	
https://www.google.com/drive/terms-of-service/ When you upload, submit, store, send or receive content to or through Google Drive, you give Google a worldwide license to use, host, store, reproduce, modify, create derivative works (such as those resulting from translations, adaptations or other changes we make so that your content works better with our services), communicate, publish, publicly perform, publicly display and distribute such content.	
Requirements	
Access	

Source #	C.2
Source Name	University of Texas at Austin (UT)
Source Type and Reference	Acceptable Use Policy; Section 4.1
Date effective	January 2018
Citation	
https://security.utexas.edu/policies/aup 4.1 You must control unauthorized use of your university information resources by preventing others from obtaining access to your computer...	
Requirements	
Access	

STEP C: KELLY ELLIS

Source #	C.3
Source Name	Community (UT classmates, teammates, and professors) Expectations
Source Type and Reference	GARP; Principle of Availability, Principle of Integrity
Date effective	January 2018
Citation	
<p>Ellis shall maintain records in a manner that ensures timely, efficient, and accurate retrieval of needed information.</p> <p>A recordkeeping program shall be constructed so the records and information generated or managed by or for the organization have a reasonable and suitable guarantee of authenticity and reliability.</p>	
Requirements	
Creation, Form, Capture and maintenance, Access	

Source #	C.4
Source Name	Houston Endowment Graduate Fellowship
Source Type and Reference	Award Acknowledgment Letter Guidelines; N/A
Date effective	August 10, 2018
Citation	
<p>In appreciation of the gift you have received, please write a thank you letter to the stakeholder behind this scholarship.</p>	
Requirements	
Creation, Form, Capture and maintenance, Access	

STEP C: KELLY ELLIS

Source #	C.5
Source Name	Willis, Graves & Associates
Source Type and Reference	GARP; Principle of Protection, Principle of Retention and disposition
Date effective	Upon hire
Citation	
<p>A recordkeeping program shall be constructed to ensure a reasonable level of protection to records and information that are private, confidential, privileged, secret, or essential to business continuity.</p> <p>Ellis shall maintain her records and information for an appropriate time and shall provide secure and appropriate disposition for records that are no longer required to be maintained.</p>	
Requirements	
Retention and disposal, Access	

Source #	C.6
Source Name	Healing with Horses
Source Type and Reference	Employee Handbook; Section 2.4, 5.6.b, 6.3
Date effective	Upon hire
Citation	
<p>2.4 Time Sheets. Nonexempt employees are required to keep an accurate and complete record of their attendance and hours worked. Time sheets are official business records and may not be altered without the employee's supervisor's approval and may not be falsified in any way.</p> <p>5.6.b All electronic information created by any employee on Company premises or transmitted to Company property using any means of electronic communication is the property of HHR and remains the property of HHR.</p> <p>6.3 The employee understands that all information, both written and verbal, regarding clients and confidential business matters at HHR, shall be held in strict confidence at all times except as needed with the facility staff for therapy and/or business purposes.</p>	
Requirements	
Creation, Form, Capture and maintenance, Retention and disposal, Access	

STEP C: KELLY ELLIS

Source #	C.7
Source Name	Community (Family, Partner, Existing Roommates) Expectations
Source Type and Reference	GARP: Principle of Availability
Date effective	-
Citation	
Ellis shall maintain records in a manner that ensures timely, efficient, and accurate retrieval of needed information.	
Requirements	
Access	

Source #	C.8
Source Name	Kelly Ellis Expectations
Source Type and Reference	ARMA Code of Professional Responsibility; Section 1.1, 2.5
Date effective	-
Citation	
1.1 Support the creation, maintenance, and use of authentic, reliable, usable information and support the development and use of information systems that place a high priority on accuracy and integrity, which requires that records be complete and unaltered (ISO 15489-1 Records Management).	
2.5 Recognize the need for careful action to assure appropriate access to information without violation of the intellectual property rights of the owners of that information.	
Requirements	
Creation, Form, Capture and maintenance, Retention and disposal, Access	

STEP C: KELLY ELLIS

Source #	C.9
Source Name	IRS
Source Type and Reference	Tax Topics; Topic No. 305
Date effective	2010
Citation	
<p>https://www.irs.gov/taxtopics/tc305 Period of limitations for refund claims: The later of 3 years or 2 years after tax was paid - For filing a claim for credit or refund, the period to make the claim generally is 3 years from the date you filed the original return (or the due date for filing the return if you filed the return before that date)</p>	
Requirements	
Creation, Form, Capture and maintenance, Retention and disposal, Access	

Source #	C.10
Source Name	UT Health Services
Source Type and Reference	General Information Catalog Policy; Section 4-410
Date effective	January 2018
Citation	
<p>http://catalog.utexas.edu/general-information/appendices/appendix-c/university-health-services/ Sec. 4-410. Medical Records All original medical records (whether electronic or paper) and other records of treatment, whether originating within University Health Services or another facility or provider, are the property of University Health Services. Medical information may be disclosed as required by state or federal law. Additional information from patient records will be released only with informed written consent. Students have the right to review, inspect or request copies of their medical records.</p>	
Requirements	
Capture and maintenance, Retention, Access	

This page intentionally left blank

Part 2: Activity Investigations

Drawing from the functions and individual activities from Step B, we apply the requirements from Part 1 of this Step to determine Ellis's duties as the record keeper. Using the definitions of creation, capture, maintenance, form, access and retention and disposal the tables below will offer a quickly scannable format to find her requirements.

In addition to understanding the requirements we also assessed the recordkeeping risks. Recordkeeping risks are the risks that can result from:

- creating and maintaining records
- not creating records at all
- not having appropriate or adequate records of the work to meet the recordkeeping requirements

It may not be in Ellis's best interests or ability to comply with every requirement placed upon her. This risk assessment will help her determine when she may make the choice not to comply. Generally, this would be considered a low risk requirement.

Risk Assessment	
Low	Minor consequences. No lasting repercussions for Ellis's activities.
Moderate	Difficult to fix, but not impossible. Potential for lasting consequences.
High	Very undesired, possibly irreversible consequences with potential for significant long-lasting repercussions.

STEP C: KELLY ELLIS

Function: Student	
Sub-Function: Enrolled Student	
Activity: Attending Classes	
Transactions: Creating timetables to avoid school and work conflicts	
Description of Records & Formats	Google Sheet (on Google Drive homepage - loose)
Requirements for Recordkeeping	Creation: A schedule must be created
	Capture & maintenance: A file name must be assigned, and the record must be filed appropriately
	Form: Schedule
	Content: Times, details, locations
	Quality: Details in the schedule must be accurate
	Access: Ellis
Source(s)	C.3 UT Community, C.8 Ellis
Stakeholder(s)	Ellis, Faculty/Professors, Classmates
Retention & disposal	Destroy 1 year after semester end
Assessment of Risk	High: If these records are inaccurate, destroyed prematurely, not maintained or inaccessible Ellis's day-to-day would be significantly impacted negatively.

Function: Student	
Sub-Function: Enrolled Student	
Activity: Completing Assigned Readings	
Transactions: Downloading PDFs, downloading Syllabi	
Description of Records & Formats	PDFs, word documents (laptop/ desktop/ within a class specific folder)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Download onto computer, file in appropriate folder
	Form: N/A
	Content: Proprietary information
	Quality: N/A
	Access: N/A
Source(s)	C.8 Ellis
Stakeholder(s)	Ellis, Faculty/Professors, Classmates

STEP C: KELLY ELLIS

Retention & disposal	Retain for 7 years after completion date then dispose
Assessment of Risk	Moderate: If these records are inaccessible on her systems, they can be downloaded again during the semester, but it would take time. Once the semester is over, she will likely lose access to these resources.

Function: Student	
Sub-Function: Enrolled Student	
Activity: Taking Notes	
Transactions: Creating and typing documents in class	
Description of Records & Formats	Word documents (laptop/ desktop/ within a class specific folder) Google documents (Google Drive/ homepage – loose)
Requirements for Recordkeeping	Creation: Notes should be created
	Capture & maintenance: Notes should be registered in context of the class and maintained
	Form: N/A
	Content: Pertinent points from class that will assist Ellis in the future
	Quality: Should be as accurate as possible
	Access: Ellis and anyone she wishes to share it with
Source(s)	C.3 UT Community, C.8 Ellis
Stakeholder(s)	Ellis, Classmates
Retention & disposal	Retain for 3 years after completion date then dispose
Assessment of Risk	Moderate: If these records are inaccessible or inaccurate it would be difficult for Ellis to recover that information.

STEP C: KELLY ELLIS

Function: Student	
Sub-Function: Enrolled Student	
Activity: Preparing and completing assignments and projects	
Transactions: Downloading reference materials, Creating drafts, Finalizing product to turn in, Sharing draft for peer review	
Description of Records & Formats	PDFs, Word documents, PowerPoint (laptop/ desktop/ within a class specific folder) Google documents (Google Drive homepage - loose)
Requirements for Recordkeeping	Creation: Drafts must be created; final versions must be created based on the drafts
	Capture & maintenance: Reference materials should be downloaded; drafts should be saved and when it has been finalized it should be maintained
	Form: In the appropriate form for the assignment
	Content: Complete, with identity and accurate
	Quality: The materials should have integrity
	Access: Ellis and anyone she wishes to share it with
Source(s)	C.3 UT Community, C.8 Ellis
Stakeholder(s)	Ellis, Faculty/Professors
Retention & disposal	Retain final documents permanently, retain reference materials and drafts for 7 years after completion date
Assessment of Risk	High: If these records do not meet the requirements it would likely result in bad grades for Ellis.

Function: Student	
Sub-Function: Enrolled Student	
Activity: Archiving past schoolwork	
Transactions: Creating copies of notes and assignments	
Description of Records & Formats	Google documents (Google Drive/ homepage/ "Schoolwork" folder)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Register copies in appropriate folders and maintain existing documents
	Form: Fixed form would be ideal
	Content: Stable content is necessary
	Quality: New documents should be accurate to original documents

STEP C: KELLY ELLIS

	Access:	Ellis and anyone she wishes to share it with
Source(s)	C.8 Ellis	
Stakeholder(s)	Ellis	
Retention & disposal	Retain for 3 years after completion date then dispose	
Assessment of Risk	Moderate: As these records are not relevant to her day-to-day if they do not meet the requirements it would be difficult, but not have lasting consequences.	

Function: Student		
Sub-Function: Team Member		
Activity: Completing projects and assignments		
Transactions: Planning and preparing assignments and projects, Uploading finalized project/assignment		
Description of Records & Formats	Google documents, PDFs, PowerPoint & Google slides (Google Drive/ Team Drive/ within a class specific folder)	
Requirements for Recordkeeping	Creation:	Drafts and final products must be created
	Capture & maintenance:	Upload and share documents and maintain their version
	Form:	In the appropriate form for the assignment
	Content:	Complete, with identity and accurate
	Quality:	The materials should have integrity
	Access:	Ellis, team members and anyone she wishes to share it with
Source(s)	C.3 UT Community, C.8 Ellis	
Stakeholder(s)	Ellis, Team Members, Faculty/Professors	
Retention & disposal	Retain final documents permanently and retain reference materials and drafts for 7 years after completion date	
Assessment of Risk	High: If these records do not meet the requirements it would likely result in bad grades for Ellis and teammates.	

STEP C: KELLY ELLIS

Function: Student	
Sub-Function: Scholarship Recipient	
Activity: Accepting the award	
Transactions: Downloading guidelines, Writing thank you letters	
Description of Records & Formats	PDF, Word document (laptop/ desktop – loose)
Requirements for Recordkeeping	Creation: Letter must be created
	Capture & maintenance: Download guidelines; register the records together and maintain the records
	Form: Appropriate letter format
	Content: Letter must follow supplied guidelines; complete, identity
	Quality: Letter should be accurate
	Access: Letter should be sent to stakeholder
Source(s)	C.4 Houston Endowment Graduate Fellowship, C.8 Ellis
Stakeholder(s)	Ellis, Scholarship Providers
Retention & disposal	Retain for 7 years after completion date then dispose
Assessment of Risk	High: If these records do not meet the requirements, they would not reward the scholarship.

Function: Employee	
Sub-Function: Former Staff	
Activity: Being Compensated	
Transactions: Filing out and submitting monthly payroll document	
Description of Records & Formats	Excel spreadsheet, Word document (laptop/ desktop/ "Personal Document" folder)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Download template; register it in system; complete and submit payroll documents
	Form: Timesheet
	Content: Complete, identity
	Quality: Documents must be accurate
	Access: Ellis and employer
Source(s)	C.5 Willis, Graves & Associates, C.8 Ellis
Stakeholder(s)	Ellis

STEP C: KELLY ELLIS

Retention & disposal	Retain 1 year after completed date
Assessment of Risk	High: If these records do not meet the requirements Ellis won't be paid on time or not at all. If they're inaccurate it could give reason to be fired.

Function: Employee	
Sub-Function: Former Staff	
Activity: Researching for litigation projects	
Transactions: Downloading reports, Typing up notes	
Description of Records & Formats	PDFs, Google documents (Google Drive/ "Willis, Graves & Associates" folder)
Requirements for Recordkeeping	Creation: Notes must be created
	Capture & maintenance: Download reports; register them in context with the notes
	Form: N/A
	Content: Identity, comprehensive
	Quality: Documents should have integrity and be accurate
	Access: Ellis and employer
Source(s)	C.5 Willis, Graves & Associates, C.8 Ellis
Stakeholder(s)	Ellis, Willis, Graves & Associates
Retention & disposal	Transfer to Willis, Graves & Associates organization and dispose immediately
Assessment of Risk	Low: Willis, Graves & Associates calls Ellis from time to time, asking if she has certain notes from her time there. There would be no consequences if she does not have them. She could decide to dispose of these immediately without transferring copies if she feels they are not necessary.

STEP C: KELLY ELLIS

Function: Employee	
Sub-Function: Former Staff	
Activity: Assisting in website design	
Transactions: Reviewing website text and images	
Description of Records & Formats	PowerPoint (Google Drive/ homepage – loose)
Requirements for Recordkeeping	Creation: Record must be created
	Capture & maintenance: Assign a unique identifier and register within context of other website records
	Form: N/A
	Content: Complete
	Quality: Accurate
	Access: Ellis and employer
Source(s)	C.5 Willis, Graves & Associates, C.8 Ellis
Stakeholder(s)	Ellis
Retention & disposal	Transfer to Willis, Graves & Associates organization and dispose immediately
Assessment of Risk	Low: Willis, Graves & Associates calls Ellis from time to time, asking if she has certain notes from her time there. There would be no consequences if she does not have them. She could decide to dispose of these immediately without transferring copies if she feels they are not necessary.

Function: Employee	
Sub-Function: Staff Member	
Activity: Assisting in management of volunteer database	
Transactions: Running background checks	
Description of Records & Formats	Google sheets (Google Drive/ Shared with Me - loose)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: N/A
	Form: N/A
	Content: Reliable, complete, comprehensive
	Quality: Accurate
	Access: Ellis and employer
Source(s)	C.6 Healing with Horses, C.8 Ellis
Stakeholder(s)	Ellis, Employer, Co-Workers

STEP C: KELLY ELLIS

Retention & disposal	Dispose upon completion
Assessment of Risk	Moderate: As Ellis is not the originator of this document, if she disposes of this prematurely it would not have significant repercussions. The other requirements for content and quality should be met as these records influence future co-workers.

Function: Employee	
Sub-Function: Staff Member	
Activity: Planning Annual Fundraiser	
Transactions: Creating mailing list, Reviewing meeting minutes, Creating internal memos	
Description of Records & Formats	Excel spreadsheet (laptop/ desktop/ "Healing with Horses" folder) Google sheet (Google Drive/ Shared with Me – loose)
Requirements for Recordkeeping	Creation: Creates spreadsheets
	Capture & maintenance: Register records in context with others in this activity
	Form: Mailing list, internal memos
	Content: Complete and comprehensive
	Quality: Reliable, accurate, accessible
	Access: Ellis, employers, co-workers
Source(s)	C.6 Healing with Horses, C.8 Ellis
Stakeholder(s)	Ellis, Employer, Co-Workers
Retention & disposal	Transfer to Healing with Horses organization upon completion and dispose 1 year after completion date
Assessment of Risk	Moderate: If records do not meet requirements it could result in the organization not having a successful annual fundraiser.

STEP C: KELLY ELLIS

Function: Employee	
Sub-Function: Staff Member	
Activity: Editing monthly newsletter	
Transactions: Compiling and editing copy, Compiling images	
Description of Records & Formats	Word documents, PDFs, PNGs, JPEGs (laptop/ desktop/ "Healing with Horses" folder/ "Newsletter" and "September Newsletter" folders) Google documents (Google Drive/ homepage – loose)
Requirements for Recordkeeping	Creation: Newsletters must be created
	Capture & maintenance: Download and register components within the context of each month
	Form: Newsletter
	Content: Complete, Stable, Identity
	Quality: Accurate, Reliable
	Access: Ellis, employer, co-workers
Source(s)	C.6 Healing with Horses, C.8 Ellis
Stakeholder(s)	Ellis, Employer, Co-Workers
Retention & disposal	Transfer to Healing with Horses organization upon completion and dispose 1 year after completion date
Assessment of Risk	Moderate: If records do not meet requirements it could result in the organization not putting out a quality newsletter and thereby losing patrons.

Function: Employee	
Sub-Function: Staff Member	
Activity: Being compensated	
Transactions: Filling out and submitting timesheet	
Description of Records & Formats	Google sheet (Google Drive/ Shared with Me - loose)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Register shared documents in context of the function
	Form: Timesheet
	Content: Complete, Identity
	Quality: Documents must be accurate
	Access: Ellis and employer
Source(s)	C.6 Healing with Horses, C.8 Ellis

STEP C: KELLY ELLIS

Stakeholder(s)	Ellis
Retention & disposal	Retain 1 year after completed date
Assessment of Risk	High: If these records do not meet the requirements Ellis will not be paid on time or not at all. If they are inaccurate it could give reason to be fired.

Function: Employee	
Sub-Function: Staff Member	
Activity: Caring for horses	
Transactions: Being on the feed team, Providing medical care	
Description of Records & Formats	Google sheet (Google Drive/ Shared with Me - loose)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Register shared document in context of the function
	Form: Schedule
	Content: Complete, Identity
	Quality: Accurate, Reliable
	Access: Ellis, employer, co-workers
Source(s)	C.6 Healing with Horses, C.8 Ellis
Stakeholder(s)	Ellis, Employer, Co-workers
Retention & disposal	Retain 1 year after completion of task
Assessment of Risk	Low: As Ellis is not the originator of this document, if she disposes of this prematurely it would not have significant repercussions. If the requirements are not met, the employer would feel the repercussions more than Ellis.

STEP C: KELLY ELLIS

Function: Employee	
Sub-Function: Future Employee	
Activity: Maintaining resumes	
Transactions: Creating role specific resumes	
Description of Records & Formats	Word documents (laptop/ desktop/ "Personal Documents" folder)
Requirements for Recordkeeping	Creation: Resumes must be created
	Capture & maintenance: Register with appropriate file names within the context of records supporting the resume and other versions
	Form: Resume
	Content: Complete, Stable, Identity,
	Quality: Accurate, Integrity, Reliable
	Access: Ellis
Source(s)	C.8 Ellis
Stakeholder(s)	Ellis
Retention & disposal	Retain 5 years after completion date
Assessment of Risk	Moderate: If these records do not meet the requirements it would be difficult for Ellis to recover/duplicate that information.

Function: Employee	
Sub-Function: Future Employee	
Activity: Storing supplemental materials for applications	
Transactions: Saving copy of letter of recommendation	
Description of Records & Formats	Google documents (Google Drive/ homepage - loose)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Download and register within context of similar records
	Form: N/A
	Content: N/A
	Quality: N/A
	Access: Ellis
Source(s)	C.8 Ellis
Stakeholder(s)	Ellis

STEP C: KELLY ELLIS

Retention & disposal	Retain 5 years after completion of employment
Assessment of Risk	Low: These records cannot be shared with others. There is very little risk regarding these records.

Function: Consumer	
Sub-Function: N/A	
Activity: Renting a house	
Transactions: Searching for a roommate	
Description of Records & Formats	JPEGs (laptop/ desktop/ "House pics" folder)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Download and register images
	Form: N/A
	Content: N/A
	Quality: N/A
	Access: Ellis
Source(s)	C.7 Community Expectations, C.8 Ellis
Stakeholder(s)	Ellis, Roommates
Retention & disposal	Retain 1 year after completion date
Assessment of Risk	Low: As Ellis did not create these records, if she disposes of them prematurely she could capture another copy.

STEP C: KELLY ELLIS

Function: Consumer	
Sub-Function: N/A	
Activity: Tracking expenses	
Transactions: Recording spending at item level	
Description of Records & Formats	Google sheet (Google Drive/ homepage - loose)
Requirements for Recordkeeping	Creation: Spreadsheet must be created
	Capture & maintenance: Assign a unique identifier and register with similar records
	Form: Expense spreadsheet
	Content: Complete and comprehensive
	Quality: Accurate, Reliable
	Access: Ellis
Source(s)	C.8 Ellis
Stakeholder(s)	Ellis
Retention & disposal	Retain 1 year after completion date
Assessment of Risk	Moderate: If the records do not meet the requirements it would be difficult to go back and add data later. No significant repercussions if she decides not to meet them though.

Function: Author	
Sub-Function: N/A	
Activity: Writing creatively	
Transactions: Creating diary entries, Writing poems, Writing short story drafts, Recording ideas for future work	
Description of Records & Formats	Google documents (Google Drive/ homepage/ "Personal Writing" folder)
Requirements for Recordkeeping	Creation: Documents will be created
	Capture & maintenance: Assign a unique identifier and register with similar records
	Form: N/A
	Content: Identity
	Quality: Reliable
	Access: Ellis
Source(s)	C.8 Ellis
Stakeholder(s)	Ellis

STEP C: KELLY ELLIS

Retention & disposal	Retain documents permanently
Assessment of Risk	High: If the above requirements are not met Ellis would not know when a writing is started.

Function: Social Being	
Sub-Function: Daughter	
Activity: Traveling with family	
Transactions: Sharing itinerary	
Description of Records & Formats	Google documents (Google Drive/ Shared with Me - loose)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Register record with similar records
	Form: N/A
	Content: Identity
	Quality: Reliable
	Access: Ellis, Family
Source(s)	C.7 Community Expectations, C.8 Ellis
Stakeholder(s)	Ellis, Family
Retention & disposal	Retain 1 year after completion date
Assessment of Risk	Low: As Ellis did not create the records, her requirements are minimal. And if she does not meet them, it would only result in her additions to the records not being clearly her notations.

STEP C: KELLY ELLIS

Function: Social Being	
Sub-Function: Daughter	
Activity: Helping with grandfather's funeral	
Transactions: Writing obituary	
Description of Records & Formats	Word document (laptop/ desktop/ "Personal Documents" folder)
Requirements for Recordkeeping	Creation: Obituary must be created
	Capture & maintenance: Assign a unique identifier and register with similar records
	Form: N/A
	Content: Complete, Comprehensive
	Quality: Reliable
	Access: Ellis
Source(s)	C.7 Community Expectations, C.8 Ellis
Stakeholder(s)	Ellis, Family
Retention & disposal	Retain documents permanently
Assessment of Risk	Low: This record has significant personal value, but because it is for a one-time event it would not have lasting repercussions if requirements are not met.

Function: Social Being	
Sub-Function: Friend/Partner	
Activity: Planning activities and trips	
Transactions: Planning 4 th of July party	
Description of Records & Formats	Google sheet (Google Drive/ Shared with Me - loose)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Register record with similar records
	Form: N/A
	Content: N/A
	Quality: Reliable
	Access: Ellis, friends, partner
Source(s)	C.7 Community Expectations, C.8 Ellis
Stakeholder(s)	Ellis, Friends, Partner
Retention & disposal	Retain 1 year after completion date

STEP C: KELLY ELLIS

Assessment of Risk	Low: As Ellis did not create the records, her requirements are minimal. And if she does not meet them it would only result in her additions to the records not being clearly her notations.
--------------------	---

Function: Social Being	
Sub-Function: Friend/Partner	
Activity: Traveling	
Transactions: Sharing vacation photos	
Description of Records & Formats	JPEGs (Google Drive/ Shared with Me/ "Mexico 2017" folder)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Upload and register photos with similar records
	Form: N/A
	Content: N/A
	Quality: N/A
	Access: Ellis, friends, partner
Source(s)	C.7 Community Expectations, C.8 Ellis
Stakeholder(s)	Ellis, Friends, Partner
Retention & disposal	Retain documents permanently
Assessment of Risk	Low: There are no necessary requirements for this activity. If Ellis does not want to share these photographs it will not impact her day-to-day.

STEP C: KELLY ELLIS

Function: Social Being	
Sub-Function: Friend/Partner	
Activity: Celebrating birthdays	
Transactions: Creating wishlists	
Description of Records & Formats	Google sheet (Google Drive/ homepage - loose)
Requirements for Recordkeeping	Creation: Wishlist needs to be created
	Capture & maintenance: Assign a unique identifier and register with similar records
	Form: List
	Content: N/A
	Quality: Reliable
	Access: Ellis
Source(s)	C.7 Community Expectations, C.8 Ellis
Stakeholder(s)	Ellis, Partner
Retention & disposal	Retain 1 year after completion date
Assessment of Risk	Moderate: If Ellis does not make notes on the list at the time of the event it would be difficult to add information to the record.

Function: Social Being	
Sub-Function: Friend/Partner	
Activity: Sharing images with friends	
Transactions: Storing images from email	
Description of Records & Formats	JPEGs (laptop/ downloads - loose)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Download attachments from emails, assign unique identifiers, register with similar records
	Form: N/A
	Content: N/A
	Quality: N/A
	Access: Ellis
Source(s)	C.7 Community Expectations, C.8 Ellis
Stakeholder(s)	Ellis, Friends

STEP C: KELLY ELLIS

Retention & disposal	Retain documents permanently
Assessment of Risk	Low: As Ellis did not create these records, if she disposes of them prematurely she could capture another copy from her email.

Function: Citizen	
Sub-Function: N/A	
Activity: Paying taxes	
Transactions: Storing record of filed 2017 taxes	
Description of Records & Formats	PDF (laptop/ desktop/ "Images" folder)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Download completed documents from Tax Preparer's website, register them with similar records
	Form: Tax documents
	Content: Complete, Comprehensive, Stable, Identity
	Quality: Accurate, Fixed, Integrity, Reliable, Authentic
	Access: Ellis
Source(s)	C.8 Ellis, C.9 IRS
Stakeholder(s)	Ellis, State and Federal Government
Retention & disposal	Retain records 3 years after completion date
Assessment of Risk	High: While the likelihood of being audited is low, it would have very negative consequences if Ellis was audited and had not met the requirements. It would be wise to meet these requirements.

STEP C: KELLY ELLIS

Function: Patient	
Sub-Function: N/A	
Activity: Compiling medical records	
Transactions: Downloading lab work summary	
Description of Records & Formats	PDF (Google Drive/ homepage - loose) - corrupted
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Download from various medical websites, register them with similar records
	Form: N/A
	Content: N/A
	Quality: N/A
	Access: Ellis
Source(s)	C.8 Ellis, C.10 UT Health Services
Stakeholder(s)	Ellis
Retention & disposal	Retain future non-corrupted files permanently. Dispose of corrupted files
Assessment of Risk	Moderate: As Ellis is not the creator of these records, she has minimal requirements. However, it would be difficult to gather these records in the future. It is best if she captures the records at the time of creation from her doctors.

Function: Leisureite	
Sub-Function: N/A	
Activity: Downloading media	
Transactions: Downloading books, Downloading memes, Downloading artwork	
Description of Records & Formats	PDF (laptop/ desktop/ "The Web as History" folder) JPEGs (laptop/ desktop/ "Images" folder); (laptop/ desktop/ "Mr. Rogers Posters" folder)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Download from various websites, assign them unique identifiers, register them with similar records
	Form: N/A
	Content: Proprietary media
	Quality: N/A

STEP C: KELLY ELLIS

	Access: Ellis
Source(s)	C.8 Ellis
Stakeholder(s)	Ellis
Retention & disposal	Retain documents permanently
Assessment of Risk	Low: As Ellis is not the creator of these records, she has minimal requirements. If they are not met and something happens to the files, she can find them again on the internet.

Function: Leisurite	
Sub-Function: N/A	
Activity: Pursuing computer dependent hobbies	
Transactions: Downloading various softwares	
Description of Records & Formats	.apps (laptop/ applications)
Requirements for Recordkeeping	Creation: N/A
	Capture & maintenance: Download onto computer
	Form: Application
	Content: Proprietary software
	Quality: N/A
	Access: Ellis
Source(s)	C.8 Ellis
Stakeholder(s)	Ellis
Retention & disposal	Uninstall 5 years after last use
Assessment of Risk	Low: The software is not necessary to meet any requirements for other functions, so the risk of not having access to this software is very low.

This page intentionally left blank

Part 3: Retention Schedule

Based on the interviews with Kelly Ellis and understanding her various functions, a retention schedule was determined for her current records. There are two terms that need definition and clarification. An **Essential Record** is a record that is essential to the continuity of services during a calamity or the restoration of daily business if it has been interrupted. These records are irreplaceable. A record that has been appraised as **Archival** is based upon the ongoing usefulness or significance of records, based on the evidential, administrative, financial, legal, informational and historical values. Below is a guideline that builds from the business classification scheme and shows the records disposal authority in a concise format.

Function	Record Series	Medium	Retention Period	Archival	Essential Record	Remarks
Student	Schedule	G	SE+1		X	
	Readings Syllabi	D, P	C+7			
	Notes	D, GD	C+3			
	References Drafts Final Project	D, GD, P, PP	C+7	A		A= Final projects should be archived
	Past Notes Past Projects	GD	C+3			
	References Notes Final Projects	GD, GS, P, PP	C+7	A		A= Final Projects should be archived
	Guidelines Thank you letters	D, P	C+7			

Medium Codes		Retention Codes	Archival Code	Vital Code
D – Word Document .doc(x) E – Excel Document G – Google Sheet GD – Google Doc GS – Google Slide	J - .jpeg P - .pdf PN - .png PP – Powerpoint S - .apps	C – Completion of Task L – Last use PM – Permanent SE – Semester End T – Transfer	A – Transfer to External Hard Drive or other medium to be retained in Ellis’s personal archives	Indicate with “X”

STEP C: KELLY ELLIS

Function	Record Series	Medium	Retention Period	Archival	Essential Record	Remarks
Employee	Former Employment Payroll	D, E	C+1			
	Former Employment Litigation References Notes	GD, P	T			T= Email files before disposing
	Former Employment Website design	PP	T			T= Email files before disposing
	Background Checks	G	C			Dispose immediately upon completion
	Mailing List Meeting Minutes Internal Memos	E, G	T, C+1			T= Transfer to employer before disposing
	Editing Copy Images	D, GD, J, P, PN	T, C+1			T= Transfer to employer before disposing
	Timesheet	G	C+1			
	Feed Team Medical Care	G	C+1			
	Role Specific resumes	D	C+5			

Medium Codes		Retention Codes	Archival Code	Vital Code
D – Word Document .doc(x) E – Excel Document G – Google Sheet GD – Google Doc GS – Google Slide	J - .jpeg P - .pdf PN - .png PP – Powerpoint S - .apps	C – Completion of Task L – Last use PM – Permanent SE – Semester End T – Transfer	A – Transfer to External Hard Drive or other medium to be retained in Ellis’s personal archives	Indicate with “X”

STEP C: KELLY ELLIS

Function	Record Series	Medium	Retention Period	Archival	Essential Record	Remarks
	Letter of recommendation	GD	C+5			
Consumer	House Images	J	C+1			C= When Ellis moves out of current apartment.
	Expense Ledger	G	C+1			
Author	Diary Poems Short Stories Future Work	GD	PM	A		
Social Being	Traveling Itinerary	GD	C+1			
	Obituary	D	PM	A		
	Party Planning	G	C+1			
	Vacation photos	J	PM			
	Wishlists	G	C+1	D		
	Photos	J	PM			

Medium Codes		Retention Codes	Archival Code	Vital Code
D – Word Document .doc(x) E – Excel Document G – Google Sheet GD – Google Doc GS – Google Slide	J - .jpeg P - .pdf PN - .png PP – Powerpoint S - .apps	C – Completion of Task L – Last use PM – Permanent SE – Semester End T – Transfer	A – Transfer to External Hard Drive or other medium to be retained in Ellis’s personal archives	Indicate with “X”

STEP C: KELLY ELLIS

Function	Record Series	Medium	Retention Period	Archival	Essential Record	Remarks
Citizen	Filed taxes	P	C+3			C= File date
Patient	Labwork	P	PM	A		
Leisureite	Book Memes artwork	J, P	PM	A		
	Software	S	L+5			

Medium Codes		Retention Codes	Archival Code	Vital Code
D – Word Document .doc(x) E – Excel Document G – Google Sheet GD – Google Doc GS – Google Slide	J - .jpeg P - .pdf PN - .png PP – Powerpoint S - .apps	C – Completion of Task L – Last use PM – Permanent SE – Semester End T – Transfer	A – Transfer to External Hard Drive or other medium to be retained in Ellis’s personal archives	Indicate with “X”

Step D: Assess existing systems



Introduction

Step D is considered the benchmarking step of the DIRKS methodology. The three prior steps, A, B and C, have provided important context for the assessment of Ellis's business information systems. They have helped by providing an understanding of how Ellis operates.

Step A has already prepared a basic system inventory, but here we go deeper into the systems and tools available. We will assess Ellis's Laptop and Google Drive to determine their overall capability as recordkeeping systems. In addition, we will determine their capability of meeting her recordkeeping requirements described in Step C. Step B has assisted in giving context by way of describing Ellis's business classification scheme.

Part 1 of Step D explores her two systems through the use of screenshots and explanation. This part describes these systems capabilities of meeting Ellis's requirements for record creation and management.

Part 2 is a Gap Analysis investigation of both systems based on the definitions from *Characteristics of Systems that Keep Good Records*. This will provide an understanding of the strengths and weaknesses of Ellis's existing use of her systems as well as note if a system is not capable.

Part 1:

In the following section each of Ellis's recordkeeping systems (Laptop and Google Drive) will be analyzed for functionality. This will be a broad overview of her systems and will not be discussing them in regard to specific transactions.

This will be investigated through, but not limited to, the three following avenues:

- Technical specifications of software and hardware where applicable as well as the tools that each offers
- Identify the people who use and manage the systems
- Policies governing the use of the systems, rules and procedures on operating the systems

Laptop: Hard drive and Operating System

Ellis uses her laptop which is a 2015 MacBook Air on a daily basis. It is one of her main recordkeeping systems and she has various records that support all of her functions stored on it. Although she does not have all of her records stored there.

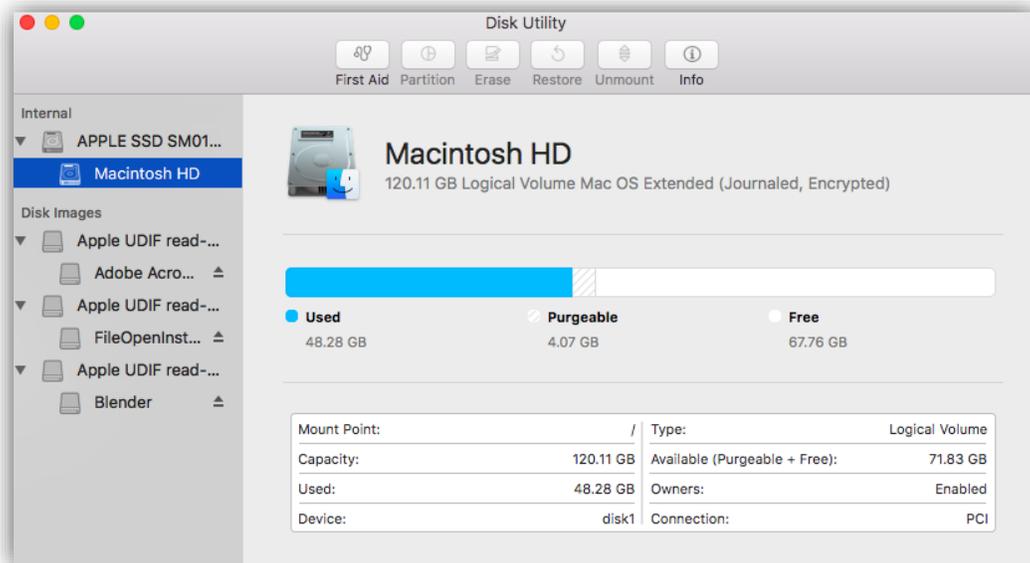


Figure 1: Hard drive's internal memory capacity and current usage

The internal memory's total capacity is 120 GB of which she is currently using 48 GB [see Fig. 1]. As is documented in Step A, the additional drive "Blender" is no longer in use and she no longer needs access to this drive. This is evidence of an infrequent acknowledgment and disposal of unnecessary aspects of the system.



Figure 2: Hard drive type

The physical hard drive itself is a solid-state drive (SSD) [See Fig. 2]. This is noteworthy because overall they are generally very reliable, but when they fail, they don't usually give a warning. They also have a higher chance of the information not being recoverable than hard disk drives. The risk of sudden failure and how best to prepare for that should be addressed in Steps E & F.

Ellis's S.M.A.R.T. status reads "Verified" but upon doing some research it was discovered that Apple has decided that this status is obsolete with an SSD due to the fact that there aren't any obvious signs that the drive is going to fail. They began to stop supporting this process in 2015 and newer models will read "Not Supported". This status could give a false sense of security that the system is fine and will not likely fail in the near future.



Figure 3: Ellis's current operating system

The laptop is currently running on Apple's operating system Sierra version 10.12.6 [See Fig. 3]. This is not the most up to date operating system (OS) Apple offers. They recommend to their users to download the latest OS that the computer can support. This ensures that the system's security is the best available. Ellis's computer can be upgraded to macOS Mojave version 10.14.

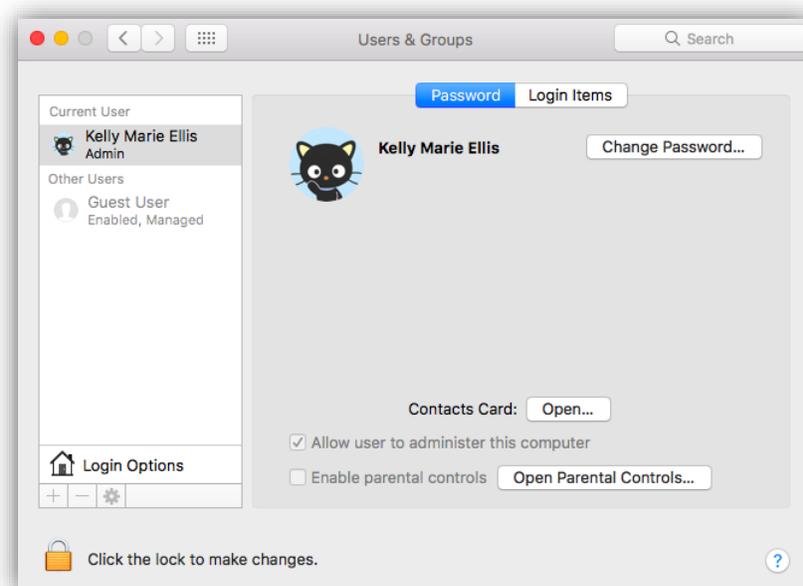


Figure 4: Users and their given permissions

This system has the capability to create users for this computer. In addition to being the Administrator for the computer, Ellis has also set a password to access her information. The system automatically creates a “Guest User” as well so that those who want to use the computer can login while not allowing access to Ellis’s files and information [See Fig. 4]. She does not share this computer with others, but if she wished to, she could create additional User profiles and decide how much control that user had over the computer. This is the first level of security that the system offers.

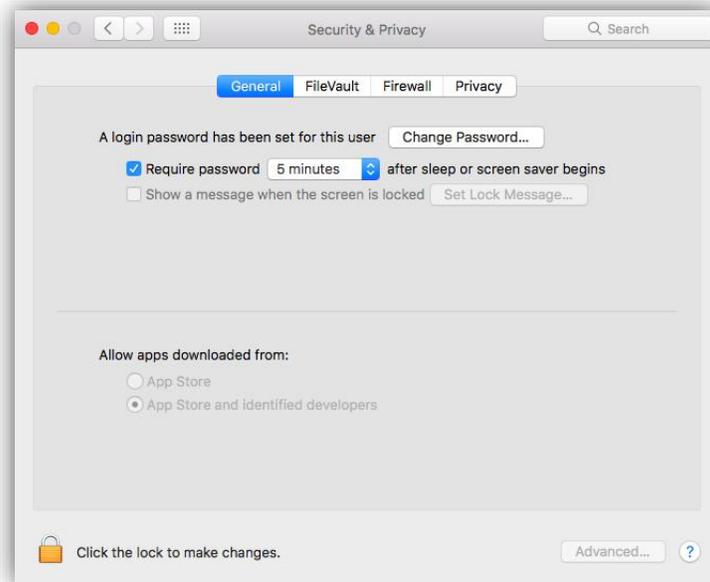


Figure 5: A password is required to access the computer

Within “System Preferences” is a subfolder titled “Security & Privacy”. There are several options to keep the system secure. In the General tab is the availability to specify how much time should pass after the computer goes to sleep or screen saver begins [See Fig. 5]. To ensure a basic level of security it would be wise to require the password immediately considering Ellis carries her computer with her constantly and is currently a student as well as working part-time.

The next tab to the right is “FileVault” [See Fig. 6]. This is a slightly concerning security option because as it describes “If you forget both your password and recovery key, the data will be lost.” It encrypts the computer’s contents. This would ensure that if someone removed her SSD from the computer they would not be able to read the information.

STEP D: KELLY ELLIS

The third tab over is “Firewall” [See Fig. 7]. Apple has a well-respected built in firewall. As we can see Ellis has not turned it on so while implementing some of the system’s security measures, she is not taking full advantage of them.

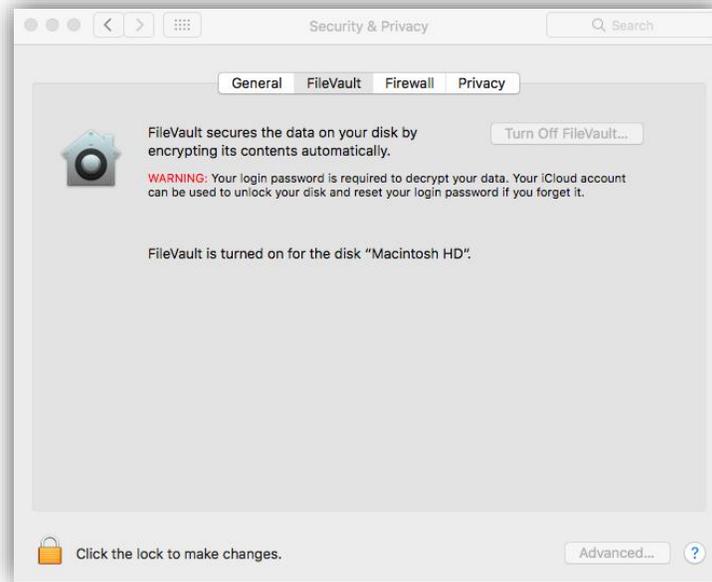


Figure 6: FireVault is an encryption tool that the laptop offers



Figure. 7: Laptop offers the ability to utilize a built in Firewall

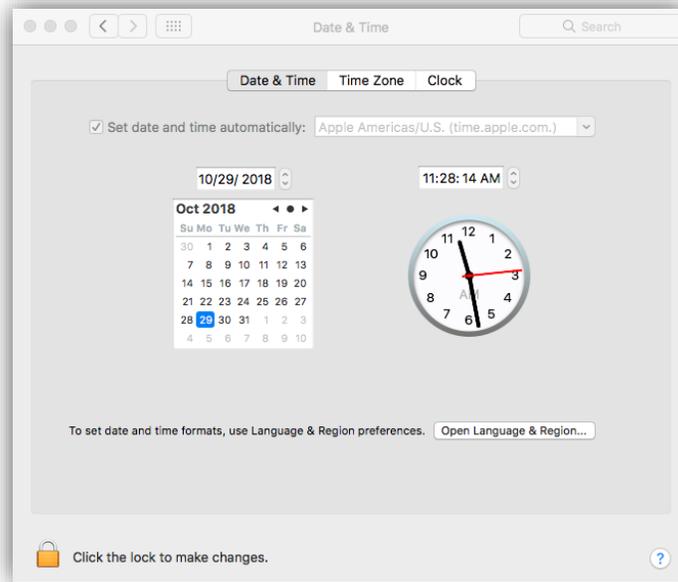


Figure 8: Date and time can be automatically set

The system allows for the user to choose the system to automatically set the day and time based on a broad continent field [See Fig. 8]. It will also allow for the system to automatically select a time zone based on current location [See Fig. 9]. These options would ensure that records created using this system are reliably time stamped based on the moment of creation and modification. As we can see though, Ellis has not selected that the time zone be automatic.

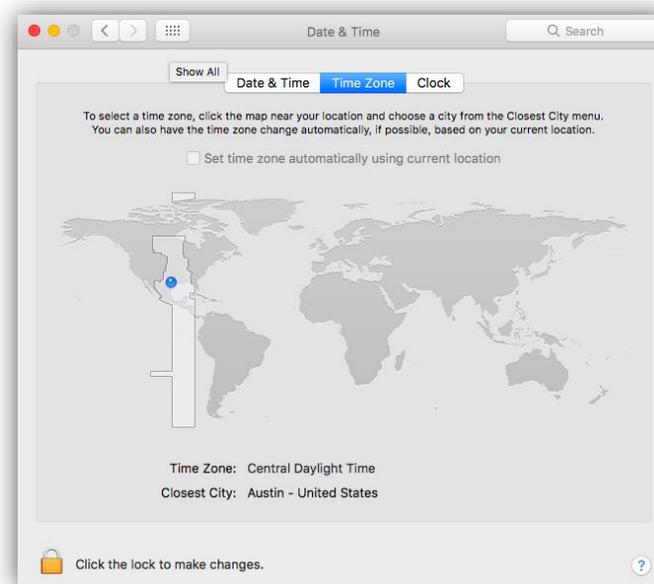


Figure 9: Time zone can be changed automatically based on location

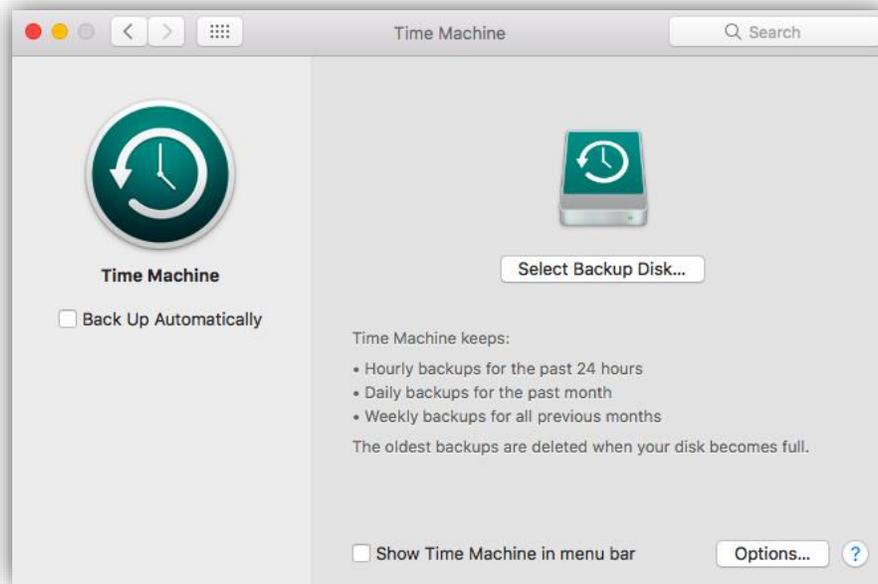


Figure 10: Time Machine: a backup function inherent to macOS

The system has a backup function that could be enabled to automatically back up the computer [See Fig. 10]. Setting this up to run when an external hard drive is plugged into the computer is a simple way of backing up the computer without demanding much time or money. While this function should not be used as an archiving process it does offer an automatic level of preservation for the files.



Figure 11: iCloud backup

The system offers another backup solution called iCloud [See Fig. 11] that is less about specific records, but as a social being it would be damaging to Ellis if her contacts were lost. This tool can be used to store photographs and videos as well, but as Apple only gives 5 GB for free, it is not functional for those types of files.

iCloud can travel between all Apple devices though and as such it gives you the ability for more security by enabling two-factor authentication [See Fig. 12].



Figure 12: iCloud two-factor authentication security

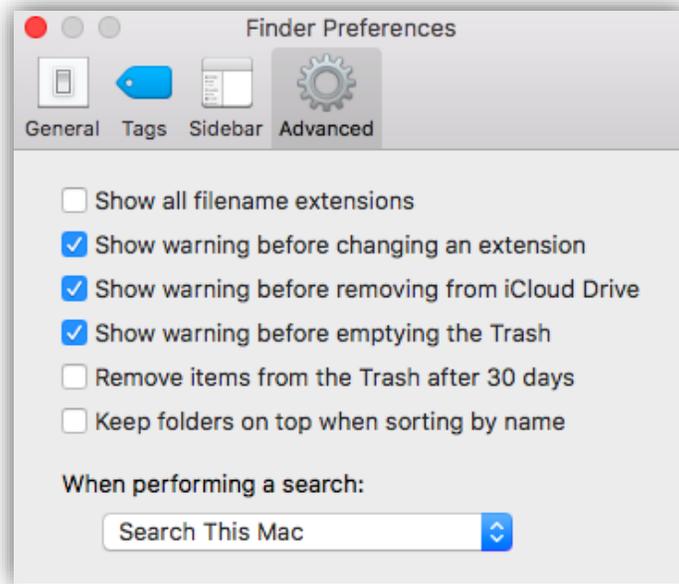


Figure 13: Finder preferences to prompt warnings

The system has a file directory tool that is customizable to a degree. To ensure a fixed record one can select that the Finder “Show all filename extensions”. This allows one to see at a glance if any file extensions are in danger of not being usable due to the necessary software to open it not being supported by the computer.

Reviewing Fig. 13 we can see that Ellis has enabled certain warnings that will assist in maintaining integrity by not changing an extension. By not selecting “Remove items from the Trash after 30 days” and selecting “Show warning before emptying the Trash” she has ensured the disposal of any records are done intentionally.

STEP D: KELLY ELLIS

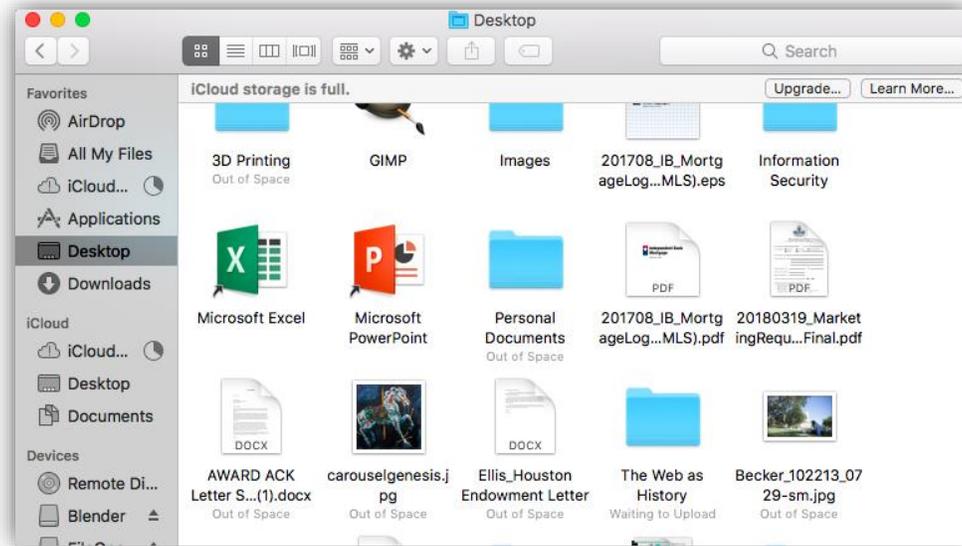


Figure 14a: File Directory by icon

By using the Finder, a file directory opens and this system allows Ellis to choose how she wants to view her records. Choosing to view documents as an icon shows a thumbnail of the records. This might be chosen if one is looking at files of photographs, but as we see from Fig. 14a it is not as functional for most other documents.

Selecting to view as a list allows for more metadata to be viewed [See Fig. 14b] like "Date Modified", "Size" and "Kind". It also can be setup to group file types together. This format can be used to make records more accessible if used systematically.

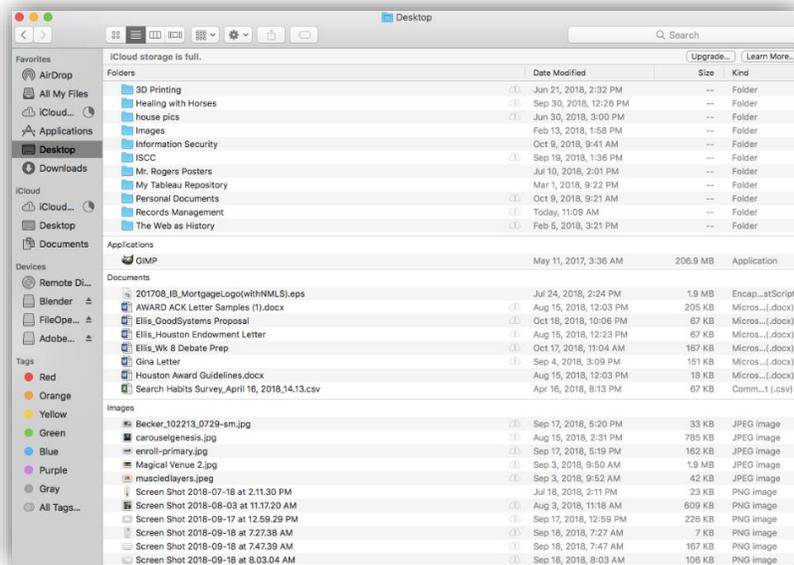


Figure 14b: File Directory by list

Laptop: Microsoft Word



Figure 15: Microsoft Word version 15.41

Ellis uses Microsoft Word as a student, employee and social being. She is using an older version of Word than what is available to her. As a student of the University of Texas she can download the latest version of the Microsoft suite for free.

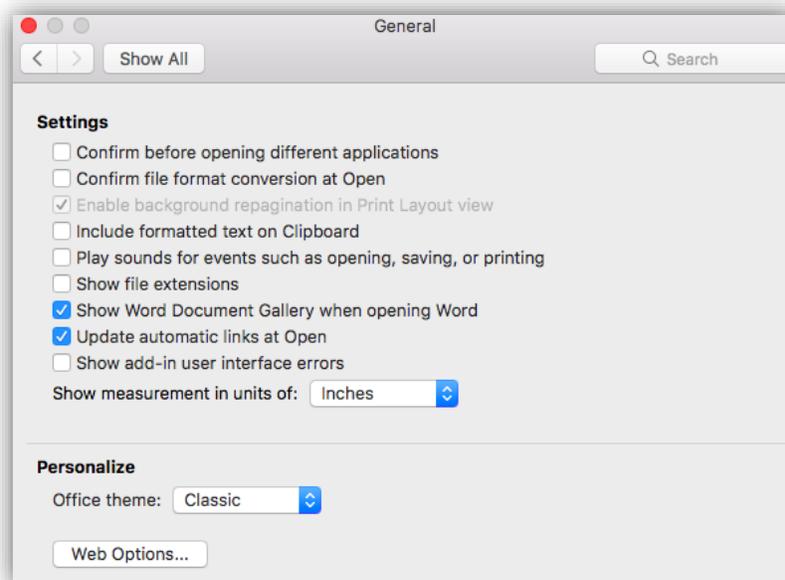


Figure 16: Word's General preferences

Word allows for the user to ensure a record is fixed by having the software “Confirm file format conversion at Open” [See Fig. 16]. If it is determined that the record should not be migrated to a different format the user has a chance to not open the document.

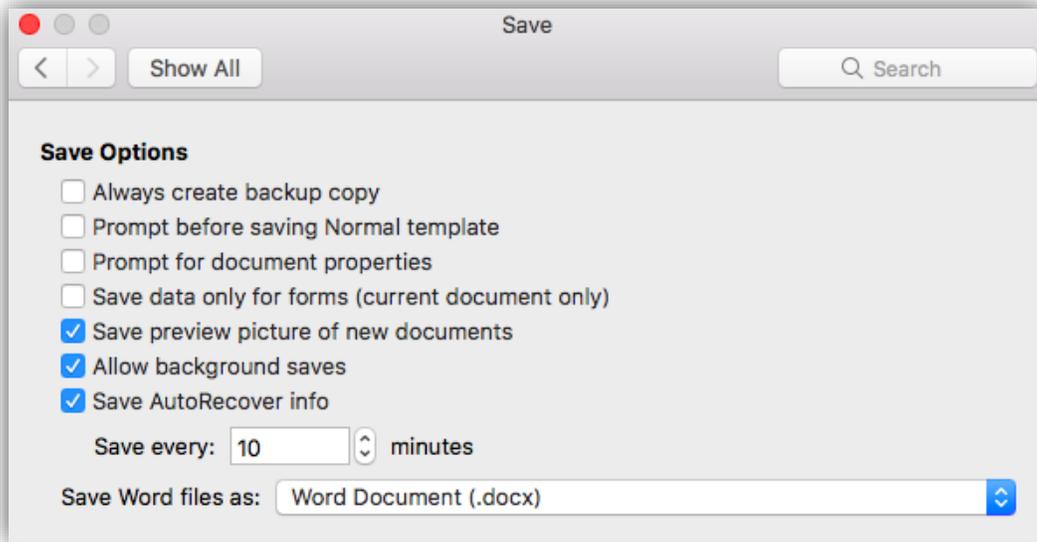


Figure 17: Word’s Save preferences

Within the Save Preferences the user can set the system to systematically create a backup copy as well as prompt the user for document properties [See Fig. 17]. This assists with creating complete records by capturing metadata. The only automatic metadata Ellis can control is her User Information [See Fig. 18].

The screenshot shows the 'User Information' dialog in Microsoft Word. It contains the following fields and options:

- Name:** Kelly Ellis
- Initials:** KE
- Always use this name regardless of how I'm signed in to Office
- Company:** [Empty text field]
- Address:** [Empty text field]
- City:** [Empty text field]
- State:** [Empty text field]
- Zip:** [Empty text field]
- Country/Region:** [Empty text field]
- Phone:** [Empty text field]
- E-Mail:** [Empty text field]

Figure 18: Word’s default User preferences

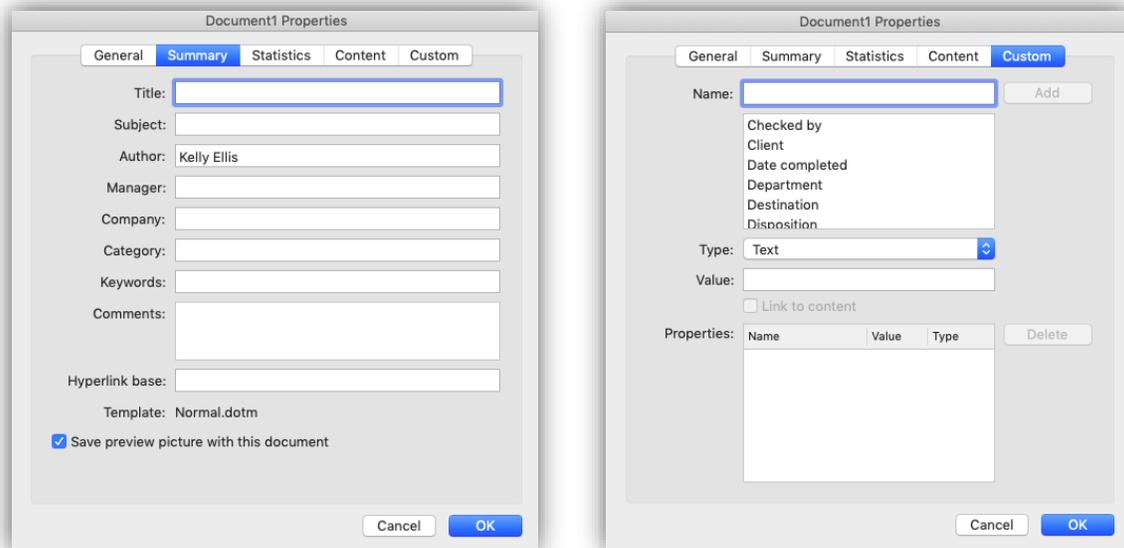


Figure 19a & 19b: Document Properties

Additional metadata can be manually applied to a document [See Fig. 19a & 19b]. By utilizing this feature Ellis would be giving her records identity.

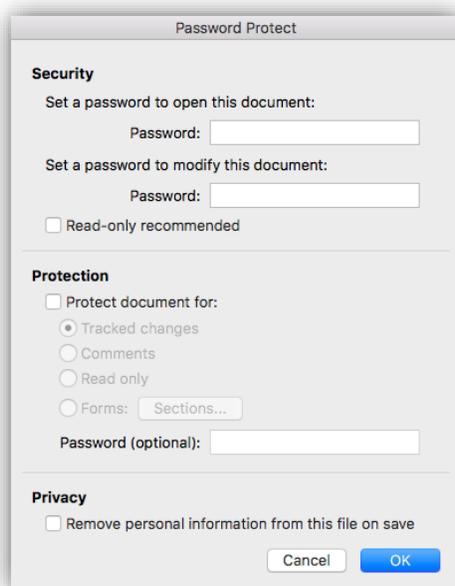


Figure 20: Password protect Word documents to open and to modify

A measure of security that Word offers is to password protect opening a document, modifying a document or assigning the document as read-only [See Fig. 20]. There are levels to the protections beyond that as well. This feature may not be necessary for all

Ellis’s records, but for her documents with personally identifiable information included it would provide a document specific level of security.

There should be a strong concern for utilizing password protection in that if the password is lost or forgotten it cannot be recovered. If the document is “password protected to modify this document” Word offers that the user can create a duplicate for modifications or open the document as “Read-Only”. This feature meets the fixed requirement for a record by not allowing changes to the original document.

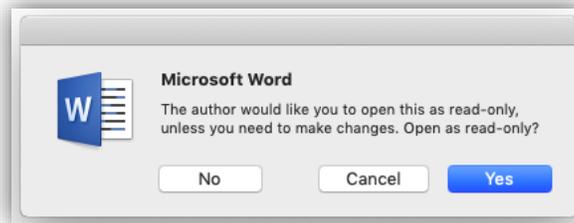


Figure 21: Setting an individual document to Read-Only

Both the password protection and read-only have to be selected for each individual document, it cannot be applied to all documents as a whole. The read-only feature also does not enforce itself except to ask at opening if you want to open it as Read Only or make a modification. You can press “No” and it lets you change it without issue.

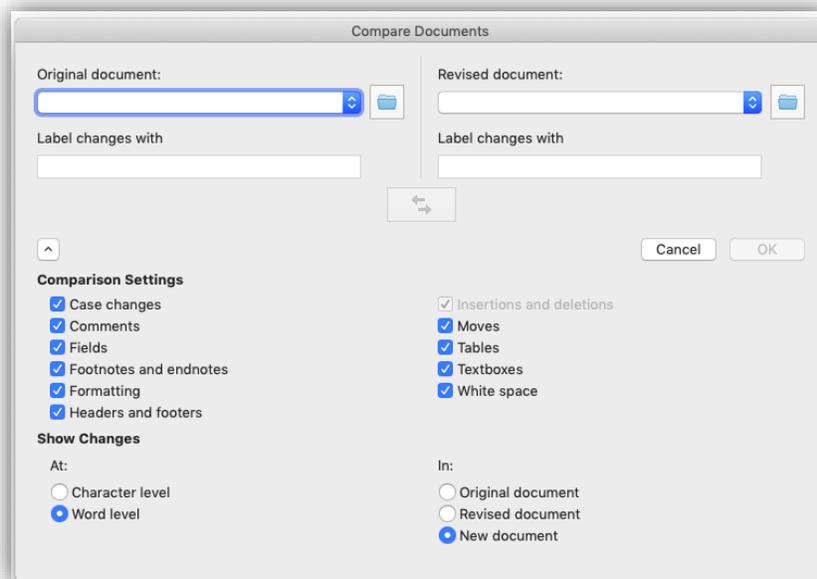


Figure 22: Compare two documents as detailed as the character level

Ellis could decide to use the feature “Compare Documents” that Word offers to prove that a document is authentic compared to its backup or original [See Fig. 22]. It can compare down to the character level, not just to the word level.

Laptop: PowerPoint

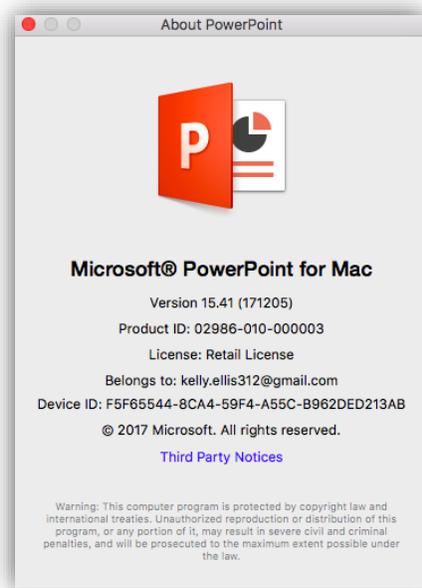


Figure 23: Microsoft PowerPoint version 15.41

Same as the version issues with Microsoft Word, Ellis is running an older version of PowerPoint.

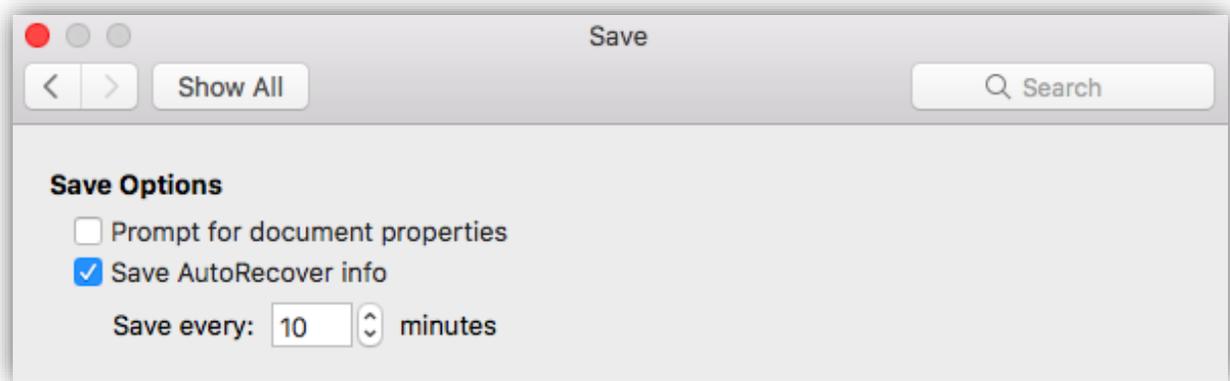


Figure 24: Save preferences for PowerPoint

The Save options are more limited here, but it will allow for the automatic prompt for document properties. These document properties are the same as Word. Being the same layout and options helps the user capture the pertinent metadata for each document.

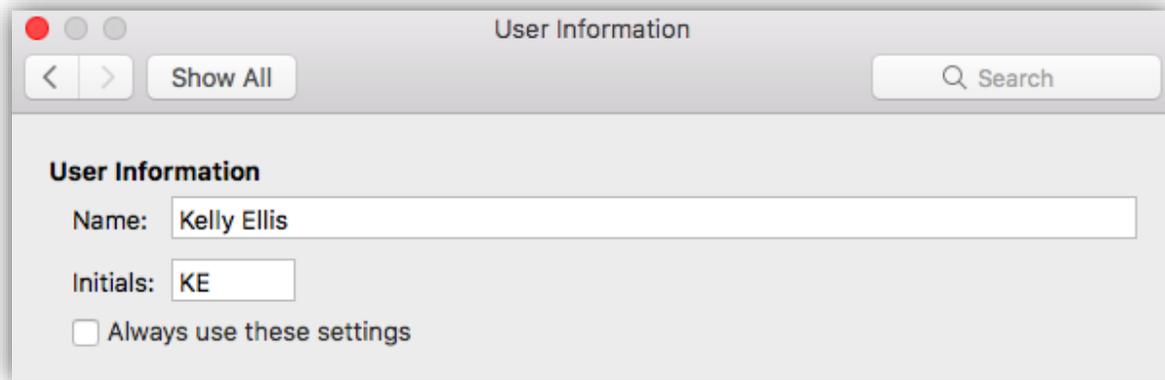


Figure 25: Default user information for PowerPoint

Ellis has set up the automatic user information to her PowerPoint documents.

Laptop: Excel



Figure 26: Microsoft Excel version 15.41

Same as the version issues with Microsoft Word, Ellis is running an older version of Excel.



Figure 27: General preferences for Excel

Excel combines the User Information into the General preferences [See Fig. 27]. It also has the same metadata properties that Word, and PowerPoint offer and one can select to have a prompt for the property window.

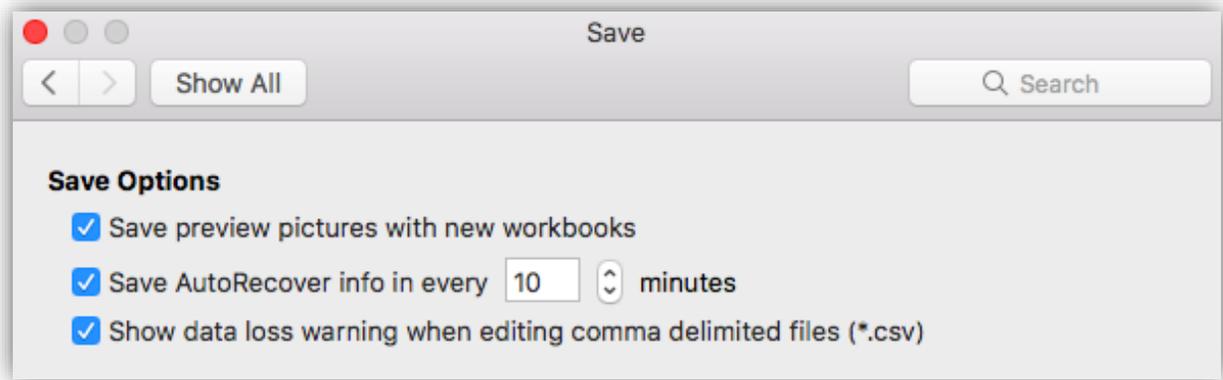


Figure 28: Save preferences for Excel

All three Microsoft programs that Ellis uses gives the option to “Save AutoRecover info in every __ minutes”. This is helpful in case the program fails while she is working on a record.

Google Drive

Google Drive is the other system that is being analyzed regarding Ellis's recordkeeping. This is a cloud-based system that is directly linked to her email address. She uses a personal email address. As a student, she has the ability to get an email address through the school's G suite.

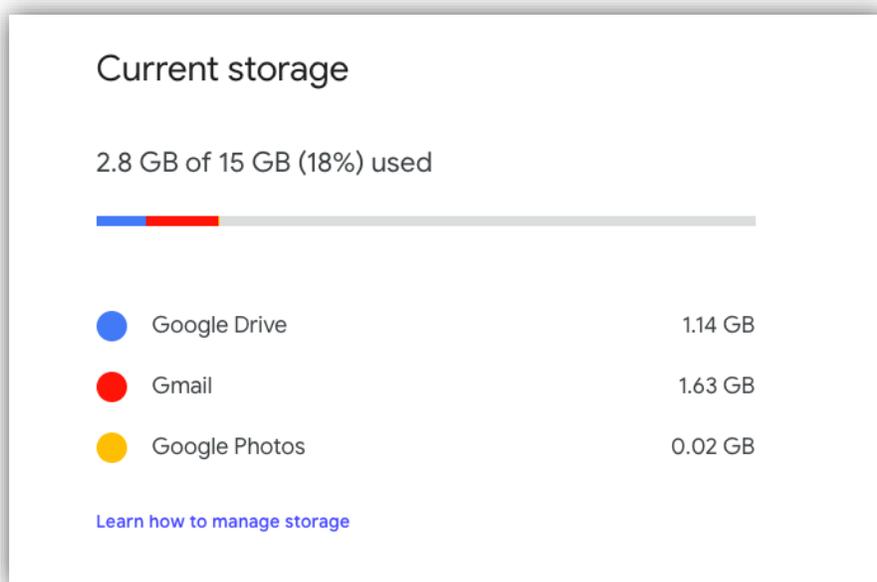


Figure 29: Storage capacity and how much is used (per Google's policy)

Google has a storage limit for individual accounts like Ellis's. If she transferred everything to a school provided email address, she would have unlimited storage. Something to note though is that any document that is created and stored as a Google file format does not take up any storage in their system.

She is currently using 2.8 GB of 15 GB based on Google's policy, but again this is not accurate to the actual storage being used. It is unknown how much she is actually storing in her Google Drive.

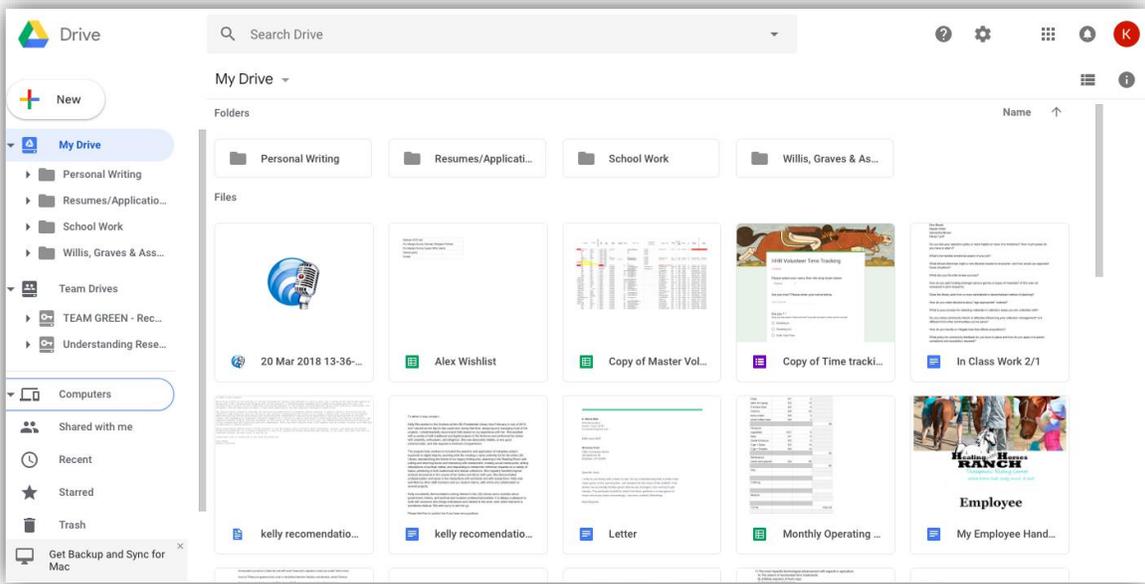


Figure 30: File directory as icon

Google Drive offers two ways to view the File directory. Similar to her laptop, this offers up an icon which does not show any additional metadata than the title and a thumbnail [See Fig. 30]. Looking at the Google Drive overall shows all the file formats you have stored on your drive.

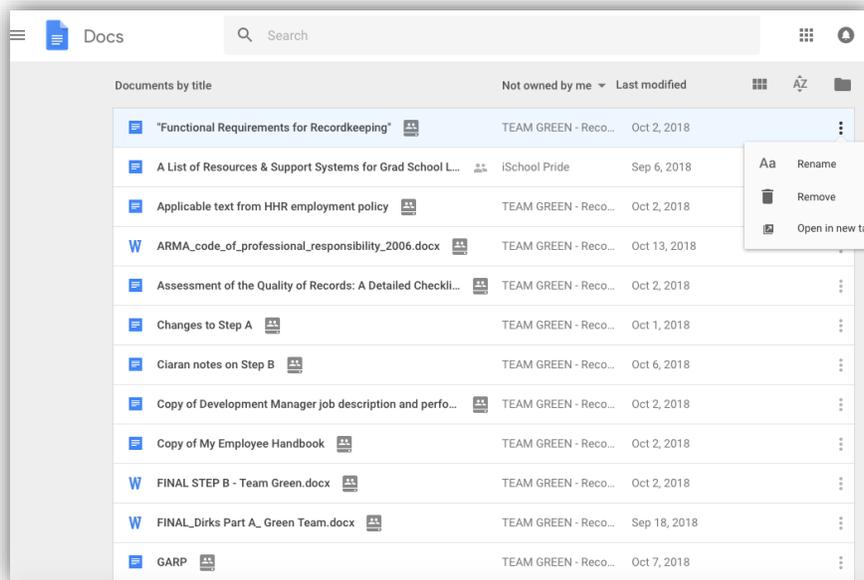


Figure 31: File directory as list

One can also view just a specific file type as in Fig. 31 where it is only showing Google Doc openable documents including Microsoft Word documents. In the list view one can see a little more metadata like who owns the document and last modified. It is worth noting that by opening and viewing a document owned by someone else even once, it will link the document to your account. It is an automatic process that unless one is vigilant in disposal of these unintentionally saved documents one can be inundated with them.

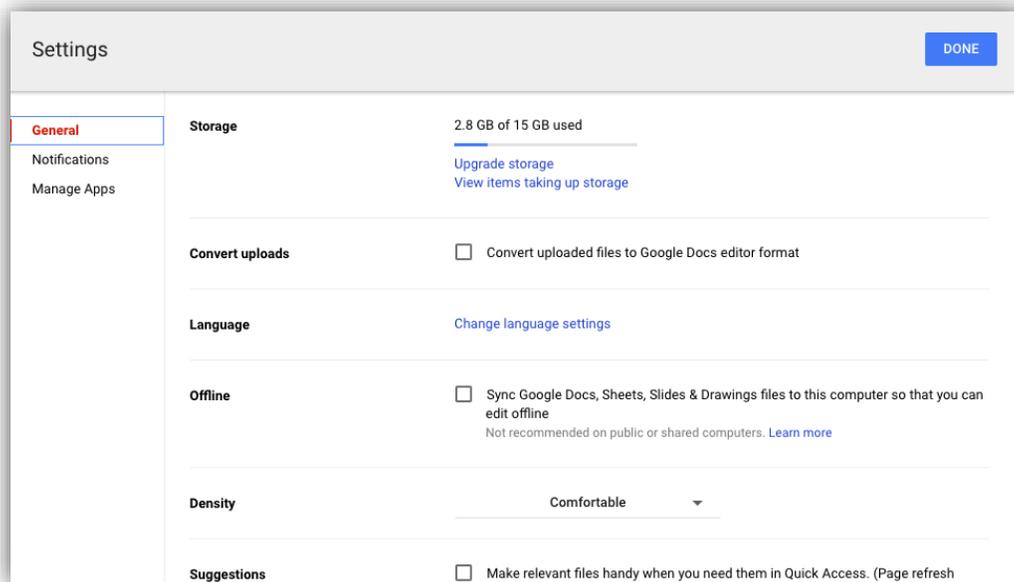


Figure 32: Google Drive settings

Google Drive's general settings are very minimal and most of the options are a way to use Google more than any other system [See Fig. 32]. There are privacy settings, but those are mostly dealing with ads targeted to the user. They do not have anything specific regarding records. They claim that all information is owned by the account holder.

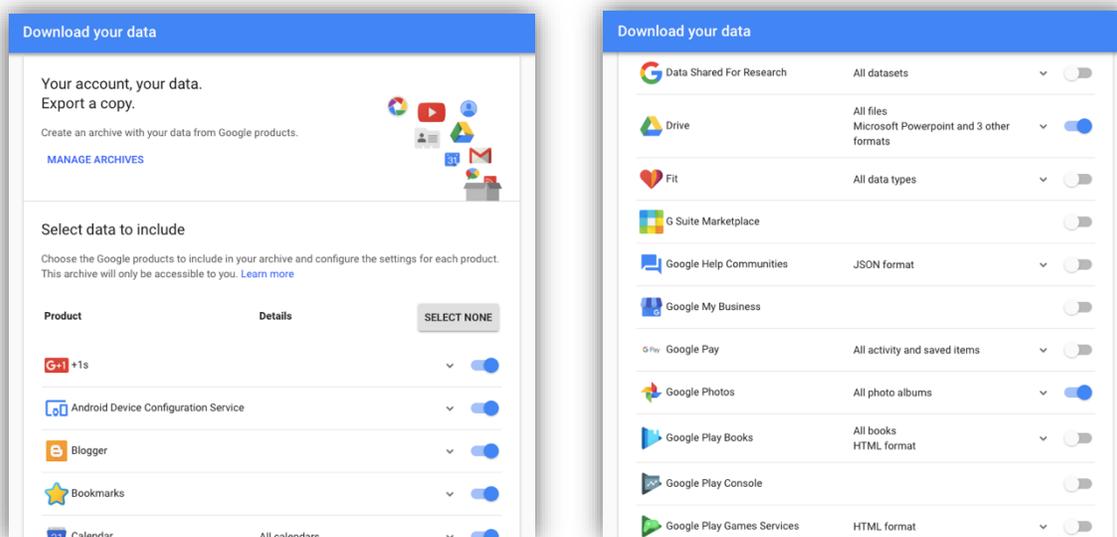


Figure 33a & 33b: How to create an archive of your data

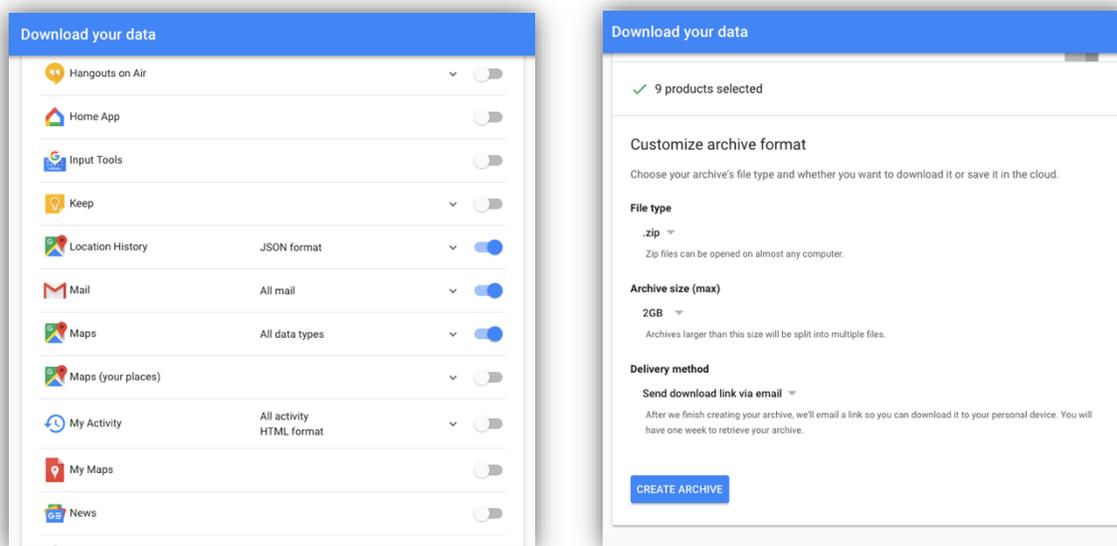


Figure 33c & 33d: How to create an archive of your data

Google offers individual users the ability to create and download an archive of the various data pieces they collect. Google Drive is one of those. The user can pick and choose what they would like to archive and how they want it sent.

Something to note is that upon investigating this option it was revealed that this particular feature would not be available to Ellis if she switched to using the school supplied email address.

STEP D: KELLY ELLIS

Google does offer the option to download individual files but depending upon how many files you have stored with them, it could take a significant amount of time getting them all saved if done that way.

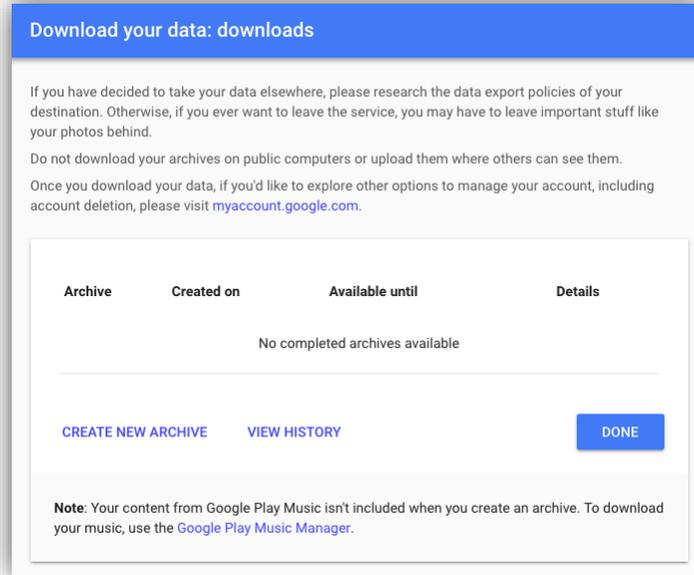


Figure 34: How to view an archive of your data and Google's recommendations

In the same window that one can view the archives created, Google warns their users to research the data export policies if one plans to use a different cloud service [See Fig. 34].

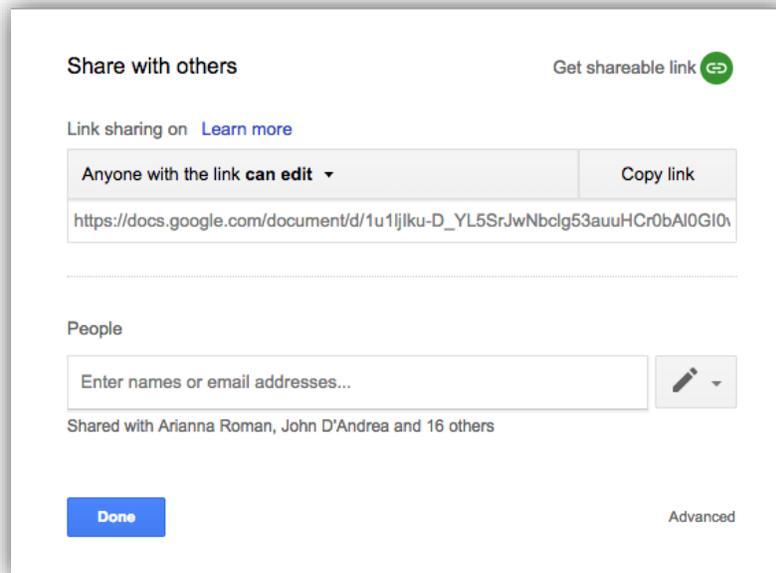


Figure 35: Share settings for files

The owner of a file on Google Drive can share the document with others, but they can also choose to share a link. By sharing the link, it can be forwarded to others without an issue. This could pose integrity and security issues.

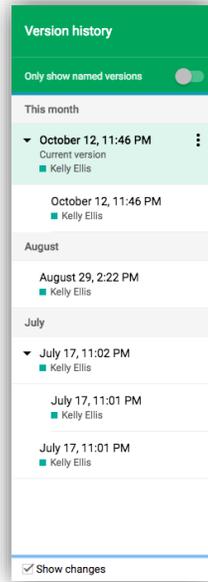


Figure 36: Version history of a specific document

For all Google software, anyone who can view a document can also view the version history [See Fig. 36]. Looking at this critically, one can see every change that was made to a file. The downfall is that if the file had many alterations it could be very difficult to find exactly what is being sought. Specific points can be named, but this is a function that cannot be automated.

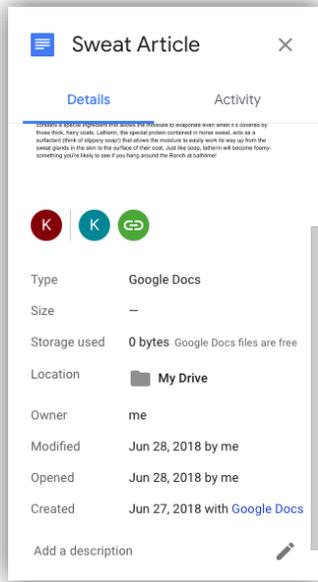


Figure 37: Additional possible metadata

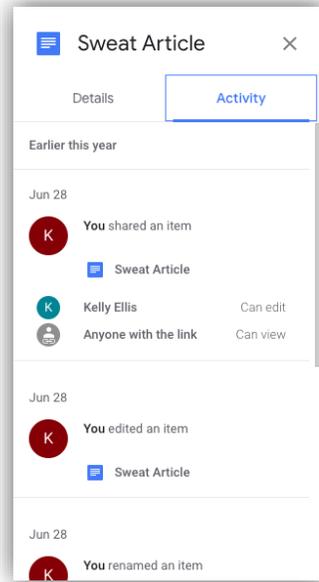


Figure 38: Activity details for the record

This system does not offer many ways, or types of additional metadata one can apply to a file in an attempt to strengthen the integrity of said file. It does not show the user the size of the file if it is one of the Google software formats. One can, however, view the activity associated with the file.

This page intentionally left blank

Part 2

Using the knowledge gained by assessing the functionality of the two systems this part of Step D will analyze whether they meet her requirements. This will be done through the use of Gap Analysis by identifying the gaps that may exist between her desired or required practice and her actual system operations.

Characteristics of systems that keep good records will be used as the benchmark to analyze the systems. These words and definitions are also found in ISO 15489-1-2016. These characteristics have also been used in Step C in determining the requirements Ellis needs to meet.

Expectations from the systems

The elements below create the environment that allows for the identified records requirements ability to be met. Without these characteristics of records systems, the records themselves are less likely to be compliant with the requirements from Step C.

- Integrity/Security
- Reliability
- Systematic
- Comprehensive
- Compliant

Integrity / Security	
Definition: The system has control measures regarding: access monitoring, user verification, authorized destruction and security in order to prevent unauthorized access, destruction, alteration, or removal of records.	
Laptop	Google Drive
Partially compliant	Not compliant
Ellis has enabled her computer to be password protected upon opening and she has enabled FireVault. However the system offers a Firewall and the Microsoft software allows for password protected documents.	As many records on Google Drive are shared between multiple people all those who have access can alter the record.

STEP D: KELLY ELLIS

Reliability	
Definition: The records systems should be capable of continuous and regular operation in accordance with authorized policy and procedures.	
Laptop	Google Drive
Not compliant	Not compliant
<p>The system allows for records to be organized and can provide access to relevant records and metadata.</p> <p>Ellis does not utilize the functions of the system though.</p>	<p>The system allows for records to be organized in folders, but a record you view once from an outside source (shared by email) is added to your account without your implicit permission. It does not offer much additional metadata than the very basic.</p> <p>Ellis does not utilize the folders systematically.</p>

Systematic	
Definition: Records should be created, maintained and managed systematically.	
Laptop	Google Drive
Partially compliant	Partially compliant
<p>The system allows for some features to be systematic like the prompt document properties, and automatically saves files every 10 minutes.</p> <p>Ellis does not have the prompt for file properties enabled.</p>	<p>The system automatically saves files as they are worked on. It does not manage the records systematically.</p>

STEP D: KELLY ELLIS

Comprehensive	
Definition: The system should manage records resulting from the complete range of business activities.	
Laptop	Google Drive
Partially compliant	Not compliant
<p>The system could manage the complete range of activities.</p> <p>Ellis does not utilize this as she has split her records between this system and Google Drive.</p>	<p>This system could not manage the complete range of activities because it does not have enough storage for all Ellis's records.</p> <p>It also would not allow the various file formats that Ellis uses.</p>

Compliant	
Definition: The systems should be in compliance with the expectations and recordkeeping requirements outlined in Step C.	
Laptop	Google Drive
Partially compliant	Not compliant
<p>This system can comply with the requirements outlined in Step C.</p> <p>Ellis does not currently meet the requirements.</p>	<p>This system cannot comply fully with the requirements from Step C.</p> <p>For example, the metadata available to create or is systematically created is not very much.</p>

Characteristics of good records

The characteristics of good records are based on the requirements described in Step C. In that step it was determined that the records were required to meet at least one of the principles below.

- Complete
- Accurate
- Fixed
- Identity
- Integrity
- Reliable
- Authentic
- Usable/Accessible

Complete	
Definition: Records have content, context, structure [include metadata]. Records should be accurate, understandable and meaningful.	
Laptop	Google Drive
Partially compliant	Partially compliant
<p>The system is capable of allowing the author to create records that are complete.</p> <p>Ellis has records that are not complete such as duplicates and those without metadata.</p>	<p>The system automatically fills in a date and time stamp, the owner of the document as well as the various people it is shared with. The structure is not stable though.</p> <p>Ellis has records that are not complete such as duplicates, documents that are not meaningful to her and those without metadata.</p>

STEP D: KELLY ELLIS

Accurate	
Definition: The degree to which the data in the materials are precise, correct, truthful and free of error or distortion. To ensure accuracy, one must exercise control on the processes of creation, transmission, maintenance and preservation of the material.	
Laptop	Google Drive
Partially compliant	Not compliant
The system is capable of allowing records to meet this characteristic.	The system works against Ellis because at any given time someone with shared access can alter the record as well as possibly delete the record without her permission.

Fixed	
Definition: Record has fixed form (quality of appearance or presentation is the same each time the record is retrieved) and stable content (quality of information and data is immutable).	
Laptop	Google Drive
Partially compliant	Not compliant
The system is capable of fixed form and stable content. To ensure stable content Ellis would need to enable the password protected modification on her files.	This system is not capable of a fixed form and it is extremely easy to alter a file.

STEP D: KELLY ELLIS

Identity	
Definition: Attributes of a record that characterize it as unique (e.g. date, author, addressee, subject, identifier).	
Laptop	Google Drive
Partially compliant	Partially compliant
<p>The system automatically assigns attributes and at the time of saving makes the author, assigns a unique name.</p> <p>Ellis has the option to add additional metadata to the file as well if she wishes.</p>	<p>The system automatically assigns attributes. It does not require Ellis to assign it a unique name because it is constantly saving. It also limits the type and amount of metadata Ellis can assign to the file.</p>

Integrity	
Definition: A record has integrity if the message it is meant to communicate in order to achieve its purpose is unaltered. Importance of text and form fidelity, absence of technical changes.	
Laptop	Google Drive
Partially compliant	Not compliant
<p>The system allows for read-only and password protected records. If a record is taken off the system, the form will remain.</p> <p>Ellis has not enabled read-only or password protection for any of her documents.</p>	<p>The system does not allow for a document to live unaltered while stored on its site.</p> <p>If a record is downloaded off the system, the form is not fixed.</p>

STEP D: KELLY ELLIS

Reliable	
Definition: Records are created at the time of the transaction, system design should reduce the amount of data fields requiring manual entry, authored by the competent person.	
Laptop	Google Drive
Partially compliant	Not compliant
<p>Ellis is the only person who can create documents on this system and the records have a minimum amount of metadata assigned to the records automatically.</p> <p>Ellis could use some training and make a habit of thinking critically about her important documents.</p>	<p>Many people can author and alter documents either shared with Ellis or after Ellis has shared with them. The system itself does not foster a culture of thinking critically about important documents.</p>

Authentic	
Definition: The trustworthiness of a record that is what it purports to be, untampered with and uncorrupted, must be based on its <i>identity</i> and <i>integrity</i> , and on the reliability of the records system in which it resides.	
Laptop	Google Drive
Partially compliant	Not compliant
<p>The system has the capability to create authentic records and in general the system has a history of reliability. The system offers a base level of authenticity as Ellis is the only person to have access to these records.</p>	<p>With version history available to Ellis she can go back through a document to find a time when the record was altered by another person, but that requires a significant amount of time.</p> <p>The system as a whole does not foster an untampered with and uncorrupted recordkeeping environment.</p>

STEP D: KELLY ELLIS

Usable / Accessible	
Definition: The record can be located, and retrieved, and is capable of being presented, exported, redacted, and interpreted.	
Laptop	Google Drive
Partially compliant	Not compliant
<p>The system is capable of allowing a record to be usable and accessible.</p> <p>Ellis has said that she often does not know what records she has stored on this system. The records are not organized or easily found.</p>	<p>The system is capable of allowing a record to be usable and accessible.</p> <p>Ellis has said that she often does not know what records she has stored on this system. The files are not organized or easily found.</p>

Recordkeeping processes that should be part of the system

The characteristics of good recordkeeping processes terms below are used to determine if the systems are capable of being compliant. The terms also help us understand if Ellis is using the processes effectively and efficiently.

- Capture
- Registration
- Classification & Indexing
- Retention
- Storage
- Use & Tracking
- Data backup & Preservation
- Migration

Capture	
Definition: Establishes a relationship between the record, the creator and the business context that originated it. Places the record and its relationship within a records system, and links it to other records.	
Laptop	Google Drive
Partially compliant	Not compliant
The system has the capability to assign additional explicit metadata to a record. Ellis does not utilize it.	The system does not allow for methodical and easily repeatable additional explicit metadata to be assigned to a record.

STEP D: KELLY ELLIS

Registration	
<p>Definition: The act of giving a record a unique identifier on its entry into a system through the ability to assign a unique identifier, classify items and assign unique metadata.</p>	
Laptop	Google Drive
Partially compliant	Partially compliant
<p>The system allows for unique identifiers for a record from as simple as a name upon saving to unique metadata.</p> <p>Ellis could use these tools more fully to make finding documents through the search field more successful.</p>	<p>The system allows for unique identifiers for a record, but it does not require it upon entry into a system. It also does not make the addition of metadata easy.</p>

Classification & Indexing	
<p>Definition: Systematic identification and arrangement of records into categories according to logically structured conventions, methods and procedural rules represented in a classification system.</p>	
Laptop	Google Drive
Partially compliant	Partially compliant
<p>The system allows for arranging records in categories and folders.</p> <p>Ellis does not do this systematically.</p>	<p>The system allows for arranging records in categories and folders.</p> <p>Ellis does not do this systematically.</p>

STEP D: KELLY ELLIS

Retention	
Definition: Records systems should be capable of facilitation and implementing decisions on the retention or disposition of records.	
Laptop	Google Drive
Partially compliant	Partially compliant
The system allows for disposition of records. Ellis does not follow through with disposing of unnecessary records.	The system allows for disposition of records. Ellis does not follow through with disposing of unnecessary records.

Storage	
Definition: Records should be stored on media that ensure their usability, reliability authenticity and preservation for as long as they are needed.	
Laptop	Google Drive
Partially compliant	Not compliant
The system while fairly stable could fail at any moment due to the type of media that it is. This should be mitigated by backing up the files.	The system cannot ensure authentic records and because the account is associated with Ellis' email address if something was to happen to it, she could potentially lose access to all her files. This should be mitigated by backing up the files.

Data backup & Preservation	
Definition: Electronic records routinely backed-up, copied to new media or migrated to new technology as needed.	
Laptop	Google Drive
Not compliant	Not compliant
<p>This system has the ability to routinely back-up the records through the use of Time Machine.</p> <p>Ellis does not back-up any of these documents consistently. She had started using Google Drive in the attempt to use that as her back-up.</p>	<p>The system has the ability to create an archive of records. It is not something that could be routinely set-up.</p> <p>Ellis does not back-up any of these documents. The thought in using Google Drive was it would be a safe storage place.</p>

Conclusion

The laptop that Ellis uses is robust enough that she can use it for her individual recordkeeping system. The operating system and software need to be addressed in that she can upgrade to the newest version to ensure the most up to date security as well as functionality. She needs clear and manageable classification and file naming conventions to help her systematically utilize them.

Both systems have duplicate files within the system as well as between the two of them. By having the same classification and file naming conventions in both systems it would help identify those duplicates.

The Google Drive that Ellis uses is limited and should not be used for final work. It is convenient when working with groups of people where the accuracy of a document is not the highest importance, but it should not be used as a means of back-up.

Steps E & F will be able to reference this Step to recommend solutions where Ellis is either not or partially compliant. Some reasons being that the system is not able to meet the requirements and some reasons being that Ellis is not using the system's functions to meet the requirements.

This page intentionally left blank

Step E: Strategies for Recordkeeping

Introduction

Step E is the stage of the DIRKS audit in which strategies and solutions are identified to address the shortcomings of Ellis's current recordkeeping system. Step E draws heavily on the Gap Analysis performed in Step D and offers solutions to the issues previously identified. Step E utilizes four strategies: policy, design, implementation, and standards. Implemented together, these strategies will bolster Ellis's file organization, metadata, retention, and backup practices for the records in Ellis's laptop hard drive and Google Drive.

The purpose of Step E is to identify tools and strategies to satisfy recordkeeping requirements. These tools and strategies may be in the form of policies, practices, new systems, utilizing old systems, or adopting new standards. They are chosen based upon the needs and degrees of risks that were identified in Step D.

Step E sorts its tools and strategies into four categories of tactics:

- Policy
- Design
- Standards
- Implementation

Policy tactics include policies, procedures, and practices guidelines. **Design** based tactics involve the application of technical components of recordkeeping systems to business processes. **Standards** apply the technical system and communication protocols, like computer security, documentation, record formats, and record storage. **Implementation** tactics explain how to implement these plans.

Step E provides two tables that capture the four tactics suggested for each of the *Characteristic for Systems that Keep Good Records* for both Ellis's laptop hard drive and Google Drive. The tables will also provide a brief assessment of the degree to which Ellis's current practices embody these characteristics.

Strategies for Recordkeeping- Laptop

Integrity / Security	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i></p> <p>Ellis has enabled her computer to be password protected upon opening and she has enabled FireVault. However, the system offers a Firewall and the Microsoft software allows for password protected documents.</p>	
Tactics, Tools and Strategies	
Policy	An assessment strategy should be enacted to ensure any sensitive documents meeting the minimum threshold are given the necessary password protection.
Design	Figure out which records need password protection and use the password protection features of FireVault.
Standards	Formats employed by Microsoft and other text editing software are used.
Implementation	Determining which documents exceed the minimum sensitivity threshold and should receive further password protection with FireVault.

Reliability	
Laptop	
<p>Assessment of Step D: <i>Not Compliant</i></p> <p>The system allows for records to be organized and can provide access to relevant records and metadata. Ellis doesn't utilize the functions of the system though.</p>	
Tactics, Tools and Strategies	
Policy	File names must align with a concrete name/tag classification scheme that allows for accessibility, details the organization of the file, and clearly identifies its identity.
	Metadata must be tagged from a prescribed list of approved tags.
Design	Designing a system in which the metadata can be easily checked by identifying key terms to attach to records of similar categories.
Standards	Formats employed by Microsoft and other text editing softwares are used.
Implementation	Creating a list of acceptable tags that allows for better accessibility and identity.

STEP E: KELLY ELLIS

Systematic	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i></p> <p>The system allows for some features to be systematic like the prompt document properties, and automatically saves files every ten minutes. Ellis doesn't have the prompt for file properties enabled.</p>	
Tactics, Tools and Strategies	
Policy	Enable automatic file saving properties or any other systematic features in order to maintain up-to-date files.
Design	Ensure that the systematic file saving features are turned-on and current.
Standards	Utilize the systems that are in place for Macbook.
Implementation	Checking to see if the features are still enabled on a schedule.

Comprehensive	
Laptop	
<p>Assessment of Step D: <i>Not Compliant</i></p> <p>The system could manage the complete range of activities, but Ellis has her records between this system and Google Drive.</p>	
Tactics, Tools and Strategies	
Policy	Establish comprehensive storage areas for records in order to prevent misplaced records.
Design	Have a dedicated storage system for the entirety of relevant files that can be accessed via the laptop's appropriate folder hierarchy. This also assists in the managing of file migration and external drive backups.
	Designing a system in which metadata can identify records potentially split between file storage areas.
Standards	Metadata will be recorded in the properties section of Microsoft Word or other text editing or record creating software.
Implementation	Creating a guide to determine which files belong on which storage system.
	Identifying tags that can determine the appropriate placement of files.

STEP E: KELLY ELLIS

Compliant	
Laptop	
<p>Assessment of Step D: <i>Not Compliant</i> The system offers Time Machine as a way to backup files. Ellis doesn't backup or archive her records. She also has files that should already have been disposed.</p>	
Tactics, Tools and Strategies	
Policy	Time Machine and external backups must be used to backup files.
	Utilize file retention strategies (discussed below).
Design	Use Time Machine and an external hard drive.
Standards	Using the Time Machine application on the Macbook.
Implementation	Creating a list of files that need to be backed up according to the retention schedule in Step C.

Characteristics of Good Records

Complete	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> The system automatically fills in a date and time stamp, the author and using Microsoft the structure of the document is maintained. Ellis has documents that are superfluous and could be destroyed.</p>	
Tactics, Tools and Strategies	
Policy	Consistent data and metadata must be entered at file creation to ensure complete and identifiable materials.
Design	Designing a system in which the metadata can be easily checked by identifying key terms to attach to records of similar categories.
Standards	Metadata will be recorded in the properties section of Microsoft Word or other text editing or record creating software.
Implementation	Creating a list of acceptable tags that allows for better accessibility and identity.

STEP E: KELLY ELLIS

Accurate	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> Ellis needs to set up a preservation system that she can implement systematically.</p>	
Tactics, Tools and Strategies	
Policy	Routine file back-up to an external hard drive must be followed.
	Assess the preservation needs of files that reach their disposition date.
	Initiate file migration measures
Design	Determining the appropriate hard drive needed and utilize the laptop's Time Machine capabilities.
Standards	Using the Time Machine application on the Macbook.
Implementation	Creating a list of files that need to be backed up according to the retention schedule in Step C.

Fixed	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> The form itself is fixed, but to ensure stable content Ellis would need to enable the password protected modification on her files.</p>	
Tactics, Tools and Strategies	
Policy	Password protection or applicable edit protection must be enabled on modifiable files.
Design	Figure out which records need password protection and use the password protection features of FireVault.
Standards	Formats employed by Microsoft and other text editing softwares are used.
Implementation	Create a criteria for determining which documents are non-compliant and should receive further password protection with FireVault.

STEP E: KELLY ELLIS

Identity	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> The system automatically assigns attributes and at the time of saving makes Ellis assign a unique name. Ellis has the option to add additional metadata to the file as well if she wishes.</p>	
Tactics, Tools and Strategies	
Policy	Additional metadata must be entered while saving in order to create better overarching identifiers across system files.
Design	Designing a system in which the metadata can be easily checked by identifying key terms to attach to records of similar categories.
Standards	Metadata will be recorded in the properties section of Microsoft Word or other text editing or record creating software.
Implementation	Creating a list of acceptable tags that allows for better accessibility and identity.

Integrity	
Laptop	
<p>Assessment of Step D: <i>Not Compliant</i> Microsoft allows for password protection, but Ellis has not enabled it for any of her documents.</p>	
Tactics, Tools and Strategies	
Policy	An assessment strategy should be enacted to ensure any sensitive documents meeting the minimum threshold are given the necessary password protection.
Design	Figure out which records need password protection and use the password protection features of FireVault.
Standards	Formats employed by Microsoft and other text editing softwares are used.
Implementation	Create a criteria for determining which documents exceed the minimum sensitivity threshold and should receive further password protection with FireVault.

STEP E: KELLY ELLIS

Reliable	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i></p> <p>Ellis is the only person who can create documents on this system and the records have a minimum amount of metadata assigned to the records automatically. Ellis could use some training and make a habit of thinking critically about her important documents</p>	
Tactics, Tools and Strategies	
Policy	File names must align with a pre-defined naming convention that allows for accessibility, details the organization of the file, and clearly identifies its identity.
	Metadata must be tagged from a prescribed list of approved tags.
Design	Designing a system in which the metadata can be easily checked by identifying key terms to attach to records of similar categories.
Standards	Formats employed by Microsoft and other text editing softwares are used.
Implementation	Creating a list of acceptable tags that allows for better accessibility and identity.

Authentic	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i></p> <p>The system has the capability to create authentic records and in general the system has a history of reliability.</p>	
Tactics, Tools and Strategies	
Policy	Documents must be able to be identifiable and have integrity in order to be authentic.
	Ellis must make sure that each record follows the identity and integrity policies in order for her files to be deemed authentic.
Design	Designing a system in which the identification and integrity are easily checked.
Standards	Formats employed by Microsoft and other text editing softwares are used.
Implementation	Ensure that both the identification and the integrity of the files can be checked.

STEP E: KELLY ELLIS

Usable / Accessible	
Laptop	
<p>Assessment of Step D: <i>Not Compliant</i> Ellis has said that she often does not know what records she has stored on this system. The files are not organized or easily found.</p>	
Tactics, Tools and Strategies	
Policy	Files must be saved or otherwise migrated in directories as part of a predetermined organizational schema.
Design	Organize files by hand or consider downloading a program to help with the organization of files within a laptop. Software options include: Hazel.
Standards	Make sure that the folder organization design fits within the technical capacities of Ellis's laptop.
Implementation	Creating a clear set of folder and directories.
	Developing saving and file migrating habits that place files in easily locatable areas.

Recordkeeping processes that should be part of the system

Capture	
Laptop	
<p>Assessment of Step D: <i>Not Compliant</i> The system has the capability to assign additional explicit metadata to a record, but Ellis does not utilize it.</p>	
Tactics, Tools and Strategies	
Policy	Additional metadata must be entered upon file creation and naming to help link a file to others in the system.
Design	Designing a system in which the metadata can be easily checked by identifying key terms to attach to records of similar categories.
Standards	Metadata will be recorded in the properties section of Microsoft Word or other text editing or record creating software.
Implementation	Creating a list of acceptable tags that allows for better accessibility and identity.

STEP E: KELLY ELLIS

Registration	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> The system allows for unique identifiers for a record from as basic as a name upon saving to unique metadata. Ellis could use these tools more fully to make finding documents through the search field more successful.</p>	
Tactics, Tools and Strategies	
Policy	File names must align with a pre-defined naming convention that allows for accessibility, details the organization of the file, and clearly identifies its identity.
	Metadata must be tagged from a prescribed list of approved tags.
Design	Designing a system in which the metadata can be easily checked by identifying key terms to attach to records of similar categories.
Standards	Metadata will be recorded in the properties section of Microsoft Word or other text editing or record creating software.
Implementation	Creating a list of acceptable tags that allows for better accessibility and identity.

Classification & Indexing	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> The system allows for arranging records in categories, but Ellis does not do this systematically.</p>	
Tactics, Tools and Strategies	
Policy	Files must be placed in appropriate categories within an organizational schema.
Design	Designing a structure in which a broad classification system can be made applicable to the entire breadth of laptop contents.
Standards	Using the Macbook's folder capabilities.
Implementation	Creating a hierarchical taxonomy of folders and directories within the laptop.

STEP E: KELLY ELLIS

Retention	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> The system allows for disposition of records. Ellis doesn't follow through with disposing of unnecessary records.</p>	
Tactics, Tools and Strategies	
Policy	Files must be disposed of when they reach their disposition date.
Design	Determine a standardized period after which file retention is no longer in effect.
Standards	Disposition data will be recorded through reporting with a tracking system within a spreadsheet application or some other type of tracking system.
Implementation	Routinely creating a report of files that have reached or will soon reach their disposition date, so that they may be disposed of at the correct time.

Storage	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> The laptop storage should not be considered a permanent place to retain records. This should be mitigated by backing up the files.</p>	
Tactics, Tools and Strategies	
Policy	Files must be backed up in widely considered stable file formats.
	File preservation must utilize a reliable external hard drive as a means of back up.
Design	Resave or convert files in stable formats.
	Determining the appropriate hard drive needed for file backup.
	Utilize Time Machine and other laptop features meant to offer greater file backup.
Standards	Using the Time Machine application on the Macbook.
Implementation	Create a list of files that need to be backed up as well as a schedule to follow for backing up the files.

STEP E: KELLY ELLIS

Use & Tracking	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> The system allows for a file classification, but Ellis doesn't consistently use it. The system has a very robust and effective search tool though.</p>	
Tactics, Tools and Strategies	
Policy	A pre-determined organizational schema must be in place for files to be saved or placed, which can in turn aid in more targeted and effective searching.
Design	Designing a structure in which a broad classification system can be made applicable to the entire breadth of laptop contents.
Standards	Using the Macbook's folder capabilities.
Implementation	Creating a hierarchical taxonomy of folders and directories within the laptop.

Data Backup & Preservation	
Laptop	
<p>Assessment of Step D: <i>Not Compliant</i> Ellis doesn't back-up any of these documents consistently. She had started using Google Drive in the attempt to use that as her back-up.</p>	
Tactics, Tools and Strategies	
Policy	Routine file back-up to an external hard drive must be followed.
Design	Determining the appropriate hard drive needed for file backup.
	Utilize Time Machine and other laptop features meant to offer greater file backup.
Standards	Using the Time Machine application on the Macbook.
Implementation	Create a list of files that need to be backed up as well as a schedule to follow for backing up the files.

STEP E: KELLY ELLIS

Migration	
Laptop	
<p>Assessment of Step D: <i>Partially Compliant</i> Microsoft software is not presently anticipated to reach obsolescence.</p>	
Tactics, Tools and Strategies	
Policy	Periodic assessment and determination must be made regarding software to ensure associated files remain accessible.
	While relatively stable software can continue to be utilized and the associated files can continue to be accessed without file format migration (i.e. Microsoft software), files must be migrated to stable formats on a case-by-case basis.
Design	In Microsoft and other software, consider placing limits on the type of file formats used at the time of saving.
	For existing files, resave or convert at-risk files to stable formats in the software or utilizing converting applications or website services.
Standards	Records will be created using Microsoft products.
Implementation	Use Microsoft software until a planned obsolescence is announced and see how to migrate files at that point.

Strategies for Recordkeeping - Google Drive

Integrity / security	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i></p> <p>As many records on Google Drive are shared between multiple people all those who have access can alter the record.</p>	
Tactics, Tools and Strategies	
Policy	A strategy should be enacted to ensure that documents are finalized.
Design	Google gives users the ability to lock files after they are completed.
Standards	Formats employed by Google docs.
Implementation	Create a criteria for determining which documents need to be locked and turned into read-only status.

Reliability	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i></p> <p>The system allows for records to be organized in folders, but a record you view once from an outside source can be added to your account without your explicit permission. It does not offer much additional metadata than the very basic. Ellis does not utilize the folders systematically.</p>	
Tactics, Tools and Strategies	
Policy	File names must have a pre-defined naming convention that allows for accessibility, details the organization of the file, and clearly identifies its identity.
	Any available metadata should be utilized.
	Files housed in Google drive that have been shared with the recipient (rather than created from the Google account in question), should be assessed at regular intervals for changes and alterations made by other individuals retaining ownership or editing capabilities.
Design	Designing a system in which limited metadata can be optimized for maximum efficacy.
Standards	Formats employed by Google docs.
Implementation	Creating a list of acceptable organizational methods (descriptive data, folder hierarchies) to convey file identity in context of other files.

STEP E: KELLY ELLIS

Systematic	
Google Drive	
<p>Assessment of Step D: <i>Partially Compliant</i> The system automatically saves files as they are worked on. It does not manage the records systematically.</p>	
Tactics, Tools and Strategies	
Policy	Save files into the appropriate places immediately when beginning a new record.
Design	Ensure that the files are placed into the appropriate folders within Google Drive.
Standards	Utilize the systems that are in place for Google Drive.
Implementation	Continue doing this for every new record.

Comprehensive	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> This system could not manage the complete range of activities because it does not have enough storage for all Ellis's records. It also would not allow the various file formats that Ellis uses.</p>	
Tactics, Tools and Strategies	
Policy	Purchase storage space if necessary.
	File formats that are not supported need to be placed on a different system.
Design	Have a dedicated storage system for the entirety of files which are not supported in Google Drive. This also assists in the managing of file migration and external drive backups.
Standards	Utilize the systems in place for Google Drive or the alternative solution for records that Google Drive does not support.
Implementation	Creating a guide to determine which files belong on which storage system.
	Identifying tags that can determine the appropriate placement of files.

STEP E: KELLY ELLIS

Compliant	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> The metadata available to Ellis is lacking. It does not allow for a transparent backup system.</p>	
Tactics, Tools and Strategies	
Policy	Utilize file retention strategies to monitor and migrate files.
	Actively save files to external drive.
Design	Use external hard drive for files not needed on drive.
Standards	Utilize the systems in place for Google Drive or the alternative solution for records that Google Drive does not support.
Implementation	Creating a list of files that need to be backed up according to the retention schedule in Step C.

Characteristics of Good Records

Complete	
Google Drive	
<p>Assessment of Step D: <i>Partially Compliant</i> The system automatically fills in a date and time stamp, the owner of the document as well as the various people it is shared with. This structure is not a stable structure. As previously discussed, records could be added to Ellis's account that are not meaningful to her. Ellis has documents that are superfluous and could be destroyed.</p>	
Tactics, Tools and Strategies	
Policy	Files which are not relevant should be removed from Ellis's Google Drive.
	Files which are convenience copies can be deleted from Ellis's Google Drive.
Design	Use the Google Drive system to determine which files should be removed from Ellis's Google Drive.
Standards	Utilize the systems in place for Google Drive.
Implementation	Creating a list of records to remove and then removing them.

STEP E: KELLY ELLIS

Accurate	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> The system works against Ellis because at any given time someone with shared access can alter the record as well as possibly delete the record without her permission. Creating an archive would be wise.</p>	
Tactics, Tools and Strategies	
Policy	Routine file back-up to an external hard drive, or to the laptop proper, must be followed.
	Assess the preservation needs of files that reach their disposition date.
	Initiate file migration measures.
Design	Determining the appropriate hard drive destination.
	Creating the criteria for periodic file retention monitoring.
Standards	Utilize the systems in place for Google Drive as well as the systems in place for secondary destinations.
Implementation	Creating a list of files that need to be backed up according to the retention schedule in Step C.

Fixed	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> Google does not have a fixed form and it is extremely easy to alter a file.</p>	
Tactics, Tools and Strategies	
Policy	File permissions must be enabled on applicable files.
Design	Designing a method to ensure that documents which need file permissions are protected.
Standards	Utilize the systems in place for Google Drive.
Implementation	Create criteria for determining which documents necessitate view permissions or edit permissions.

STEP E: KELLY ELLIS

Identity	
Google Drive	
<p>Assessment of Step D: <i>Partially Compliant</i> The system automatically assigns attributes. It does not require Ellis to assign it a unique name because it is constantly saving. It also limits the type and amount of metadata Ellis can assign to the file.</p>	
Tactics, Tools and Strategies	
Policy	Files must be organized within folders and directories to signify characteristics that can group files together.
	Descriptions and any other Drive features must be utilized to provide file context.
Design	Designing a system in which limited metadata structures can be optimized for maximum efficacy.
Standards	File data will be recorded in the description section of each Google Drive file listing. Folders and file directories also provide attribute information contextually.
Implementation	Creating a list of acceptable identifiers and other information that allow for better organization within Google Drive.

Integrity	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> The system does not allow for a document to live unaltered while stored on its site. Any final documents should be removed from Google Drive and stored safely.</p>	
Tactics, Tools and Strategies	
Policy	An assessment strategy should be enacted to ensure any final documents are moved to another location.
Design	Designing a system to ensure that documents which are complete are protected.
Standards	Formats employed by Google Drive, Microsoft, and other text editing softwares or cloud-based softwares.
Implementation	Create a criteria for determining which documents are complete and should be placed in another storage location.

STEP E: KELLY ELLIS

Reliable	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> Many people can author and alter documents either shared with Ellis or after Ellis has shared with them. The system itself does not foster a culture of thinking critically about important documents.</p>	
Tactics, Tools and Strategies	
Policy	File names must align with a concrete name classification scheme that allows for accessibility, details the organization of the file, and clearly identifies its identity.
Design	Designing a system in which the file names can be easily checked and renamed to the approved file name format.
Standards	File names will be recorded in the name section of each Google Drive file listing.
Implementation	Creating a list of acceptable file names that allows for better accessibility and identity.

Authentic	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> With version history available to Ellis she can go back through a document to find a time when the record was unaltered by another person, but that requires a significant amount of time. The system as a whole does not foster and untampered with and uncorrupted recordkeeping.</p>	
Tactics, Tools and Strategies	
Policy	Documents must be identifiable and have integrity in order to be authentic.
Policy	Ellis must make sure that each record follows the identity and integrity policies in order for her files to be deemed authentic.
Design	Establishing a schedule in which the identification and integrity of files are easily checked
Standards	Activity and details are viewed when Drive items are selected.
Implementation	Create a regularized schedule to spot check file integrity.

STEP E: KELLY ELLIS

Usable / Accessible	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> Ellis has said that she often does not know what records she has stored on this system. The files are not organized or easily found. The system also will assign a record to her without her consent outside of viewing the document once if someone sends her a link.</p>	
Tactics, Tools and Strategies	
Policy	Files must be placed in the correct location or otherwise migrated in directories as part of a predetermined organizational schema.
Design	Organize files by hand or consider downloading a program to help with the organization of files within Google Drive.
Standards	Make sure that the folder organization design fits within the technical capacities of Google Drive.
Implementation	Creating a clear set of folder and directories.
	Developing saving and file migrating habits that place files in easily locatable areas.

Recordkeeping processes that should be part of the system

Capture	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> The system does not allow for methodical and easily repeatable additional explicit metadata to be assigned to a record.</p>	
Tactics, Tools and Strategies	
Policy	Add information that can be easily searchable within the description of the file within Google Drive.
Design	Designing a strategy in which the descriptive information can be easily searched by establishing key phrases to attach across related documents and also unique phrases when needed.
Standards	The descriptions will be recorded in the “Add a Description” section of a Google Doc.
Implementation	Ensuring that every Google Drive file has a description of the file contents, so that the files can be effortlessly found.

STEP E: KELLY ELLIS

Registration	
Google Drive	
<p>Assessment of Step D: <i>Partially Compliant</i> The system allows for unique identifiers for a record, but it does not require it upon entry into a system. It also does not make the addition of metadata easy.</p>	
Tactics, Tools and Strategies	
Policy	<p>File names must have a pre-defined naming convention that allows for accessibility, details the organization of the file, and clearly identifies its identity.</p> <p>The file description area must be filled out to describe contents of the file.</p>
Design	<p>Identifying a workflow strategy in which the file description is always filled out and establish similar key phrases to better unite various documents with similar content or purpose.</p>
Standards	<p>The description will be written in the description section of Google Drive.</p>
Implementation	<p>Creating a description of each file that allows for the file to be easily searchable.</p>

Classification & Indexing	
Google Drive	
<p>Assessment of Step D: <i>Partially Compliant</i> The system allows for arranging records in categories, but Ellis does not do this systematically.</p>	
Tactics, Tools and Strategies	
Policy	<p>Files must be placed in appropriate categories within an organizational schema.</p>
Design	<p>Designing a structure in which a broad classification system can be made applicable to the entire breadth of Google Drive contents such as creating general topic folders to house applicable files.</p>
Standards	<p>Using Google Drive's capabilities.</p>
Implementation	<p>Creating a hierarchical taxonomy of folders and directories within Google Drive.</p>

STEP E: KELLY ELLIS

Retention	
Google Drive	
<p>Assessment of Step D: <i>Partially Compliant</i> The system allows for disposition of records. Ellis does not follow through with disposing of unnecessary records.</p>	
Tactics, Tools and Strategies	
Policy	Files must be disposed of when they reach their disposition date.
Design	Utilize file retention schedule outlined in DIRKS step C.
Standards	Disposition data will be recorded through reporting with a tracking system within a spreadsheet application or some other type of tracking system.
Implementation	Routinely creating a report of files that have reached or will soon reach their disposition date, so that they may be disposed of at the correct time.

Storage	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> The system cannot ensure authentic records and because the account is associated with Ellis’s email address if something was to happen to it she could potentially lose access to all her files. This should be mitigated by backing up the files.</p>	
Tactics, Tools and Strategies	
Policy	File preservation requires a reliable external hard drive as a means of backup completely removed one’s Google account.
Design	Determining the appropriate hard drive location and directory for responsible backup.
Standards	Using the external hard drive’s storage and organizational capabilities.
Implementation	Creating a list of files that need to be backed up according to the retention schedule in Step C.

STEP E: KELLY ELLIS

Use & Tracking	
Google Drive	
<p>Assessment of Step D: <i>Partially Compliant</i> The system allows for a file classification, but Ellis does not consistently use it. The system has a very robust and effective search tool though.</p>	
Tactics, Tools and Strategies	
Policy	A pre-determined organizational schema must be in place for files to be saved or placed, which can in turn aid in more targeted and effective searching.
	Making sure that the Google Drive file description is utilized to improve search.
Design	Designing a structure in which a broad classification system can be made applicable to the entire breadth of Google Drive contents such as creating general topic folders to house applicable files.
Standards	Using the Google Drive's folder capabilities.
Implementation	Creating a hierarchical taxonomy of folders and directories within the Google Drive.

Data Backup & Preservation	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> Ellis does not back-up any of these documents. The thought in using Google Drive is that it would be a safe storage place.</p>	
Tactics, Tools and Strategies	
Policy	Routine file back-up to an external hard drive or cloud-based drive must be followed when using Google Drive.
Design	Determining an appropriate hard drive needed for file backup, if needed.
	Determine if a cloud based backup storage would be suitable for file backup, if needed.
Standards	Using the external hard drive or cloud-based drive.
Implementation	Creating a list of files that need to be backed up according to the retention schedule in Step C.

Migration	
Google Drive	
<p>Assessment of Step D: <i>Not Compliant</i> Google files best retain their native formatting when accessed through Google's proprietary applications. This poses consistent risk of migrated files lacking their source integrity, if proper care is not taken throughout the file's life cycle. One can download the Google suite, but it should be questioned if this is the best course for the future.</p>	
Tactics, Tools and Strategies	
	Periodic assessment and determination must be made regarding the need for files to be migrated.
Policy	While relatively stable software can continue to be utilized and the associated files can continue to be accessed without file format migration (i.e. Microsoft software), files must be migrated to stable formats on a case-by-case basis if digital obsolescence is forthcoming.
Design	For existing files, download and/or convert at-risk files to stable formats or utilize converting applications, extensions, or website services.
Standards	Records will be created using Google Drive products.
Implementation	Use Google Drive software until a planned obsolescence is announced and see how to migrate files at that point.

Conclusion

In Step D of the DIRKS methodology, the assessment began to expose the limitations of file storage and recordkeeping when overly reliant on default laptop and Google Drive features. Both systems, to varying degrees, lack backup capabilities and do not immediately file retention. Laptop file storage requires active user organization and metadata management. Conversely, Google Drive storage lacks significant metadata input.

Step E makes sure that the weaknesses identified in Step D are appropriately covered. The tactics identified use the strengths of the current systems while also introducing some additional measures, such as the role of an external hard drive, as a way of offsetting the risks associated with mislabeled or redundant or incomplete records, or worse. Following Step E, Step F will be able to reference Step E to recommend solutions where Ellis is either not or partially compliant.

Step F: Guidelines and Suggestions for an Improved Recordkeeping System

Introduction

Step F seeks to layout actionable goals for Kelly Ellis that will improve her recordkeeping on both her laptop hard drive and her Google Drive. These actionable goals will address the concerns raised in previous steps and lead to a manageable and satisfactory recordkeeping system. Using the information gathered in previous steps, as well as the practices described in the InterPARES II Creator Guidelines, Step F suggests methods that are both good practice and implementable. The suggestions take into account the resources our subject has available, such as time and money, and are tailored to be implementable and sustainable in her unique context.

Ellis stated in Step A that she wanted:

- To improve the accessibility of her documents
- To have a reliable back up practice
- To eliminate redundant, obsolete, and trivial records
- To have better organization of her shared documents
- To achieve greater overall efficiency in her recordkeeping practices

By following the guidelines and goals presented in Step F, Ellis will be able to achieve a consistent and manageable set of records that she will be able to maintain with reasonable effort in the future.

Step F Index: Goals and Guidelines

Drawing from the InterPARES II Creator Guidelines; DIRKS Step C, D, E

I. Accessibility

Addresses software compatibility of Ellis's laptop and Google Drive to ensure that records will be accessible both presently and in the future.

II. Fixity & Integrity

Addresses the stability of Ellis's records, their ability to accurately represent the context that created them, and assurance that only authorized changes will occur

III. Identity

Addresses the identification schemes implemented on Ellis's Laptop and Google Drive to ensure that records are distinguishable and redundancy is eliminated.

IV. Organization, Classification, & Metadata

Addresses the logic of Ellis's grouping of records as well as her naming conventions and associated metadata.

V. Authentication

Addresses the ability to preserve Ellis's materials and to ensure the integrity and identity of her records.

VI. Protection

Addresses the protection of Ellis's materials from unauthorized access or corruption.

VII. Backup & Archiving

Addresses the need for an archiving and backup practice that protects Ellis's records from accidental loss or corruption.

VIII. Obsolescence

Addresses the need to maintain hardware and software updates to prevent obsolescence.

IX. Conclusion

Summarizes the findings of this audit and provides insight into how Ellis might maintain awareness and better recordkeeping practices in perpetuity.

I. Accessibility

To create good accessibility in Ellis's records, we must ensure that she will be able to continue to access them over time by providing a clear strategy to create and maintain records that have longevity. An accessible record, for our purposes, is one that can be stored, transferred, and opened without corruption across platforms. For instance, a document format that requires specific and obscure software to be opened, such as the .blend files in her downloads, score poorly in terms of accessibility. At the other end of the spectrum, common and unlicensed file types such .jpeg and .csv can be opened by numerous software and are likely to be supported for the foreseeable future as they are de facto standards. Licensed formats, such as .pdf and .doc, made available by Adobe Inc. and Microsoft, respectively, are considered accessible because their use is widespread, and our subject does not anticipate a time when she will not have access to their software, whether through school, her employer, or her own means.

The strategies to create good accessibility overlap a great deal with our suggestions provided in Sec. 5, Organization, Classification, and Metadata, and Sec. 10, Obsolescence. Sec. 5 will address Ellis's ability to locate files with relative ease. If one cannot find a record, one cannot access it. Sec. 10 will address Ellis's need to update her software to maintain compatibility. To avoid redundancy, Sec. 1 will lay out strategies regarding file type selection and migration.

Laptop

As determined in Step B, the records stored on Ellis's laptop consist primarily of PDFs, Microsoft Office formats (PowerPoint, Word, and Excel) and common image formats, such as .jpeg and .png. For this majority of records, we recommend that Ellis make no changes to format for the time being, though we do encourage her to stay aware of any major shifts in de facto standards that would impact the accessibility of these formats.

Concerning her records with limited support, such as the .blend files that run only through Blender software, we recommend that Ellis:

- 1) Assess whether the records have lasting value
- 2) Dispose of records with limited support and limited value
- 3) Convert valuable records to a more accessible file format when possible
- 4) Record record's metadata in a more accessible file format when conversion is not an option.

Google Drive

The records in Ellis's Drive have the benefit of being supported by the same software that stores them, which greatly reduces the odds of incompatibility, and thus, inaccessibility. Google has so far demonstrated a commitment to backwards computability throughout updates to its Drive platform. We still recommend that Ellis stay aware of any changes to the Drive platform so that she may act accordingly to ensure the survival of valuable records. With regard to transferring files between her Drive and her Laptop, Google provides a reliable file conversion system that we recommend Ellis utilize.

The steps are as follows:

- 1) Download Google file formats through Google Drive interface
- 2) Upload Microsoft file formats through Google Drive interface
- 3) Do not attempt to copy and paste material from Google Docs into .Doc or .Docx formats

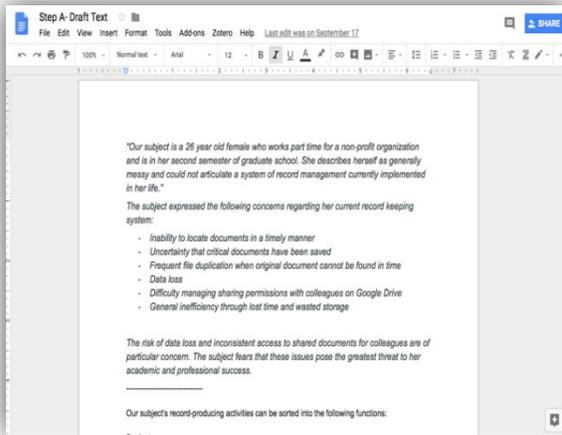


Figure 1: Google Doc

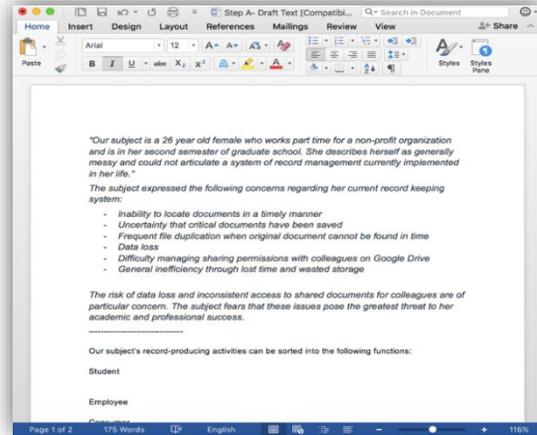


Figure 2: Microsoft Word

Fig. 1 and 2 show successful conversion from a Google Doc to a Microsoft Word format.

DIRKS Characteristics improved: Accessibility, Retention & Disposition

II. Fixity & Integrity

Fixity describes the degree to which a record is stable in both its content and its form, while Integrity refers to the ability to determine that a record is unaltered, uncorrupted, and complete. We have group these characteristics together in Step F because the strategies we suggest for Ellis simultaneously address fixity and integrity.

In Step D, we identified two major issues with Ellis's recordkeeping practices that compromised the fixity and integrity of her records. First, we found that Ellis under-utilized features on her laptop that would allow her to improve both fixity and integrity, such as password protection and metadata creation. Second, we found that many of her important Drive records were shared documents, and could be easily altered or corrupted without Ellis's knowledge. To address these issues, we suggest the following strategies:

Laptop

There are a number of tools available to Ellis through her Apple and Microsoft software that she is currently not utilizing. To ensure that her records are not altered or corrupted without her knowledge or consent, she should:

- 1) Enable password protection on Microsoft office documents which contain sensitive information or Personally Identifiable Information, such as tax records, medical history, or employment records.
- 2) Assign metadata to records created in Microsoft office whose loss pose a moderate or high risk, as determined in Steps B & C
- 3) Practice consistent organization and naming practices, as laid out in Sec. 4 to ensure version history information is accurate

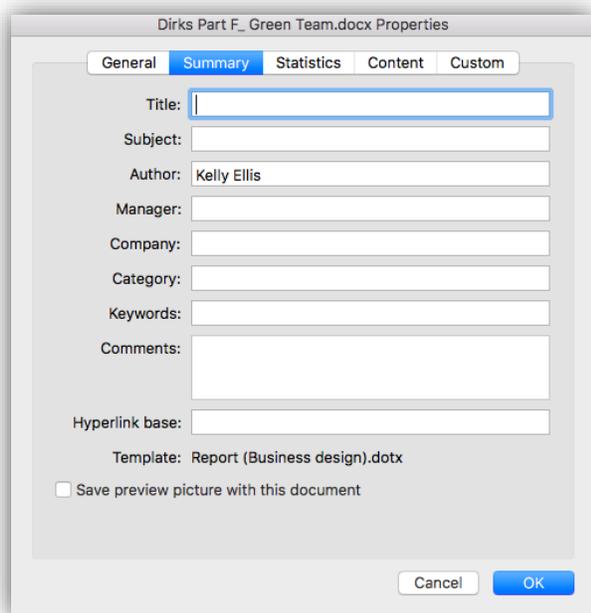


Figure 3: Microsoft Properties

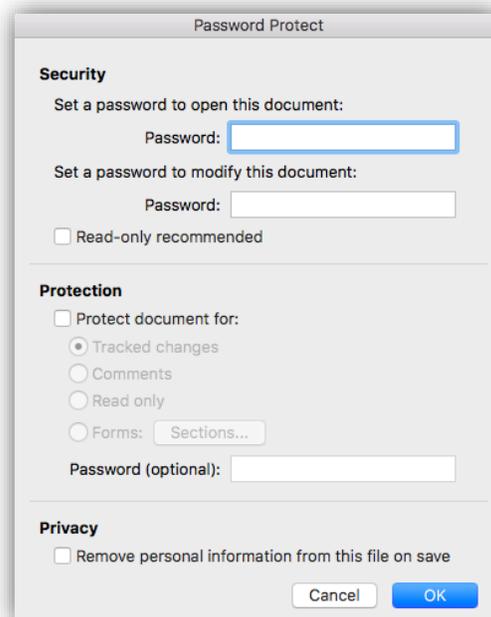


Figure 4: Microsoft Password Protect

Google Drive

While Step D found the documents on Ellis’s personal drive to adequate in their fixity and integrity, there were significant issues identified with her shared documents. Though Ellis is somewhat limited in her ability to address fixity in the shared documents (she cannot ensure that her coworkers will adopt good recordkeeping practices alongside her), we have created workaround strategies that will ensure Ellis has access to stable, uncorrupted and authentic versions of critical shared records.

After identifying a shared record of significant value, Ellis should:

- 1) Download a copy of the record onto her hard drive
- 2) Indicate the version number and date of download, as well as assigning any other relevant metadata
- 3) Routinely check the metadata provided by Google for critical documents, and download new versions when changes have been made

These strategies will help Ellis avoid being negatively affected by her coworkers’ recordkeeping practices. They will improve her organization and access. Fig. 5 and 6 below show the details of one of Ellis’s most critical records. Over twenty individuals have access to the file, and it is inexplicably located in the “Fundraising Committee”

STEP F: KELLY ELLIS

folder. While Ellis cannot change that, she can ensure that reliable, complete, and stable versions of the record are stored on her laptop.

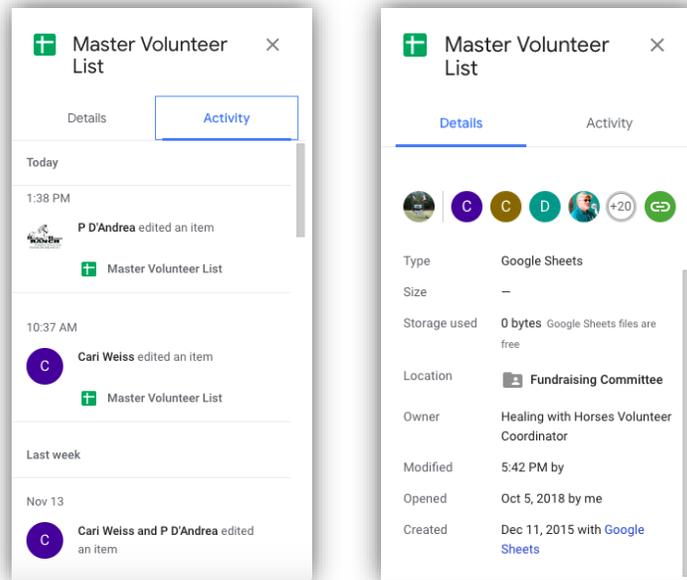


Figure 5 & 6: Google Drive Properties

DIRKS Characteristics improved: Integrity, Reliability, Fixity, Authenticity

III. Identity

Identity refers to the ability of a record to distinguish itself from other records and from other versions of itself. While a great deal of good identity practice deals with naming conventions and organization, as addressed in Sec. 4, Identity is also concerned with content and metadata. As addressed in Sec. 2 as well as Step D, Ellis greatly underutilizes metadata in her recordkeeping practices.

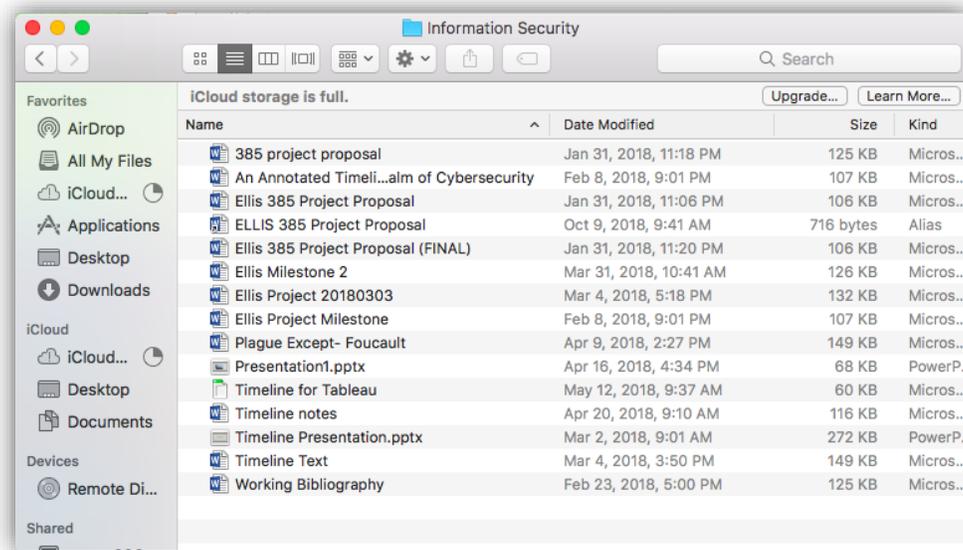


Figure 7: Poor naming convention example

Figure 7 shows illustrates issues with identity within a particular folder. Although there has been an attempt to implement naming conventions, it is still difficult to differentiate the files by name alone. Without metadata, Ellis will have to comb through the contents of each record to determine which is the authoritative version.

To remedy the insufficient identification of Ellis's records we recommend that she:

Laptop

- 1) Implement a standardized naming convention as suggested in the following section (Sec. 4)
- 2) Utilize tools to add metadata to high-value records whenever possible
- 3) Implement disposition practices as described in Step C to avoid redundancy and confusion over which record is the authoritative version

Google Drive

- 1) Implement a standardized naming convention as suggested in Sec. 4, with special attention paid to authorship in shared records
- 2) Download high-value records onto the laptop, whether shared or not, and assign metadata through the tools provided by Microsoft
- 3) When sharing/giving editing privileges, create a duplicate to be shared, while maintaining an authoritative record privately. The authoritative record can then be update to reflect authorized changes to the duplicate.

DIRKS characteristics improved: Integrity, Reliability, Authenticity, Accessibility

IV. Organization, Classification, & Metadata

Ellis's records should be organized into logical groupings based on function of the records as identified by Step B's Business Classification Scheme (BCS) and their disposition as identified in Step C's retention schedule. Ellis should reference Step B's BCS and record organization to identify which function or activity future records would fall under and therefore where the records should be filed. Ellis should also use the BCS to evaluate the need for the addition of new functions or activities into her record organization. In both of Ellis's systems being analyzed, her laptop and Google drive, Step D concludes that Ellis is non-compliant under usability and accessibility because of her lack of organization in both systems. In order to be considered usable and accessible, Ellis's records need to be easily located and retrieved which is currently not true of her records. Our suggested plan alleviates Ellis's issues with organization by improving upon her folder and nesting habits, as well as naming conventions.

The new naming convention is based around her Functions as described in Steps A and B. Below is the new naming convention schema with examples:

Student:

Self Generated Records: Ellis_CourseID_Date_Assignment Title_Subject Tag_Brief Description

Example:

Ellis_INF389E_1118_DIRKSStepF_Draft

Downloaded or Shared Records: Author/Source Name_CourseID_Original Title OR Brief Description

Example:

Trace_INF389E_CourseSyllabus

Employee:

Self Generated: Ellis_Employer_Date_Subject Tag_Brief Description

Examples:

Ellis_HHR_1018_Newsletter_Facilities

Ellis_0517_CV_UT App; Ellis_1216_CV_TCD App

Employer Generated: Employer_Author_Date_Subject Tag_Brief Description

Examples:

HHR_1118_BB mailingList

Ex. HHR_Libby_1015_MagicMedsUpdate

Consumer:

Subject Tag_Brief Description_Date

Example:

Nelray_2018Lease_1118

Author:

Subject Tag_Brief Description_Date

Example:

Poem_ColoradoRiver_1118

Social Being:

Author_Subject Tag_Brief Description_Date

Example:

Mom_Travel_FranceTrip2018_1118

Citizen:

Subject Tag_Brief Description_Date

Example:

Taxes_TaxReturn2018_0418

Patient:

Doctor/Facility Name_Date_Subject Tag_Brief Description

Example:

HoustonMethodist_1118_LabResults_RegularCheckup

Leisurite:

Subject Tag_Brief Description_Date

Example:

Image_MrRogersPosters_1118

The new naming convention ensures that authorship and date are easily determined along with a short two to three-word description of content. Standard naming conventions will also assist in locating duplicate documents to be disposed of. In addressing accessibility, we have suggested Ellis sort her existing folders/subfolders and create new folders/subfolders using a function-based logic. Based on Step E's policy concerning identity, we suggest Ellis include metadata within the record's properties for laptop records. We suggest determining Title, Subject, and Author within the metadata for a document which can be accessed by going to File > Properties and navigating to the Summary tab.

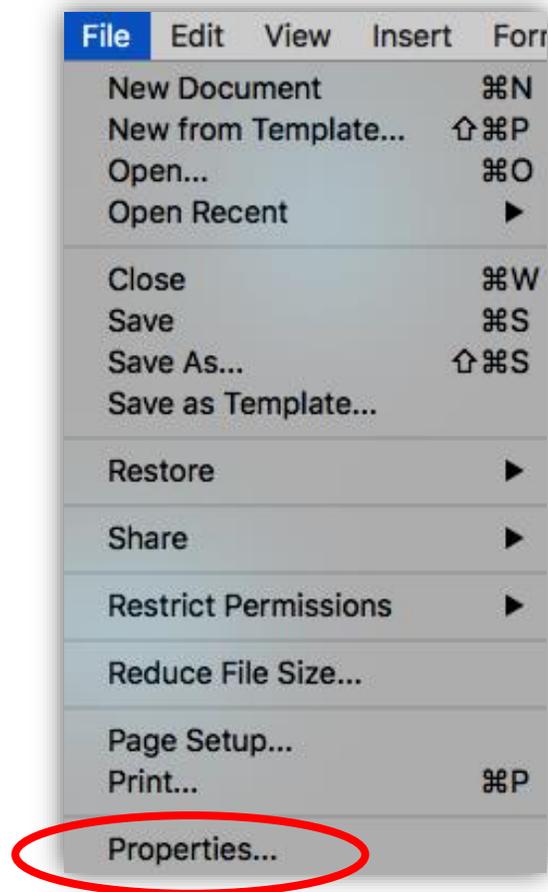


Figure 8: Microsoft Properties location

A list of standardized subject tags for the metadata section are as follows:

Student: Notes, Draft, Article, Final, Outline, Reading, Summary, Syllabus, Requirements, Schedule, Scholarship, App Material

Employee: Newsletter, CV, Cover Letter, Resume, Fundraiser, Volunteer, Payroll, Horse, Research, Notes, Draft, Portfolio

Consumer: Nelray, RAM Mgmt, Expenses, COA (City of Austin)

Author: Diary, Poem, Short Story, Draft, Idea(s)

Social Being: Travel, Expenses, Plan, Pictures, List

Citizen: Taxes, ID

Patient: Visit Summary, Lab Results, Receipt, Medications

Leisure: Image, Meme, Text

This metadata will improve upon the identity of her records where she had previously been found partially compliant by Step D by further categorizing her records through assigning a subject and reiterating the title of the document using the suggested naming conventions. The steps given in the following plans are based upon the strategies outlined in Step E.

Laptop

An organizational schema for Ellis's records on her laptop needs to be created and organized based on her functions. Ellis's records can then be migrated into that schema on her computer. Step E suggests utilizing a software tool to assist in the implementation of Ellis's organizational schema. Hazel is a software which tracks folders within the system and organizes records based on the rules it is given by the user. Use of this software is optional, but it is an alternative to manually migrating and organizing records.

The procedures for implementing this organization schema are as follows:

1. Create a clear folder organization schema based on Ellis's functions.
2. Migrate existing records into the appropriate folders based on Ellis's schema.
3. Save future records into their appropriate folders within the schema, so the organization schema stays in place.

In addition to the organizational schema and record migration, this section also includes a plan for additional metadata being added to Ellis's records. The first step to

this is creating standardized naming structures for Ellis's system. These naming structures are to be implemented in saving future records and in renaming existing records. It is notable that while standardized naming structures will be implemented, some of Ellis's school courses require specific naming structures for final documents that are determined by the professor of the class, so those records will be named according to the professors accepted naming structure. Additional metadata should be added to existing records and future records. That metadata includes a subject identifier from a standard set of subject tags created based on Ellis's functions, the same title given to the record based on the naming structures, and the author should be added as well.

The steps to complete the metadata additions and naming standardization are as follows:

1. Create a set of standard subject tags and standardized naming structures.
2. Rename existing titles of records according to standardized naming structures.
3. Search for and dispose of duplicate documents.
4. Add subject tags, title based on naming structures, and author to the summary tab under file properties as additional metadata.
5. Continue naming future records according to the established naming structures and adding metadata to the file properties to continue better identification of records, and the linking of similar records.

Google Drive

A similar organizational schema based on functions needs to be created for Ellis's Google Drive. Her existing records then need to be migrated into the schema. Tools like Hazel are not applicable to Google Drive, so any migration will need to be done manually. Folders cannot be created within the shared drive of Ellis's Google Drive, so those records are subject to organization based on when they were shared, last opened or edited as dictated by Google's organizational design. Records in her personal drive folders can be created as desired and according to Ellis's organizational schema.

The steps for achieving the organization schema are as follows:

1. Create a clear folder organization schema based on Ellis's functions.
2. Migrate existing records into the appropriate folders based on Ellis's schema within her personal drive.
3. Create future records within their appropriate folders within the schema, so the organization schema stays in place.

Additional metadata is not an option for Google Drive records as we do not have access to any additional metadata functionality. Naming the records based on the standardized naming structures is possible, however, and should be completed in Ellis's personal drive. In her shared drive, documents are subject to the naming scheme of the creator, so Ellis's standard naming structures cannot be used for shared drive documents. It is also notable that while standardized naming structures will be implemented, some of Ellis's school courses require specific naming structures for final documents that are determined by the professor of the class, so those records will be named according to the professors accepted naming structure in those situations.

The steps for standardizing the naming are as follows:

1. Create a standardized naming structure based on Ellis's functions.
2. Rename the existing records to conform to the naming structures.
3. Search for and dispose of duplicate documents.
4. Name all future records according to the naming structures to ensure better identification of records.

DIRKS Characteristics Improved: Usability/Accessibility, Identity

V. Authentication

The ability to authenticate records is the ability to ensure they have not been tampered with since they were last accessed or as they are passed from one entity to another. This section is also based on the identity and integrity of the documents and the reliability of the records system in which they reside. The record's unique identifiers that make up its identity will be strengthened through the organization and metadata suggestions made previously. Integrity of a record means that record content is unaltered, and that there have been no technical changes to the record. The suggestions we make to improve Ellis's authentication will include ways to ensure that records are unaltered which ensures their integrity as well. A reliable records system is one that has been created according to a controlled procedure and is complete in its form, meaning that metadata requirements are complete and follow the recordkeeping policies. As Ellis follows the suggestions that we have put forth, the recordkeeping system will be created according to a controlled procedure, and based on the previous section's metadata standards, the system will also be complete in its form. For this section, the missing piece to full authentication is suggestions about how to show that records have been unaltered. The following procedures are based on the design for integrity put forth by Step E.

Laptop

The plan for authentication of laptop records includes enabling password protection on applicable records. The implementation of password protection on necessary documents will show that, barring a breach of Ellis's system, only authorized users have had access to those records. Keeping track of passwords for password protected records is critical since without the password, the record is inaccessible. Strategies should be developed for safe storage of passwords for protected documents. Along that same line is the read-only capability that can be enacted for Ellis's records through the Microsoft Office applications, so if she shares any records, they cannot be altered, just viewed.

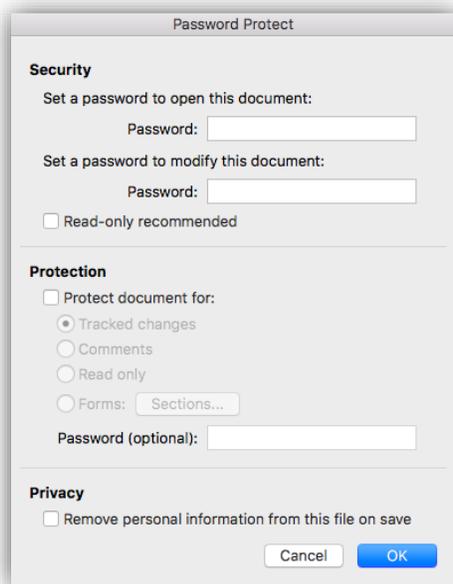


Figure 9: Microsoft password protection

Another approach to authenticating records is printing out physical copies of records which can be kept in secure physical storage to be compared to the digital records at any given point. This comparison will authenticate the records, proving they have not been textually altered.

The steps to completing this section for Ellis's laptop are as follows:

1. Identify records that require password protection or a read-only functionality.
2. Go into the records' "Get Info" window which can be accessed by right-clicking on the record in Finder. From this window, permissions can be changed for the owner of the document and for everyone else. Here, records can be put into read-only mode for those who Ellis may share documents with.
3. Set password protections on applicable records. This can be done either through security settings while printing a file as a PDF or encryption can be done through security settings while exporting an existing PDF.
4. Any records that can be printed securely in order to be stored and later compared to digital versions should be printed and filed for later use.

Google Drive

Records in Ellis's Google Drive cannot be password protected, and read-only features cannot be enabled in the same manner as Microsoft Office applications. If the record is personal, then it can only be viewed or edited by authorized users, unless shared by the owner. If a personal document is shared, the owner can choose whether the recipient is allowed to only view, if they can comment, or if they can edit. If the document lives in the shared with me drive or in a team drive, those documents cannot be restricted to view-only or comments allowed. The best way to protect these documents is for Ellis to keep log in information for her Google Drive private and secure from unauthorized users. Google Drive also allows the owner of a document to see any changes made to the record since the last time the user visited the document. Taking advantage of this functionality allows the owner or any party interested in authentication to see exactly who made changes and what changes were made, if any.

For Ellis's Google Drive, the steps to take for this section are as follows:

1. When sharing personal records with others, identify whether the records should be shared as view-only, comments allowed, or editing allowed.
2. Then, select the desired setting before sharing the document or copying the shareable link to email to others.

InterPARES Characteristics Improved: Integrity, Reliability, Identity, Authenticity

VI. Protection (Access & Security)

Protection of records are the ways in which Ellis will ensure that records are not manipulated once she has classified them in her system and assigned their metadata. The way this section is approached is through physical access barriers to the computer itself, and then digital barriers to computer access through passwords and record settings. Ellis does have some security features in place on her laptop such as password protection to access the desktop and FireVault is enabled.

There are other options for security within both systems that will be suggested for use though. These measures will also improve the reliability of the recordkeeping system as it will be less accessible to unauthorized users. Our plans for Ellis's laptop and Google Drive are based on the strategies outlined in Step E.

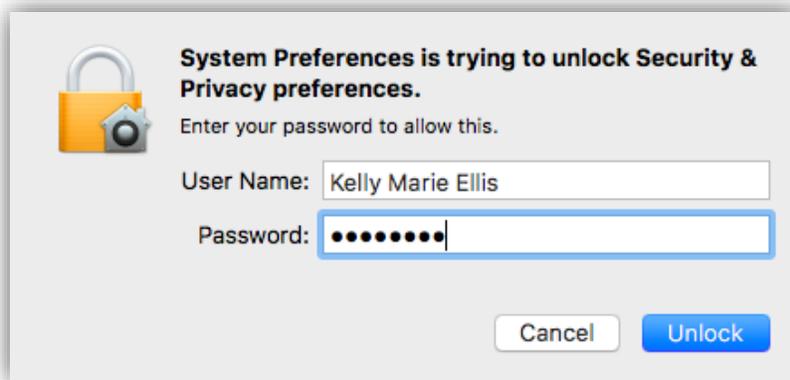


Figure 10: Laptop system preferences password protection

Laptop

In addition to the plan put forth in the last section, this section includes physical access barriers to Ellis's computer. Ellis already has a password to protect access to her desktop which should be kept in place and the password should be kept secure from unauthorized users. Ellis has also enabled Fire Vault which is a disk encryption application for Macs. These efforts should be furthered by keeping the computer physically secure and out of the hands of unauthorized users. This can be done by keeping the computer on Ellis's person while she has the computer away from home and locking her home or vehicle when the computer is being stored inside. Outside of the suggestions in the previous section, these are the remaining suggestions for Ellis's system security.

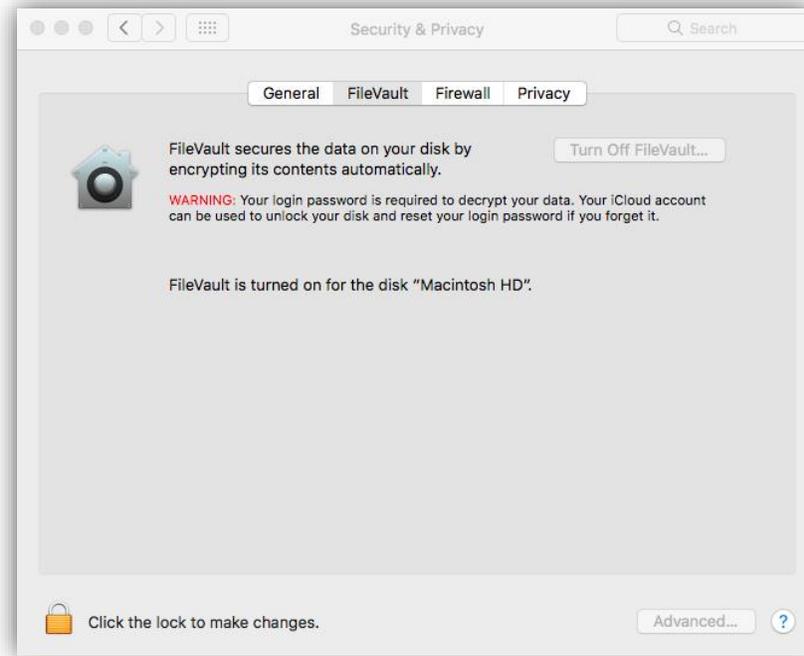


Figure 11: FireVault

Google Drive

As suggested in the previous section, protection for Ellis's Google Drive is limited to settings while sharing the records, and keeping login information private. Outside of those suggestions, Ellis should also be consistent in logging out of her Google Drive account when she is done working with records.

InterPARES Characteristics Improved: Integrity/Security, Reliability

VII. Backup, Archiving, & Disposition

Backup is a critical component of a good recordkeeping system as it protects against loss of records. Currently, Ellis does not backup her records which Step D identifies as an issue with compliance with Step C. Ellis also does not follow any kind of disposition schedule and does not archive any records that have been outlined in Step C. For her laptop, there are options for backup, and there are archiving and disposition schedules now available to her from Step C. For Ellis's Google Drive, however, backup is limited, though she can follow an archiving and disposition schedule. By following the suggestions in this section for Ellis's laptop and Google Drive, she will be making her records compliant with legal requirements and best practices as well as ensuring their preservation in the face of data loss. Some of these suggestions will be to align Ellis's recordkeeping practices with the disposition schedule created in Step C. This section does require purchasing space for backup storage whether that be in a cloud service or an external hard drive. Ellis has established that she is not willing to purchase space in a cloud service, so any cloud-based suggestions are optional. She is willing to spend a specified amount on an external hard drive and/or thumb drive, so space can be purchased in that format up to the amount Ellis has approved. The following steps for Backup and Disposition are based on Step E's strategies.

Laptop

Drawing from the policy for compliance in Step E, the plan for backup and disposition of Ellis's records will include following the retention schedule put forth in Step C and regular backups of Ellis's hard drive. The retention schedule in Step C identifies which records need to be disposed of after a certain amount of time, and which records can be archived for permanent retention. Backing up Ellis's hard drive would involve checking for or purchasing available space in a cloud service like the iCloud or otherwise. If a cloud service is undesirable, then Ellis will need to purchase an external hard drive. Ellis's computer has a built-in function called Time Machine where Ellis can select her preferred device for backup and Time Machine will perform the backup.



Figure 12: Time Machine

A consideration is that Time Machine does not allow for backup of specific documents, but rather performs a backup of the entire hard drive. A thumb drive can be used to perform backup of particular records that are deemed vital or critical to Ellis's daily functions as defined by Step C. Examples from Step C of some of Ellis's vital records are her school schedules, individual and team assignments and projects, scholarship documentation, and payroll records. The backing up process should be done at regular intervals. While having an off-site backup system is not necessary, if it is desired, a cloud service can be utilized to accomplish this.

The steps for completing backup and disposition are as follows:

1. Regularly check Step C's retention schedule to identify which records are ready for archiving or destruction.
2. Backups for vital records should be performed daily using a thumb drive or using Time Machine and an external hard drive.
3. Backups for general records should be performed weekly using Time Machine and an external hard drive or other desired backup service.
4. Off-site backup should be completed daily for vital records and weekly for general records if this is a backup system that Ellis wants to utilize.

Google Drive

Ellis's Google Drive does not provide a way to back up her records contained in that system. The records are therefore at some level of risk for loss should anything happen to the remote servers where her records are located. The retention schedule from Step C does apply to Google Drive records, though.

The steps to complete this section for Ellis's Google Drive are as follows:

1. Regularly check Step C's retention schedule to identify which records are ready for archiving or destruction.

InterPARES Characteristics Improved: Compliance, Preserved

VIII. Obsolescence

When elements of the physical hardware and the formats of the records themselves start becoming obsolete, they need to be upgraded to fit new technologies. This might mean purchasing new hardware and/or migrating records into new formats or to new hardware. Our suggestions for Ellis in this section will revolve around ensuring technology stays up to date and records stay in a viable format. These suggestions will also assist in good recordkeeping processes like good storage, data backup, preservation, and recovery, and migration.



Figure 13: Operating system version

Laptop

Ellis's physical hardware is not currently in danger of obsolescence, but will be obsolete within the next five years. In that time frame, Ellis needs to consider new hardware. Prior to migrating pertinent records to her new hardware, Ellis needs to backup her records and check the retention schedule to evaluate the records before they are transferred to the new hardware. Currently, the format of Ellis's records are stable and up-to-date. As new versions of Microsoft Office applications come out, Ellis will need to update her records to ensure their format does not become obsolete, and the record therefore becomes inaccessible.

The steps for fulfilling this section are as follows:

1. Within the next 5 years, Ellis needs to update her hardware.
2. As part of migrating records to her new hardware, Ellis needs to perform a backup and check all records against the retention schedule.
3. As new versions of Microsoft Office become available, Ellis needs to migrate records to the new format to avoid them becoming inaccessible.

Google Drive

Google Drive is not a hardware, but rather a software. It will be updated at Google's discretion as they are the proprietors. To avoid records becoming obsolete or inaccessible, Ellis should ensure that when Google Drive updates are performed, all her records are still accessible to her. If there are any records that would be a catastrophic loss should Google Drive update and the record become inaccessible, Ellis should export the contents of that document to a file that is able to be backed up and updated over time.

InterPARES Characteristics Improved: Storage, Data Backup, Preservation, and Recovery, Migration

IX. Conclusion

The plans and suggestions offered in Step F should be carried out by Ellis in order to establish a good recordkeeping system. Implementing these suggestions alone will not be enough for long-term preservation, though. Ellis will need to continue to evaluate her functions where she creates records, and identify where they fit within the retention schedule, where those records should be placed within her organization schema, and other ways those records should be situated within Ellis's recordkeeping system. Ellis will act as her own trusted custodian to keep her records, organize them, store them, and make sure the disposition schedule is followed. The two systems evaluated in this project are also only two of the multiple systems where Ellis's records reside. Records are also contained in her email account and in her paper files. Ellis could use this project to evaluate those systems and create good recordkeeping systems there as well. Long-term preservation is a commitment of both resources and time. Preservation means keeping updated hardware and migrating records to updated file formats and new hardware systems. This is a demanding venture, but one worth the effort to preserve meaningful records. Going forward, Ellis needs to maintain an awareness of best recordkeeping practices. This means being aware of additional future functions that will create new records and how she might integrate these functions into her practices, as well as staying aware of the best ways to preserve significant records for perpetuity.