Reengineering the United States Patent Process: Improving Examination Procedures and

Employee Communications

An Interactive Qualifying Project
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Abstract

Our goal was to recommend a more efficient patent examination process to the United States Patent and Trademark Office's Reengineering Process Team (RPT). In addition to recommending changes to the examination process, we also researched communication difficulties between employees who telecommute and employees who work in the physical office and possible solutions to those flaws. We developed a set of recommendations to assist the RPT in their efforts to develop efficient solutions to the current patent examination procedures.

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Executive Summary

Our project, sponsored by the United States Patent and Trademark Office (USPTO) located in Alexandria, Virginia, focused on reengineering the patent examination process. The current patent examination process is inefficient; despite improvements previously implemented, the process still takes over thirty months, on average, to complete. The present backlog of patents exceeds 700,000 applications and would require over two years to process, and at that, only if the patent office were to stop accepting new patent applications.

After assessing the situation and examining various resources available our team submitted solutions capable of improving current examination procedures. The most immediate concerns addressed by our team were: increasing processing speed and maintaining the quality of the USPTO's examination procedures. Previous research done by the USPTO's Reengineering Process Team (RPT), a group of patent examiners and managers currently working within the USPTO to improve the patent process, focused our suggestions on the three phases of patent review: the pre-examination process, the examination process, and the post-examination process. Additionally, we suggested modifications to office relations and training techniques used within the office. Specifically, our team evaluated the communication protocol between telecommuting employees and those employees working within the physical office.

To reach our goal, we identified specific objectives crucial to success. Through interviews held with USPTO employees (examiners, Review and Quality Assurance Specialists and Patent Training Academy instructors), we identified flaws that, if corrected, would prove beneficial to the patent office. Our team also cataloged and quantified previous research done

by the RPT. After analyzing the RPT's work, we compiled our research data and new discoveries into recommendations for the USPTO to pursue in the future.

The USPTO has already implemented a number of changes in the form of pilot programs with the objective to improve productivity. Our team assessed the USPTO's telecommuting system the "Patent Hoteling Program" (PHP), to determine its potential negative effects on the social culture of the office. Because human error was an important consideration in the patent review process, our team interviewed employees who were familiar with the Hoteling Program and examiners who currently interact with teleworking staff.

Our team feels that the USPTO has much to gain from our suggestions and our research in order to accomplish their goal of reducing the patent backlog. We have provided the USPTO with an analysis and set of recommendations that will facilitate future changes they intend to institute within their patent examination process. Combining our efforts with those of the Reengineering Process Team provided both an inside and outside perspective of the current patent process and will help the USPTO to efficiently evaluating measures of success for future changes.

1.0 Introduction

Every day, new ideas and inventions are developed by innovative people around the world. Before taking an idea to market, it is vital to obtain intellectual property rights, not only to promote individual and national economic prosperity, but also to ensure the quality of the product for day-to-day use by consumers. By securing intellectual property rights to new ideas, businesses gain reinforced productivity without the threat of other companies stealing their ideas and marketing them as their own. To acquire such legal rights, citizens and organizations submit patent applications to the United States Patent and Trademark Office (USPTO). New technologies may exist but, without the acquisition of patents or trademarks, the public may not have the chance to benefit from them. New inventions and items that vastly improve the quality of daily life potentially never come to fruition without a concrete system to grant legal rights of ownership.

The USPTO is a federal organization, under the auspices of the Department of Commerce that provides: patents, trademarks, and copyrights to applicants passing rigorous review processes. Despite the efforts of over nine thousand employees, the process of organizing, reviewing, and approving patents remains inefficient. Hundreds of thousands of patents lay backlogged at the USPTO; the average time currently required within the USPTO to reach first office action is currently about twenty-six months, leaving most inventors and proprietors exasperatedly awaiting a final decision.

Presently, patent examination is a long and tedious, albeit thorough, process that leaves much room for improvement. In an ideal world, a patent application would be reviewed upon

submission to the examiner's docket, or work station. Instead of this ideal system, before an examiner views a patent, the application is: categorized, coded, and converted to a specific file type. Once finally reviewed by a patent examiner, the application is then passed on to senior or primary patent examiners, to be reviewed and approved, a process often as lengthy as the initial examination.

The USPTO created seven Reengineering Teams to identify possible flaws within the agency. For example, the Reengineering Process Team (RPT) is currently analyzing the procedures followed in patent examination. The RPT hopes to identify certain procedures within the patent examination process that need improvement, thus increasing the speed of thorough application processing.

The USPTO readily acknowledges the length and inefficiency of the patent review process. Before the creation of the reengineering teams, attempts to improve the process were made through the introduction of a number of pilot programs. One of these pilots, the Patent Hoteling Program, which has since become a full initiative, allows employees to telecommute from anywhere in the country. Hoteling has allowed the USPTO to hire more employees without the need to expand their physical offices. Currently, qualified employees are offered the opportunity to work from their own homes. Despite initial concerns, the productivity of hoteling employees currently matches or exceeds that of those in the office.

The goal of this Interactive Qualifying Project was to document and catalog relevant suggestions and research obtained by the Reengineering Process Team. Our group categorized the data obtained into relevant sub-categories to assist the RPT's evaluation efforts concerning examination procedures. Additionally, our team analyzed the current Hoteling Program used by

the USPTO. We addressed potential complications brought to the office, specifically focusing on how experienced employees, that may be working from home, teach and train new hires.

The recommendations formulated in this project not only aid the USPTO in efficiently targeting areas of improvement within their patent procedures, but also provide solutions to current flaws in the examination process. The USPTO will also promote synergy pertaining to inter-office communications more effectively by gaining insight regarding how examiners seek guidance and help while being trained. Technological innovations will greatly improve with a smoother patent review process, allowing increased economic prosperity. As a result of these improvements, we expect that American citizens will see an increase in the availability of innovative and inventive products, enhancing their daily lives.

2.0 Background and Literature Review

From its origins in 1790, the United States patent process accumulated a rich history. Abraham Lincoln, the only U.S. president to ever be issued a patent, offered his view on the patent process when he said, "The patent system added the fuel of interest to the fire of genius" (Watson, 2001). In this chapter we provide a brief explanation of the current U.S. patent process and provide a working definition for efficiency as well as discuss its relevance to our project. Many pilot programs have been implemented by the USPTO and their varied successes are discussed in further detail. Finally, we review the patent processes of several other nations to identify key differences between the separate procedures.

2.1 The Patent Process of the United States

The USPTO issues copyrights, trademarks and patents. For many, it is hard to distinguish the differences between these three intellectual properties. A patent gives the inventor property rights to their invention. Currently the term of protection that a patent offers is 20 years from the date that the patent application is filed. The first patent statute (the Patent Act of 1790) stated that a patent grants the applicant the right to exclude others from making, using, offering for sale, or selling the patented product (USPTO, 2010e). Copyrights protect the authorship of expressed talents. The Library of Congress registers copyrights with a normal duration of the author's entire life as well as 70 years after their passing (personal communication, J. Swann, 2010). A trademark protects words, symbols, names, sounds or

colors that are associated with a distinct good or service. Unlike patents, a trademark can be renewed as many times as necessary as long as it is in commercial use (Watson, 2001).

2.2 Types of Patents

There are three types of patents that a person can apply for: a utility patent, a design patent or a plant patent (USPTO, 2007a). A utility patent covers any innovative and valuable process, article of manufacture, machine, composition or any improvement of any of the previously listed inventions. Any patent that has to do with a new and inventive design for an article of manufacture is a design patent. Finally, a plant patent protects any new variety of plant that is asexually produced.

Within these classifications, the United States patent process is unique. Many foreign nations only allow patents on physical objects and inventions. The United States' patent laws are much broader, allowing techniques and processes to be patented as well as traditional inventions. These guidelines demonstrate one distinct area of patent law utilized by our country to broaden the scope of patentable material. This heightened scope is the topic of much discussion in the international intellectual property field, and has received criticism over the years. USPTO officials claim that this "anything under the sun" approach allows creativity to flourish in our country by not limiting what can and cannot be protected under patent law.

2.3 The History Of Patent Laws and Agencies

Initially, the USPTO did not exist as a formal organization; instead, Congress had the power to award copyrights and patents (USPTO 2010c). Although Congress was constitutionally granted this responsibility, we found no evidence to suggest that Congress approved any patents or copyrights during the initial years of the early republic. On January 25, 1790, the House of Representatives appointed a committee to write a patent statute. After many amendments and reviews by both the House and Senate, the first patent statute was signed by President George Washington on April 10, 1790.

2.3.1 The History of the Patent Examination Process

Although the first patent statute was passed in 1790, a patent office was yet to be created. If an applicant was interested in filing a patent or trademark request, they would need to file an application with the Secretary of State, who would then confer with the Secretary of War and the Attorney General. If any two of them approved the patent request, the Attorney General would then review the legal sufficiency of the request. The application would then be sent to the President for his signature and then back to the Secretary of State for his final signature of approval. Once the appropriate steps were performed and the patent request was approved, the patent would be mailed to the applicant and would be valid for 14 years.

2.3.2 The History of Patent Fees

In the past the fee for a patent request was quite low in comparison to the current cost. Patents would cost 50 cents to be processed and received, with a charge of 10 cents for every

100 words contained within the application. After the patent was copied and documented, a

two dollar fee was necessary to create the legal patent document, and the affixing of the Great

Seal cost an additional dollar. These costs are miniscule compared to the filing fees and service

fees now charged the by USPTO. For the current fee structure, applying for a patent can cost

anywhere from $220 to $850 (USPTO, 2010c). In order for the USPTO to issue a patent, making

it a legal document, it costs over $750, compared to an inflation adjusted $25 from the 1790

fees (personal communication, T. Swann, 2010). Initially, patent fees did not go to the

government, but rather directly to the employees who provided their services on that specific

patent examination.

2.3.3 The Patent Act of 1836

In 1836, Congress passed the Patent Act of 1836 which provided a system used to

distribute new patents to libraries in every state. The Patent Act was created with the hopes

that by distributing patents to state libraries, citizens would have access to this plethora of new

knowledge, providing them with a source of ingenuity and creativity. When the Patent Act of

1836 was passed, the Patent Office belonged to the Department of State; the Patent Office

would later be transferred to the Department of Commerce. This Patent Act lead the way to

the separation of the Patent Office from the Department of State, and Henry Ellsworth, an

instrumental man in the creation of the Patent Act of 1836, became the first Commissioner of

Patents. With easily accessible patents, applicants could do research to determine if their

product had already been predicted by prior patents (Watson, 2001). This proved valuable to

the Patent Office because with this additional knowledge and access to prior patents, the number of applications, as well the quality of them increased greatly.

2.3.4 The USPTO within the United States Government

The United States Patent and Trademark Office is a federal organization; it is held accountable by the Department of Commerce (DOC), as can be seen in Figure 1. The DOC is responsible for advancing economic growth, jobs, and opportunities for the American people. An important role that the USPTO performs for the DOC is ensuring that the intellectual property system supports a strong global economic presence, and encourages the entrepreneurial spirit necessary to innovate and invent (personal communication, J. Swann, 2010).

Though the United States Patent and Trademark Office is subject to policy direction by the Secretary of Commerce, unless the Secretary intervenes, the USPTO is responsible for the decisions regarding management, administration, and budget (USPTO, 2007a). However, the definition and legal contract of a patent is under the jurisdiction of the legislative branch, as provided in the U.S. Constitution. Article 1, Clause 8, defines the basis used for U.S. patent law. Federal statutes passed by Congress govern the patent system, primarily Title 35 of the U.S. Code (USPTO 2010c). While the USPTO has the leeway to hire employees and can structure the office as it sees fit, legal definitions and procedures of patent approval and administration lie in the legislative branch of America's government. This set of interwoven governmental responsibilities can be seen below in Figure 1.
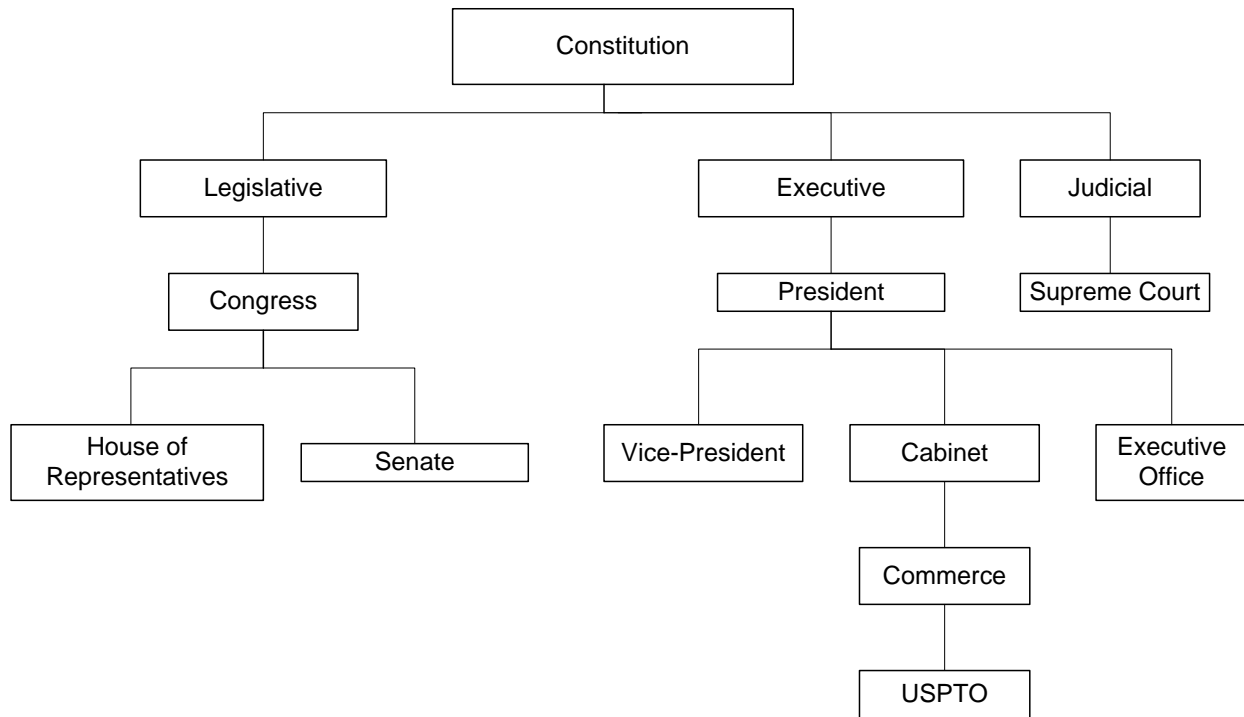
Figure 1: Tree of hierarchy showing the USPTO's current place within the three branches of the United States Government. The USPTO is contained in the Executive branch, and operates underneath the Department of Commerce.

Source: http://www.uspto.gov/about/offices/index.jsp#heading-1

2.4 Patent Procedures of the USPTO

The patent process is lengthy and, at times, complicated. However, it can be broken down into a few vital steps. The initial research lies with the patent applicants. In some cases, inexperienced applicants will hire a patent lawyer to help them with the application process. Before the applicant starts the application process, background research, called prior art, must be done to prove that his or her thoughts or ideas have not been patented previously. Once the uniqueness of an application is determined, the applicant must confirm that they have not

submitted an obvious modification of an existing invention or intellectual idea. The unique claims of the application are then compared to past patents and material in academia. This step assures that the proposed application is not just an obvious change to an existing idea. This criterion of "non-obviousness" remains one of the USPTO's most important standards in processing patents.

When the applicant decides to move forward with the application, he/she must then determine whether he/she will require international patent protection. Generally, if a product is sold on a global level, or produced outside of the U.S., international intellectual rights are pursued (Maskus, 1998). For a minor gadget or tool that may not have large scale distribution, it is generally not required to obtain legal protection on an international level.

When the applicant is ready to start the filing process, his/her next choice is to either file the patent by himself/herself, or use a registered patent attorney or agent. In most cases, speed and accuracy of an application will improve when a professional attorney is used; however, inventors do have the option to pursue the application without an attorney, these applicants are called "pro se".

An application is then received and uploaded to the USPTO's database as an image file, to preserve any original formulas or figures that are included in the original paperwork. Due to the lack of an established method to convert complex formulas or chemical compositions to pure text, the USPTO requires the whole application be converted to a standardized image file which can be read on any machine in the patent office. Currently, the applications are only accepted after a digital conversion by the office for ease of use when the patent examination process begins (personal communication, Dwyer, 2010).

2.5 Efficiency

The USPTO constantly strives to increase the efficiency of their current patent process, through reengineering, pilot programs, and various outside consultants, such as Worcester Polytechnic Institute's Interactive Qualifying Project teams. Efficiency, though sought by numerous organizations around the world, rarely shares the same defining standards from case to case. Generally, the more efficient a system is, the less time and effort it takes to produce a given set of results. Usually numbers that represent efficiency are pivotal in evaluating an organization's work flow and productivity.

2.5.1 Efficiency of Employees in the USPTO

The way that the USPTO defines its employees' efficiency in their field of work is to assign a Grade Scale that corresponds to the number of patents that each reviewer is expected to process per unit of time. In order to change one's Grade Scale; a ratio must be reached comparing the number of applications that the examiner has completed versus how many the examiner is expected to complete. Depending on the grade level of the particular employee, the amount of time allotted for the employee to complete a particular number of patents changes; that is, reviewers at different grade levels have different expectations for the number of patents reviewed per unit time. By working more efficiently, employees' grade levels increase: for example, a Grade Scale of 13 allows an examiner 8.75 hours to review an application in its entirety, while a Grade Scale of 12 is allocated more time to review applications. (personal communication, J. Swann, 2010).

Streamline, upgrade, and engineer are all words used commonly to describe an action that will increase the efficiency of a system as a whole. The USPTO is constantly trying to identify areas to improve the efficiency of their patent review process. It may be that there is not one glaring problem within the patent examination process, but a combination of minor problems. It is possible that, within interdepartmental work and communications, employees have different incentives to work harder. Because the patent process works as a system, if one employee is working slowly because he/she has less motivation to work quickly and efficiently while another employee is working hard to do the best work as fast as he/she can, the system has conflicting interests and can only move as fast as the slowest employee.

In some cases, efficiency cannot be improved whereas in others it is easy to make adjustments to existing processes and procedures. For example, if two lengthy steps can be reduced to one simple step, then efficiency is directly impacted, because one saves both time and effort at once. However, it is important to consider three components that affect the efficiency of some processes: speed, quality, and cost. While a proposed change may increase speed and quality of a process at the sacrifice of increased cost, a company may not want to follow through because of the fiscal losses it may bring. It is a difficult task to prioritize these three components, which leads to not just governmental organizations, but scientists, corporations, and manufacturers allocating tremendous amounts of resources to find the best way to correctly balance the separate components that make up their definition of efficiency.

2.6 USPTO Employee Hierarchy

Dependent upon the amount of time an employee works at the USPTO, they encounter opportunities to be promoted to a higher position (personal communication, J Swann, 2010). A new employee at the patent office is assigned the position of a junior examiner. In order to be as prepared for the requirements of this position, all new examiners are required to attend the Patent Training Academy (PTA). At the PTA examiners are given legal training, as well as training in automation and examination practice procedures. While attending the Patent Training Academy examiners are given practice patent applications to examine. Currently, examiners attend PTA daily for four months and by the end of that time they should possess a sufficient amount of knowledge to examine and review patent applications. Previously the USPTO required that junior examiners attend Patent Training Academy daily for eight months, but recently decreased this time period to four months due to the strain of such a long training period.

USPTO employees are assigned a Grade Scale (GS) representative of how efficient their work is. The more patent applications completed by an examiner in a certain amount of time, the higher their respective GS. The Grade Scale is not only used to measure efficiency, but also to award promotions.

2.6.1 Junior Examiners

When an employee first begins working with the USPTO they are assigned to be a junior examiner with a starting Grade Scale (GS) of 11. As the examiners gain experience and knowledge their GS will increase depending on the number of patent applications that they

complete. Throughout an employee's experience at the patent office, they have many opportunities for promotions. The first promotion that an employee can receive with little experience would be the position of a lab assistant. The lab assistant position requires an employee to be a GS of 12 or 13. These employees are hired to work in the PTA to aid Patent Academy Instructors in whatever is needed, and can only work in this position for a time frame of one year. It is common for examiners who are hired to work as lab assistants in the PTA to continue to work part time as examiners as well, helping to prevent a potential increase in the application backlog.

2.6.2 Primary Examiners

Junior examiners can also be promoted to Partial Signatory Authority. In order to gain Partial Signatory Authority an examiner must be a GS of 13 or above and needs to attend a two year program, referred to as "The Program" at the USPTO. "The Program" is separated into two parts. The first part takes place for 13 bi-weeks and involves a board of SPEs (Supervisory Patent Examiners) and RQAS staff (Review and Quality Assurance Specialist) who gather and review 17 randomly selected cases completed previously by an examiner and evaluate the examiner's ability to work at the level of Partial Signatory Authority. Examiners who have applied to become Partial Signatory Authority are allotted one error per case in the 17 cases submitted. After the first 13 bi-week session of "The Program" is completed, an examiner is granted the right to become a Partial Signatory Authority. That examiner is authorized to sign off on any first office actions. They do not possess the ability to sign a final patent disposition until they gain Full Signatory Authority. After a ten bi-week break from "The Program", any

examiner trying to gain Full Signatory Authority will complete the second 13 bi-week part of

"The Program".   To become a Primary Examiner an applicant must be a GS of 14 or higher and

must complete the first half of "The Program" successfully. A board of SPEs and RQAS then

review another 17 cases completed by that examiner. If the panel rules that an examiner is

adequately prepared to possess Full Signatory Authority, they are promoted to the Primary

Examiner position.

2.6.3 Supervisory Patent Examiners or Other Positions

Any examiner approved to possess Partial Signatory Authority or Signatory Authority is

given that position automatically. This is not the case when an employee applies for positions as

Review Quality Assurance Specialists or Supervisory Patent Examiners. When positions are

available as a RQAS, TQAS, SPE or Patent Training Academy instructors, the patent office posts a

vacancy announcement. If an employee wishes to apply for a vacant position, he/she is

required to compile a report stating what position they are applying for as well as a description

of why they would excel at the position. To become a SPE or a member of RQAS/TQAS an

employee is required to have a GS of 15, the highest GS attainable by a USPTO employee. PTA

Instructors are also given a GS of 15 when they begin their position as instructor, but this GS is

only temporary. When an employee's time as class instructor is completed the employee

returns to their previous GS (personal communication, J. Swann, 2010).   Although the

promotion system is extensive and strenuous, this difficulty is necessary due to power USPTO

employees can gain through a promotion.

2.7 Patent Examination Process

This section provides background on the procedures used by patent examiners in the United States Patent and Trademark Office (USPTO) to evaluate the merits of patent applications. There are three distinct phases an application progresses through, the pre-examination phase, the examination phase, and the post-examination phase. Below, our team provides brief summaries of steps within each phase.

2.7.1 Patent Classification Process

The United States Patent Classification System (USPC) is a process that was formulated to organize technical documents, like patent applications, into smaller collections related to similar subject matter. At the USPTO each dissection of a major component (class), will result in a subclass. Each particular class represents an Art Unit while each subclass delineates a process or subject matter within a particular class.

When classifying a particular patent application, one of over 150,000 subclasses is assigned to the application. Due to the vast number of classes and subclasses, each application is required to be assigned a class and a subclass.

In order to aid the USPC in the classification process they have created a number of different systems, one being the Manual of Classification (MOC). The MOC is used to organize each classification approved by the USPTO. In the MOC each classification is listed as a "class schedule". These schedules are listings of the subclasses, created by the USPTO, that list the location of each within the classification process.

To help ensure that each class and subclass is correctly classified, the USPC has created the Index to the U.S. Patent Classification System. This document defines each class and subclass by providing the specific criteria used for classification. The Index to the U.S. Patent Classification System provides a simple list in which technical material is sorted alphabetically and directs the user to where they can find the subject matter that they are looking for in the MOC by listing subclasses that most closely relate.

The Classification Data System (CDS) is used to aid in the classification process. These management and storage tools include databases as well as automated processes. The Master Classification File (MCF) contains the information that is used to list what classifications are assigned to which documents. The MCF is also used to ensure that each U.S. Patent is assigned at least one classification.

The process of reclassifying is used when a patent is incorrectly classified. When reclassifying the USPC uses The United States Patent Classification Standards and Procedures (USPCLASP) as a guide. The USPCLASP is used when terminating or modifying an existing class or subclass as well as creating new classes or subclasses. Currently, if a class or subclass is changed by the USPC the patent office employees are notified via the Classification Bulletins which are published by the USPC.

2.7.2 Examination Process

At the USPTO, employees filter applications into Technology Centers (TC) and Art Units (AU). A Technology Center is the broadest grouping used not only to organize examiners into special fields in their office, but also to place applications regarding specific technologies into

the hands of examiners proficient in those subjects. Currently, there are nine Technology

Centers, shown below in Table 1.

Technology Center	Description
1600	Biotechnology and Organic Chemistry
1700	Chemical and Materials Engineering
2100	Computer Architecture, Software, and Information Security
2400	Computer Networks, Multiplex Communication, Video Distribution, and Security
2600	Communications
2800	Semiconductors, Electrical and Optical Systems and Components
2900	Designs
3600	Transportation, Construction, Electronic Commerce, Agriculture, National Security and License and Review
3700	Mechanical Engineering, Manufacturing, Products

Table 1: Description and Call Number of Technology Centers in the USPTO.

Art Units (AU) are a more specific form of classifying units used to classify employees

and patent applications. These Arts Units exist within the larger Technology Centers, and are

responsible for narrowing the field of the invention into a unique category. Doing so allows

examiners, expert in the related fields, to examine the applications within the Technology

Center. For example, an examiner who belongs to TC 2100 and AU 2115 would work on

applications relative to electrical computers and digital processing systems.

The first action a patent examiner takes, besides reading the entirety of the patent application, is to search for prior art or work that will either dispute or support the uniqueness of the claimed invention (USPTO Contact Center, 2009). "Prior art" is defined as anything that was published or patented in this country prior to the submission of the patent application. After searching for prior art, a patent examiner acquires a body of references to review. Then the patent examiner will determine two major points: if an invention is new and if it is non-obvious. For a patent to be non-obvious the invention in question cannot be an obvious solution or change to an invention, such as a change in color or substance used in a material. Based on his/her assessment of the application, the examiner will recommend whether the patent should be granted, denied, or reviewed.

2.7.3 Amendments and Petitions

Frequently, an inventor will make a change to an aspect of their patent request. These changes are called Amendments and can consist of edits to anything from claims to drawings. There are currently 12 types of Amendments which are shown below in Table 2 (USPTO, 2010f). Amendments are most commonly made by inventors, but in some instances an examiner will request an amendment. When an examiner requests that an amendment be made to an application, they are most commonly filing because there is a condition for allowance. When a case is in condition for allowance, the examiner feels that there is no longer any question of patentability or clarity and is ready to be issued. In such a case an examiner will file an Examiner's Amendment.

Type of Amendment
Amendments to Claims
Amendments to Specifications
Amendments to Drawings
Non-Compliant Amendments
After-Final Amendments
Preliminary Amendments
Examiner's Amendments
Amendments Under 37 CFR 1.312
Supplemental Amendments
Amendments File in Response to a Quayle Action
Markings
Allowance

Table 2: Listing of the twelve types of amendments which can be filed.

2.7.4 Appealing a Patent Examiner's Decision

If a patent examiner can determine that a claimed invention passes the two criteria listed above, the application is approved and a patent is filed and processed. Only 45.6% of patent applications are approved on first disposition, or based upon the first initial claims, (due to the thoroughness with which a patent examiner processes an applicant's claims (USPTO, 2010b). For those cases in which prior art disproves the claims of the patent application, a

denial is mailed, and the applicant has an opportunity to change the claims of his or her patent

to be more specific and distinguish itself from existing products. The USPTO has defined a six

month period after receiving denial notice for an applicant to file an appeal, and allows a

maximum of two appeals per patent. This process starts the post-examination phase of an

application review, which can become the lengthiest stage due to the delays caused by

communication between applicants and reviewers.

A claim is used to define the scope of protection that an applicant is trying to gain in an

effort to distinguish itself from existing inventions. The applicant can list up to twenty claims,

three of which can be independent without adding any additional cost to the patent

application. An independent claim stands alone and does not depend on any other claims for

clarification or elaboration. These claims are often quite descriptive and should leave little

room for interpretation. A dependent claim refers to other claims listed in the patent, see

Figure 2. A dependent claim will often times elaborate more on a previous claim by listing the

claims it refers to and then further specifying its own claim.

```
Claim 1
        +------2
        |        +------3
        +------4
        |        +------5
        |                +------6
        |                        +------7
        |                        +------8
        +------9
        +------10
Claim 11
        +------12
        |        +------13
        +------14
                +------15
```
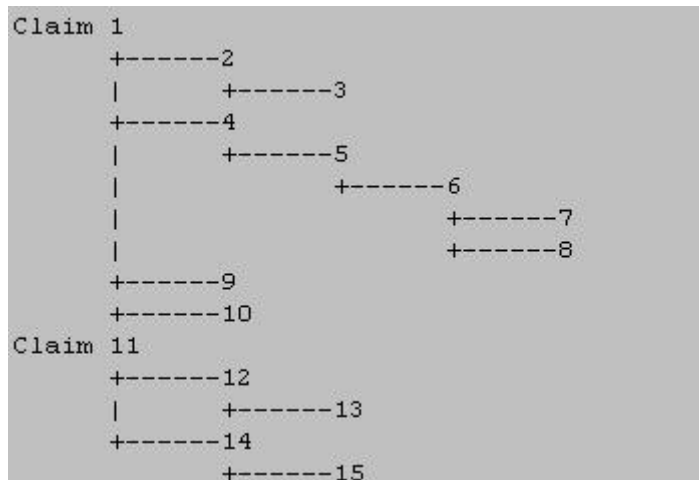
Figure 2: An example of a claim tree used by the USPTO. Claims 1 and 11 are independent claims. Claims 2-10 are dependent claims, building off of claim 1. Claims 12-15 are dependent claims of claim 11.

Source: http://www.pattools.com/claim_tree.html

If, after the post-examination phase, the patent application is still denied by the original examiner, an applicant can file for another reviewer to look over the application. If that measure fails to get the patent approved, the applicant can request that the judicial system review their patent application. This transfers the patent application from the executive branch into the judicial branch of government, specifically, the Court of Customs and Patent Appeals (CCPA). Patent lawyers play a key role in these situations because applicants must now rely on legal evidence rather than prior art to refute the decision reached about their application.

Due to the complex proceedings of the United States judicial system or the persistence of some applicants, a considerable amount of time passes when an application is started and a final office action is reached by the patent office. The USPTO separates the patent review

process into pre-examination, examination, and post-examination stages in hopes of identifying

trouble areas in each stage and making changes one step at a time instead of requiring an

entire overhaul of the process.

2.8 Past Pilot Programs Used by the USPTO

In an attempt to streamline and improve the current patent process, the USPTO has

attempted numerous pilot programs, and these programs have received varying results. A

selected sample of these pilot programs is discussed below, in order to review not only

successful pilot programs, but also identify where failed programs fell short.

2.8.1 The USPTO Hoteling Program

The USPTO Hoteling Program has quickly expanded since the date of its inception (2007)

and is currently supporting more than 1,500 teleworkers (Marques, Murphy, Sherrerd, 2008).

The majority of the patent office employees who are members of the Hoteling Program, of a

minimum grade scale of 12, work from home 4 days a week and come into the office at least

once a week (Walker, 2010). Although the Hoteling Program has positive aspects, such as

allowing parents to be able to work from home and still be with their children, there may also

be negative effects from the program. For example, the communication between employees

participating in the Hoteling Program and other employees working at the USPTO headquarters

is currently less than ideal (Walker, 2010). Although the Hoteling Program has grown, the

issues that coincide with it are growing as well. For example, Judy Swann, manager of the

Special Projects Division of the USPTO, informed our team that the communication between

the employees working at the USPTO and the telecommuting employees has not been working

the way it should (personal communication, J. Swann, 2010). Employees at the USPTO tend to

avoid calling members of the Hoteling Program because they feel uncomfortable speaking to

co-workers whom they do not normally interact with face-to-face. For this reason, both

employees who belong to the Hoteling Program and USPTO-based employees feel disconnected

from each other. Previous research done by students at Worcester Polytechnic Institute

(Marques, Murphy, Sherrerd, 2008) has provided the USPTO with information about the

Hoteling Program's effect on office statistics and efficiency, and the pilot program was

promoted to a fully-fledged program.

2.8.2 The Peer to Patent Review System

The Peer to Patent (P2P) pilot was tested recently in the USPTO. This program involved

the public in the patent review process, allowing them for the first time to see patent

applications as they were being processed. In order to help examiners find prior art that they

may not have access to on their own, U.S. citizens can submit prior art they found in order to

speed up the patent verification process. This pilot program is unique and allows another set of

eyes to help with finding prior art to either discredit or approve a patent application. The

results for the P2P program were extremely positive (Sherrerd, Lynch, Loiselle, 2010). As

predicted by the abstract of the program, professionals in their fields may have access to data

or art that the USPTO's resources do not cover. By involving reputable peers in the patent

process, a heavy burden is partly lifted from patent examiners. Despite the submission of prior

art from the public, it is still the examiner's job to consider all prior art submitted and determine an appropriate opinion. The success of the Peer to Patent pilot program influenced the beginning of a third pilot test on October 15th, 2010 (Quinn, 2010).

2.8.3 The Accelerated Examination Program

In 2006, the USPTO tested the Patent Prosecution Highway (PPH) pilot program. Within this program, for an additional fee; patents related to environmental quality, the development or conservation of energy resources, and those countering terrorism could be put on a 'fast track' patent examination schedule, in order to directly improve daily life in American society (USPTO, 2006). Patent applicants must also fill in additional forms and be available for an interview with a patent examiner to discuss prior art found and material that might cause a rejection of the application. Taking advantage of this program guarantees that the patent application begins review within two weeks of its reception into the USPTO system, and that the applicant will receive a phone call from an examiner if a patent rejection is to be filed (IP Office 2009). This cuts months off of communication delays in the office, and expedites the patent process considerably for applicants. This pilot program will continue, until January, 2011, in order to assess the feasibility of continuing this pilot program.

2.8.4. First Action Interviews

In April, 2008, the USPTO conducted a First-Action Interview Pilot program. In this program, if an applicant follows the correct procedures, he/she will receive the results of any

prior art found by an examiner and be able to partake in an interview with the patent examiner

prior to the USPTO filing an official office action on the application. A precise set of

communications must be followed in order to contact the patent reviewer working on a specific

application, with vital information provided at each step in the process (Figure 3). This allows

the applicant a unique opportunity to resolve any unforeseen patentability issues in a personal

setting with the patent examiner, thus cutting the time it takes to file an appeal as well as

processing time. This program started within certain technology fields, but has since been

expanded to include numerous additional fields and has broadened the scope of who is offered

the opportunity to ask for these interviews. This pilot program will end in March, 2011. The

First-Action Interview Process is illustrated graphically in Figure 3 below.
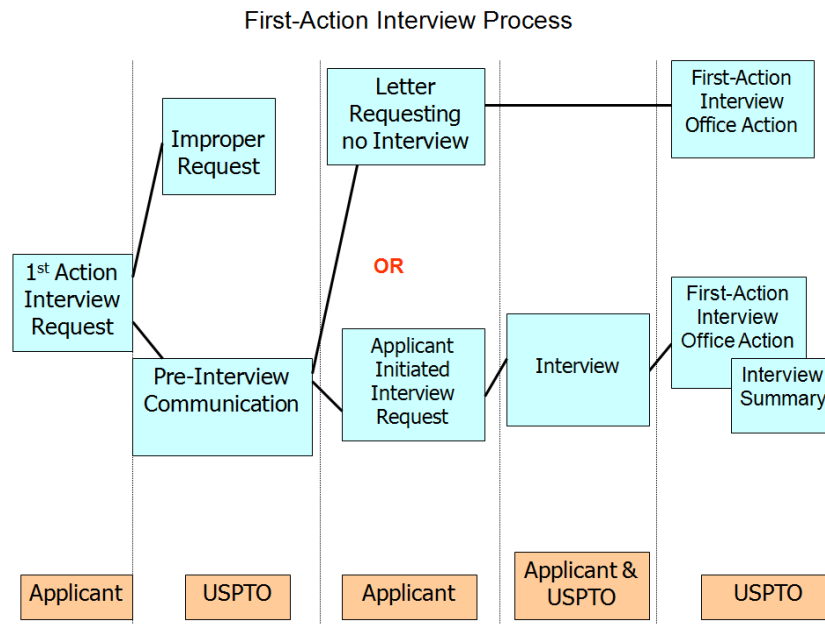
Figure 3: Flowchart illustrating the steps taken by an applicant and the USPTO in order to

facilitate a First-Action Interview.

Source: http://www.uspto.gov/patents/init_events/faipp_original.jsp)

2.8.5 Patent Examiner Technical Training Program

Currently, the USPTO is seeking assistance from U.S. citizens to help provide technical training to current patent examiners. While each patent examiner has a particular strength and knowledge base, the patent office wants to provide experts in other fields as lecturers to current examiners in order to expand their knowledge associated with their Technology Center. By understanding additional technological areas, a patent examiner expands his/her possible docket, or categories for which they read patents. The Patent Examiner Technical Training Program (PETTP) is a relatively new pilot, launched in September, 2010.

2.9 Patent Processes from Around the World

The United States is not alone in the field of securing rights for intellectual property; patents exist throughout the globe. Below the patent procedures of three familiar but relatively unique foreign nations are analyzed. The following nations either have unique contrasts to U.S. patent procedures, or possess ample information for patent law analysis, and their respective contrasts with the American patent system are presented. It is quite possible that American patent laws can be vastly improved by integrating other country's ideas into pre-existing standards.

2.9.1 Chinese Patent Law

As one of the top manufacturing countries in the world, the patent process of The People's Republic of China has some striking differences from the American patent system. The

U.S. is one of the only countries to use the 'first to invent' method of declaring ownership of an

invention. In contrast, China currently uses a 'first to file' system in determining patent

ownership. In the U.S. system, if two people apply for the same invention in different patent

applications, whoever can provide the earliest evidence of when they came up with their idea

will receive patentability rights, regardless of when the patent application was filed (Yang,

2008). Chinese patent examiners only look at the date the patent was filed and move forward

with evaluating the first patent they receive.

 The appeal process for rejected patents brings up many differences between Chinese

patent law and the American approach. The USPTO allows a six-month window for a patent

appeal to be filed upon receipt of rejection, with a maximum of two appeals per patent. China

uses an abbreviated version of this, only allowing three months to file an appeal with only one

appeal allowed per patent (Yang, 2008).

2.9.2 Japanese Patent Law

 Though somewhat similar to China's system for approving patents, Japan differs in some

ways from both the United States and China. Japan shares with China the same 'first to file'

approach for patent rights. One striking difference is when Japanese patent examiners start

their review process. An applicant is notified of the date when an application is received by the

office, and they must follow up this notification by requesting, once again, that the patent

examiner begin working on their patent (Kotabe, 1992). This can spread out the work load for

the patent examiners because they are not required to start working until the applicant

corresponds with them. Because Japan uses the 'first to file' method, it is quite common that a

Japanese business will file a patent application just to have the date recorded, but does not need the patent reviewed until a later date.

Another notable difference in applying for patents between Japan and the U.S. is in the policy regulating the release of patent applications to the public. The USPTO has a strict policy that they will not open a patent application to public review unless specifically allowed by the applicant. In Japan, 18 months after the patent application process starts, the public can view pending patent applications for inspection or opposition. Though they may not be trained patent examiners, sometimes the general public has access or knowledge of prior art that an examiner may not think of. A voluntary request to allow the public to submit prior art in support of a patent was incorporated into a "Peer to Patent" pilot program, which was discussed previously.

2.9.3 Canadian Patent Law

Canada, like many other nations, implements the 'first to file' system in determining who owns intellectual rights of an invention. Also, similar to Japanese patent laws, examination of a patent application must be requested, allowing applicants to defer the start of examination up to five years. Canadian patents incur an annual maintenance fee, while American patents are only charged three times for maintenance. The largest contrast between U.S. patent laws and Canadian law is that business methods cannot be patented in Canada, but they can be under American legislation. By decreasing the scope of patentable material like the Canadian system, it is possible that the number of applications received per year in the USPTO will decrease, which in turn will create less work for patent examiners.

2.10 Conclusion

This background chapter has provided the basis for understanding the main points of our

project. Consulting the past, mainly to identify what may be antiquated by today's standards, is

one of the best ways to identify possible flaws. To supplement historical data, an understanding

of previous pilot programs and where they have either succeeded or fallen short is crucial to

moving forward with a reengineering process. It is essential to understand where previous

efforts to reengineer have failed so as not to fall into the same pattern again. It is possible that

foreign nations utilize more effective ways of processing their own patent applications, and the

USPTO may benefit from a cross analysis of these countries and their striking differences to our

own patent laws.

3.0 Methodology

The goal of our group's project was to provide recommendations to the United States Patent and Trademark Office that will create a more efficient patent process. Achieving this goal required an analysis of existing research done by the Reengineering Process Team. Also, our team identified additional problems in the social atmosphere of the patent office. Our project utilized various methods for both analysis and discovery. We accomplished our overall goal by addressing a set of specific research objectives. This chapter details the methods employed to complete the aforementioned objectives.

3.1 Objective 1: Cataloging and Quantifying Research of the Reengineering Process Team

The USPTO chartered a group of employees, called the Reengineering Process Team (RPT), to collect data and opinions on any possible future changes or adjustments to the current patent examination protocol. Our group's first task was to catalog and analyze the RPT's preliminary data in attempt to identify viable solutions to improving the patent process with the intention of helping to focus their future efforts.

Upon arrival at the USPTO, our group received various amounts of data valuable to our project. The data we received were formatted as: spreadsheets, digital documents, meeting minutes, presentations, and legal documents. Reading and documenting this data set became a valuable step in our process of analyzing all relevant material. The specific data types documented and analyzed are discussed in the following sections.

3.1.1 Open House Data

Throughout June, July, and August of 2010, the Reengineering Process Team held a continuous open house to aid in determining areas in which the USPTO could improve. USPTO employees could write personal suggestions on large flip-charts set up within the office. While these flip-charts were set up in public settings, such as the pantry of each floor, there was no direct observation done by the RPT. Anything written on these flip charts was then documented in an Excel spreadsheet. This spreadsheet was packaged and provided to our team for analysis.

We categorized each suggestion into one of seven categories relative to the patent process: pre-examination procedures, examination process, post-examination, information technology and software tools, office relations and human interactions, training and education programs, as well as a category for any miscellaneous suggestions. Before assigning individual categories to each suggestion, we discussed what we felt the meaning of each category was so that we possessed a common definition for each. A general outline of criteria used to define each category is provided in Table 3 below. The categories were then coded on a spreadsheet according to the format shown in Table 3. This allowed for consistent, reliable sorting of the database entries.

Category	Comments relate to:	Assigned Number
Pre-Examination	Any actions taken by applicants or the USPTO before an application reaches a patent examiners desk	1
Examination	Any actions taken by a patent examiner or the USPTO to review a patent application's validity	2
Post-Examination	Any actions taken by the USPTO after a patent examiner has completed his/her evaluation of a patent application	3
Tools	Software, programs, or media used by the USPTO in daily operations	4
Office Relations	Interactions between employees of the USPTO between other employees or applicants	5
Training	Methods used to train employees in the procedures of the USPTO	6
Others	Miscellaneous comments that do not relate to previous categories	7

Table 3: Table describing the criteria used by our team to categorize different open house responses into seven main categories.

We assigned a category to each database entry according to the following procedure. First, we split the list of suggestions into thirds, and each team member taking a section, assigned each individual suggestion to one of the numbered categories shown in Table 3. After completing our assigned section, we exchanged sections and completed a secondary review. In this secondary review, each team member evaluated the categories assigned to each suggestion and either agreed with the assigned value or reassigned that suggestion to a different category. A screenshot of this spreadsheet is provided in Figure 4 below, containing the original suggestion and both reviews by our team.

1	Comment	Type	First Review	Second Review
2	Printer Rushes: rather than pressure and direction to get completed; take count away until it's corrected	Pubs	3	3
3	Eliminate 312 amendments	Pubs	3	6
4	At least 18 people work on Certificate of Corrections Another 20 doing them (Contractors) 550 Certificate of Corrections per week.	Pubs	3	3
5	90 days between allowance & Fee payment	Pubs	1	1
6	Issue fee not paid, case is abandoned. Small fee revives; make revival fee larger to discourage this practice.	Pubs	3	3
7	Have option for "original" patent printed for each inventor (fee). Currently certifications issues certified copy. (was a John Doll pilot)	Pubs	3	3
8	Returned grants: addresses no longer valid	Pubs	3	3
9	Drawings, formalities up front: early in process	Pubs	1	1

Figure 4: Screenshot of Open House spreadsheet after first and second reviews by team. Numbers represent categories assigned by our team previously in Table 1.

Second, we compared the two reviews and analyzed whether both reviewers agreed on the categories for each suggestion. We found that we disagreed on which category should be assigned to 20%, or 195 out of 997, of the suggestions. To remedy this problem, we sat down together to discuss and explain why each individual suggestion was categorized the way it was,

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attempting to come to a consensus of which category was appropriate. The category assigned at this final review by the whole group was the final categorization of each suggestion.

Next, our group analyzed the suggestions within each specific category and sorted them within newly defined subcategories. We would define these subcategories based upon the population of one of the seven categories assigned in Table 3. We noted common themes or elements that arose within the data set. The creation of these sub-categories and their scope are discussed in Chapter 4.

3.1.2 Reengineering Process Team Minutes

Our group received access to the Microsoft SharePoint server that stored minutes, or records, of any meetings held over the summer of 2010, by the full Reengineering Process Team. These minutes provided not only the date, time, and location of each meeting, but an overview of things discussed by the group. A brief recap of the team's weekly progress was provided as well as commentary on any presentations held during the meeting.

Our group examined the minutes for each meeting and then extracted potentially useful new ideas and recommendations for further analysis. Having identified the most important focus areas from these open house categorizations our recommendations were crucial in then designing solutions and changes to the current patent process.

3.1.3 Reengineering Data Binder

The largest data set provided to our team was a three-ring binder that contained various documents. Slides from presentations given by the Reengineering Process Team were printed and included in this binder, as well as any synopses of proposed changes to the patent examination process. The binder contained information concerning numerous procedures in the USPTO, specifically regarding the pre-examination, examination and post examination process as well as information on using the prior art search tools developed at the USPTO.

Our group decided that due to the range of materials in this binder, we would use those materials to support any suggestions we made to the RPT, rather than as data on which to base our suggestions. After identifying a general idea to improve upon, our team pulled relevant data from the binder in order to validate and supplement proposed changes.

3.2 Objective 2: Transforming Research Data into Recommendations for the USPTO

After cataloging and interpreting the data provided to our team, we then transformed the research data into a usable form. Our group created various pie charts that used statistical data contained within respective sub-categories of each category. Every suggestion was counted within each sub-category, and tallied within the initial category. Then each sub-category total was graphed in the same medium, providing our group with not only an accurate count of suggestions made, but a relative percentage within each primary category.

Finally, we created a spreadsheet containing all 977 open house entries. The spreadsheet contained two filters used to vary the amount and range of data shown on the screen. The first filter organized suggestions by any of the initial categories defined in Table 3

above. This view allows users to break the larger database down into smaller, yet still general

portions of comments. The subsequent filter, after selecting a primary category, provided the

option to further organize suggestions by sub-category. This type of spreadsheet allows users

to be quite selective in the data they choose to see. The most extreme case allows a user to

narrow the number of suggestions seen from the initial 997 suggestions down to only four

suggestions. In order to micro analyze the previously mentioned outcome the user selects the

Training category, and then the *Tools* sub-category. Figure 5 below shows an example of such a

filtered search.

1	Comment	Category	Sub Class
86	Do a pre-search of the cases before the case goes to the examiner	Examination	Search
97	Internal specific system for searching-can we formalize gentlemen's' agreements (boundaries between classes)	Examination	Search
158	Further in View of statements need to include all prior references in statement of rejection, computer should verify	Examination	Search
172	Only search 1 or 2 independent claims?	Examination	Search
178	Search: Get all foreign searches	Examination	Search
185	Put foreign and NPL documents in	Examination	Search
192	Want family information on foreign (or all) citations	Examination	Search
193	Want dynamic updates of cited documents	Examination	Search
195	Change searching, examiner search "pieces" their area of expertise	Examination	Search
208	Get rid of culture that search tool/word search makes up for lack of classification knowledge	Examination	Search
213	Classification and search are not different, don't develop them apart from each other not "either/or"	Examination	Search

Figure 5: Screenshot of Open House spreadsheet showing the Initial Category

(Examination) and the filtered Sub-Category (Search). Comments shown are only a

portion of suggestions shown in the full spreadsheet.

We provided this organized spreadsheet document to the Reengineering Process Team at the conclusion of this project. Our group believes that the comments it contains may hold the key to making beneficial recommendations in future reengineering efforts at the USPTO. The multitude of suggestions within the open house document made analyzing each individual suggestion on its own unrealistic. However, the data provided by our spreadsheet can be used for years to come, whether as reference material or a starting point for new procedures in the USPTO.

3.2.1 Formulation of Recommendations

Once our team identified the most commonly reported sub-categories within the open house data, we then started the process of making recommendations for the USPTO to follow in order to alleviate the issues brought up by the suggestions our team categorized. By restricting the analysis to three sub-categories, our team was able to reveal the crucial problems within each main category (as defined in Table 3). Assessing the most important elements to fix allowed us to efficiently present our findings and provide a platform for recommendations.

Our team then reviewed not only open house suggestions, but previous RPT data, with the focus on a particular sub-category each time. By searching for new material relating to the theme of the sub-category, our team combined new findings and previous data to construct relevant recommendations to improve procedures relating to each specific sub-category. Summaries of our team's findings are presented in Chapters 4 and 5.

When a member of our team found pertinent ideas in the data described in section 3.1 they would write a paragraph summarizing their findings for analysis by the rest of the team. Team members would peer-edit this paragraph and use it to formulate a final recommendation. Each sub-category in our open house spreadsheet was re-evaluated, with suggestions our team deemed unique and relevant extracted. These suggestions were used as the background support for the recommendations found in Chapter 5.

Our team formulated various recommendations for use by the RPT from our personal knowledge and experience gained during our stay at the USPTO. Our group attended a streamlined version of a class offered in the Patent Training Academy, providing us with significant background on the procedures used at the USPTO. This class, combined with the insight we gathered from talking with superiors and employees in the USPTO, lead to the creation of recommendations that were comprised of our own personal thoughts.

3.3 Objective 3: Identification and Analysis of Human Error within the Patent Office

One important but amorphous variable in the patent process concerns human interaction. Information is often exchanged verbally between employees which develops their knowledge of the patent process. Unfortunately, it is difficult, if not impossible, to record these information exchanges. The lack of data regarding social interactions hinders the ability of the RPT to identify any deficiencies in this area. Lack of statistical data on a specific topic causes unacknowledged disruptions in the social culture of the Patent Office to occur. To achieve our third objective, we interviewed current employees in the USPTO to gain insight into some of these social exchanges.

3.3.1 Interviewing USPTO Employees

To obtain personal opinions and ideas regarding the patent review process, our group interviewed particular groups of employees within the USPTO. The sixteen employees we interviewed first were from the Review Quality Assurance Specialists (RQAS) department. These employees are in charge of reviewing randomly selected applications and analyzing whether the application was processed in a satisfactory manner. RQAS staff members determine if proper procedures are followed during examination, and then return the application to the examiner for correction if any errors were found. These employees provided a unique point of view to our team, because they identify when a patent examiner has not followed patent examining procedure.

Our group felt that the results obtained through these interviews would allow us to draw conclusions similar to those received from patent examiners. All RQAS staff members held an examining position at one time in their careers, allowing them to provide such insight. We conducted all RQAS interviews using the interview protocol as defined in Appendix A.

After gathering opinions of RQAS staff members, our group hoped to interview available patent examiners. This task proved more difficult than expected, based off the USPTO's use of 'other time'. 'Other time', as defined by the USPTO, are hours each week that patent examiners are allotted to spend doing work-related activities that do not affect their productivity numbers. For example, when a patent examiner attends a training session, the USPTO provides 'other time' for that event. Although the employee is not actively examining a patent they are partaking in activities that enhance their capability to work. Our group was informed upon

arriving to the USPTO that we were unable to provide 'other time' to patent examiners, thus

diminishing our chances of talking with any of them.

Despite these complications, our group interviewed 7 junior patent examiners and one

primary patent examiner. These examiners were identified by other employees in the office as

people who would be willing to talk to our group without being granted 'other time'. Even

though our team worked with a small sample size, we felt these interviews provided ideas and

responses specific to employees who examine patents daily. The RQAS staff possessed a firm

grasp on patent examining procedures, but their experience in patent examining was from

previous years spent as patent examiners. Current patent examiners were able to provide us

with greater detail about technicalities in the current process, because they are still involved

directly in the patent examining process. Our interviews analyzed the patent examiner's

communication, asking them to rank the amount and quality of their daily interactions with

other employees and supervisors in the office. All patent examiner interviews followed the

interview protocol defined in Appendix B.

We were also able to interview an instructor in the Patent Training Academy. Although

we were only able to interview one, the knowledge we gained was valuable. This instructor

worked with the USPTO for over 20 years and has experience working in almost every

department. Our team inquired about his/her opinions about the current Patent Training

Program as well as provided us a better understanding of how examiners are trained. This

information helped us to understand the goal of the Patent Training Academy and why they

currently work the way they do to provide a comparison between the opinions of the trainers

and their students.

3.3.2 The USPTO Hoteling Program

One social problem identified as a possible area of concern is the way the Hoteling, or teleworking, Program operates at the USPTO and how it affects the business atmosphere in the office. Currently, employees who telecommute for the USPTO, and reside further than 50 miles away, are required to come into their respective offices at least twice a month. However, most employees opt to come into the office once a month for two consecutive days, usually a Saturday and Sunday (J. J. Swann, personal communication, 2010). While the long-distance employees may be in the office on a weekend, local employees tend to work a standard Monday-Friday schedule. As a result, these two groups of employees rarely or never interact or communicate directly with each other. Employees participating in the Hoteling Program share the same productivity as employees working on-campus but lack the social interactions that a local employee has every day.

In order to address these issues, we included questions regarding interactions with employees involved in the Hoteling Program in our interview with RQAS staff and with patent examiners. Many RQAS members telecommute for the major portion of their week, while patent examiners interact with both on campus employees and telecommuters when necessary.

Before we interviewed employees participating in both the Hoteling Program and employees in quality assurance, we contacted each to see if they would prefer to meet in person or perform the interview over the telephone. Some RQAS employees who telecommute felt that our group would observe the difficulties of communicating with employees outside the office if we were to speak with them only by phone.

We felt that these employees possessed valuable information regarding the social dynamic between employees who are physically in the office and those employees who work from home. Our goal was to explore their ideas about how the Hoteling Program might ideally operate. To accomplish this, we asked questions relating to their experience as telecommuters, their interpersonal interactions within the office, and the equipment and tools available to them.

3.4 Synthesis of Methods

Overall, our goal was to analyze and quantify the data gathered by the Patent Process Reengineering team. During this process we evaluated ideas on how to improve the current patent process, and to determine which ideas were most feasible and valuable. We then assessed the current USPTO Hoteling Program and held interviews to determine employees' view on the program. After collecting this data, our group then analyzed the information gained in order to effectively formulate recommendations for the USPTO to use.

4.0 Results and Analysis

Our group's goal was to assist the current efforts of the Reengineering Process Team to streamline the patent review process to reduce the current patent backlog. The following section describes the data our team researched and the inferences we were able to make from our analyses of those data. The patent process reengineering data we analyzed was a product of open house data, RPT meeting minutes, USPTO internal statistics, as well as interviews with patent examiners, quality review staff, and a Patent Training Academy Instructor. Along with providing crucial information relating to reengineering processes, these sources also helped us to obtain data pertaining to the Hoteling Program, USPTO's teleworking pilot.

4.1 Objective 1: Cataloging and Quantifying Research of the Reengineering Process Team

As described in our methodology section, the USPTO received suggestions and comments from current employees as a result of an Open House held over a two month period in the summer of 2010. These responses were recorded and packaged into a spreadsheet for our team. The open house data that we obtained provided us with an abundance of information to catalog. With 977 independent entries, suggestions covered broad categories ranging from office culture to process flow. This depth of subject matter allowed our team to cover many portions of the patent examination process. As noted in Chapter 3, we partitioned each entry into one of seven categories to define the scope of each suggestion or comment. Below, in Figure 6, the statistical breakdown by category is shown. In the following sections, each category is discussed in more detail.
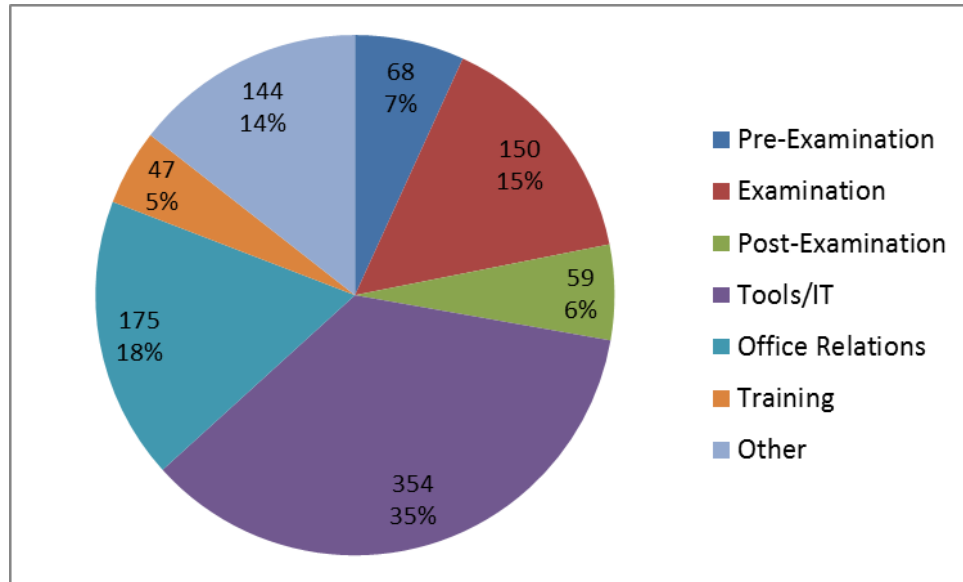
Figure 6: Categorization of Open House suggestions (n=997). Each segment represents a category and shows the number of suggestions placed in that field along with the total percentage each category represents.

The percentages shown in Figure 6 allowed our team to analyze which parts of the USPTO need the most improvement, as reported by open house correspondents. The Tools/IT category received 35% of all comments made, making it the most reported of all seven categories. Other substantial categories were Office Relations (18% of responses), Examination procedures (15% of responses), and Other (14% of responses).

4.1.1 Category 1: Pre-Examination

The first category examined by our group was pre-examination procedures. This specific category deals with application formalities and a case's initial classification before reaching a

patent examiner's docket. We calculated that 7% of all of the suggestions received were placed into this category.

Within the pre-examination category, we identified five themes that addressed the different procedures a patent application undergoes before it physically reaches an examiner. These sub-categories include the classification and transfer of applications, the procedure in which an application is prepared for an examiners review, fees associated with patent applications, and a category covering any miscellaneous suggestions. Figure 7 below illustrates the sub-categories created for Pre-Examination procedures and the number of suggestions that were placed into each.
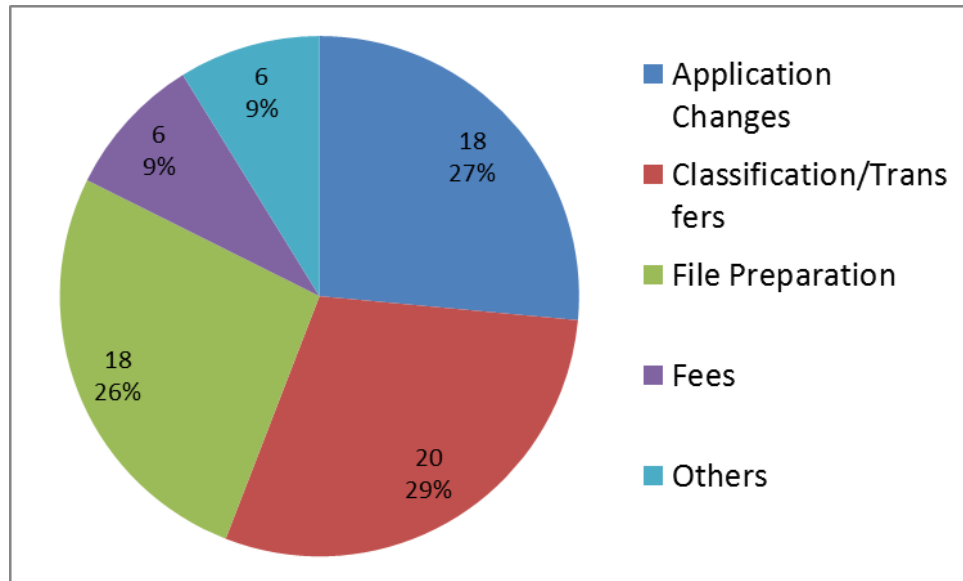
Figure 7: Categorization of suggestions placed into the Pre-Examination Category (n=68).

As shown in Figure 7, classification, application changes and file preparation are the most commonly reported issues. 29% of responses were placed in the classification sub-category, 27% of responses were placed in the sub-category regarding changes to the patent

application, and 26% of responses dealt with the preparation of applications for use by patent examiners.

4.1.2 Category 2: Examination

The next categorization covered relates to suggestions about the actual patent examination process. When categorizing the suggestions found in the open house data we found that 15% of entries were filed into the examination category.

We identified five sub-categories within the Examination category, including the transferring of applications, the classification of existing patent applications within each Art Unit, the processes regarding prior art search, and the defined steps or processes that an examiner must follow to complete their job requirements. Any comments that did not fit into those four categories were placed in a miscellaneous group. Figure 8 below illustrates the sub-categories created for examination procedures and the number of suggestions that were placed into each.

Figure 8: Categorization of suggestions placed into the Examination Category (n=150).

Our results suggest that classification and process issues were the most common topic in this category. The classification sub-category made up 34% of the suggestions we received, and suggestions regarding examination processes made up 32% of responses. The third most reported sub-category was 'Other' with 14% of the responses placed into it.

4.1.3 Category 3: Post-Examination

This category pertains to comments and suggestions based on the post-examination process. Post-examination procedures cover tasks such as the final printing of an application, quality assurance reviews, and communications regarding denied patent applications. We identified five sub-categories within the Post-Examination category, including appeals made by the applicant after a denial is issued from the office, amendments and petitions made to a patent application while it is still under review, fees associated with post-examination procedures, quality review and re-examination of patent applications, and a category to cover any miscellaneous suggestions. Figure 9 below illustrates the sub-categories created for Post-Examination procedures and the number of suggestions that were placed into each.

Figure 9: Categorization of suggestions placed into the Post-Examination Category (n=58).

As shown in Figure 9, review and reexamination, miscellaneous comments, and amendments are the most commonly reported issues. 27% of responses were placed in the review and reexamination sub-category, 25% of the responses were placed in the sub-category regarding miscellaneous suggestions, and 23% of responses dealt with the handling of amendments and petitions.

4.1.4 Category 4: IT and Tools

The next category covered in our analysis was those suggestions relating to Information Technology (IT) and Tools. This category discusses problems relating to computer issues, connectivity problems and the need for new applications. We found that 35% of all entries received were filtered into this category.

We identified seven sub-categories within the Tools and Information Technology data set. This category contained the most responses from the open house, for that reason our team deemed it necessary to create more sub-categories than were allotted previously. These sub-categories included changes that should be made to the EAST (Examiner's Automated Search Tool) and WEST (Web Enabled Search Tool) programs, eDan (Electronic Desktop Application Navigator) and OACS (Office Action Correspondent System) applications, IFW (Image File Wrapper)/PFW (Patent File Wrapper) software, suggestions pertaining to the PALM (Patent Application Location and Monitoring) software. In addition, we categorized requests for either new features in existing software or new software altogether, improvements that can be made to current equipment and a category to cover any miscellaneous suggestions. Figure 10 below illustrates the sub-categories created for the Tools and IT category and the number of suggestions that were placed into each.
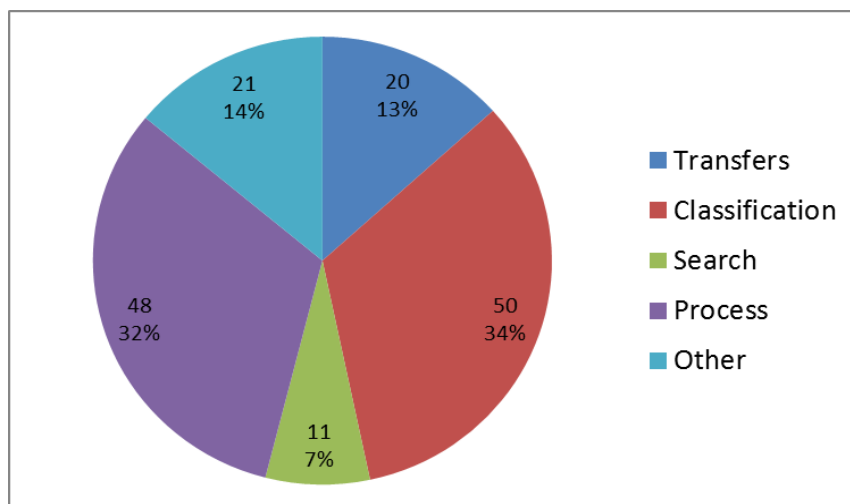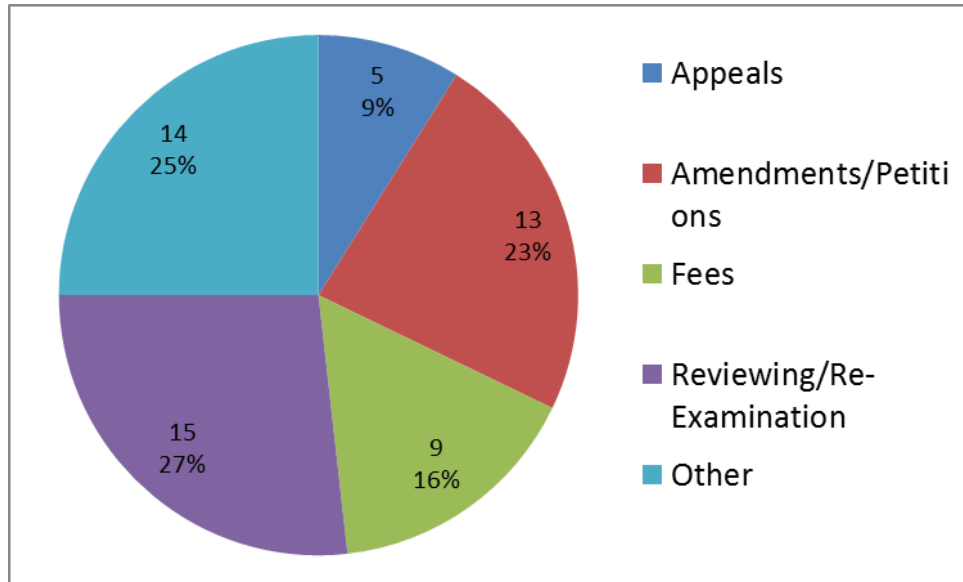

Figure 10: Categorization of suggestions placed into the Tools/IT Category (n=354).

Figure 10 shows that the 40% of comments received asked for new features or programs. A common response that we received requested the unification of all the systems into one single application, providing one common program where all tasks can be completed simultaneously.

4.1.5 Category 5: Office Relations

This category pertains to suggestions based on office interactions that occur within the USPTO, and was one of the largest of all response categories, including 18% of all comments. Since this category does not encompass specific procedures involved in the patent process but rather the effects office culture may have on performance, some of our most unique responses come from this category.

We identified six sub-categories within the Office Relations data set including teleworking and Hoteling in the USPTO, communication or contacting management figures or supervisors, contacting junior examiners or new employees, tools provided to help communication within the office, the volume of communication and questions asked in the office, and a category to cover any miscellaneous suggestions. Figure 11 below illustrates the sub-categories created for the Office Relations category and the number of suggestions that were placed into each.
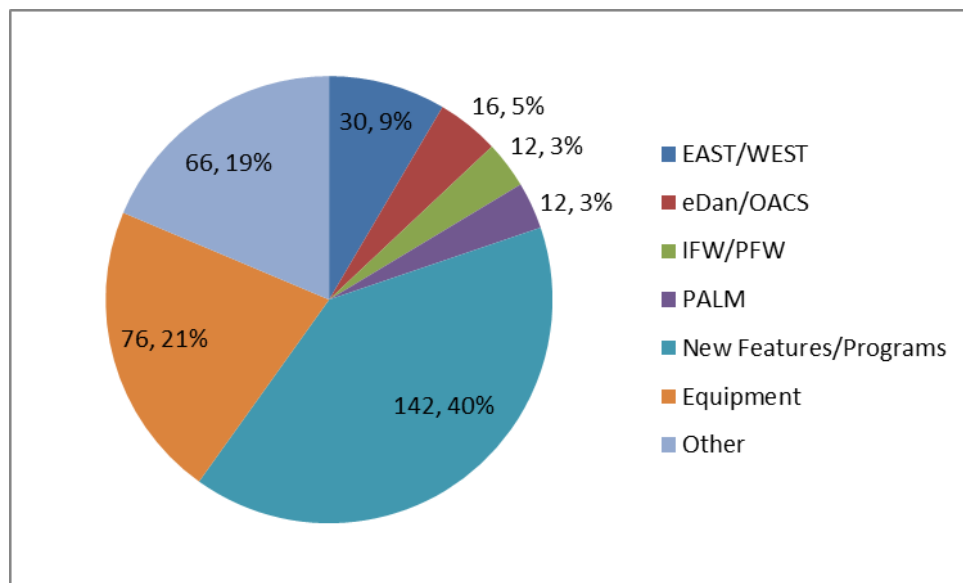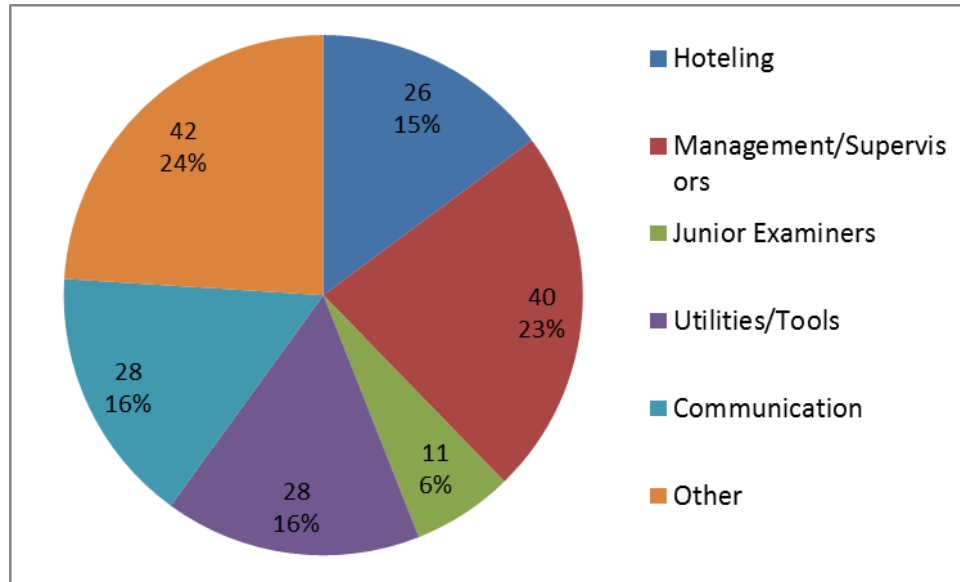
Figure 11: Categorization of suggestions placed into the Office Relations Category (n=175).

The office relations data exposed a wide variety of issues brought up by open house participants. At first glance, it appears that many of the categories have evenly distributed percentages. Our group found this to be quite beneficial, because it highlights a broader problem. Social communication issues at the USPTO are widespread, and without taking steps to correct and mitigate their effects, they will continue to plague the system and prevent the positive impacts that improvements in other categories may be able to make.

4.1.6 Category 6: Training

This section will discuss results acquired that fit under the category of training provided by the USPTO to its employees. Numerous different and distinct suggestions focusing on interpretation of office policy and issues with classification were placed into this category. Out

of all of the responses processed, five percent were regarding training and any associated

issues.

We identified five sub-categories within the data set including training provided to

management positions, training provided covering the use of different tools used in the office,

the effectiveness of the Patent Training Academy, training provided to enforce proper

adherence to patent examination procedures, and a category to cover any miscellaneous

suggestions. Figure 12 below illustrates the sub-categories created for the Office Relations

category and the number of suggestions that were placed into each.
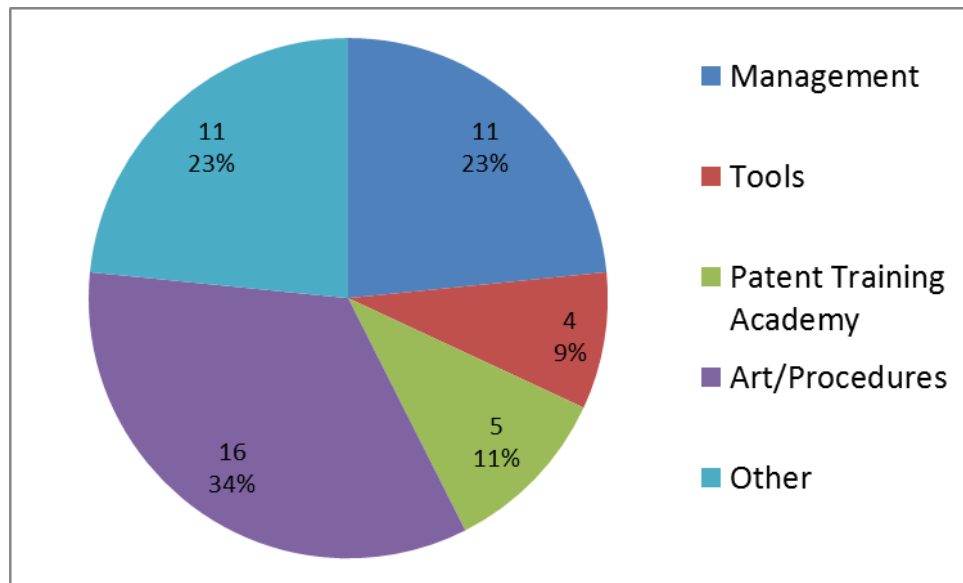
Figure 12: Categorization of suggestions placed into the Training Category (n=47).

Figure 12 shows many participants (34%) voiced their concerns about not being properly

trained in the procedures used to examine patents. Two other popular sub-categories regarded

the training of supervisory employees (23%) and miscellaneous comments (23%). Despite the

fact that the training classification exists as the smallest percentage of responses, we still

believe that it provides our group with many useful suggestions.

4.1.7 Category 7: Other

The comments in this section cannot be categorized systematically, but the lack of sub-

classification does not denote a string of arbitrary responses. Our team determined that these

suggestions should be analyzed on an independent basis. Through further investigation, we

were able to identify that the responses provided valid suggestions for our team to consider.

For instance, some of the suggestions we found in this category pertained to improving the

Manual of Patent Examination and Procedures (MPEP), the "handbook" for examiners. Another

useful comment asked whether there was a centralized location for information relating to the

patent review process, which underlines a need to improve the awareness of employees

looking to educate themselves further about the review process. Further recommendations can

be seen in Chapter 5.

4.2 Objective 2: Transforming Research Data into Recommendations for the USPTO

As part of our research, we were presented with meeting minutes and notes that the

Reengineering Process Team (RPT) team compiled over the course of their summer and fall

meetings in 2010. In these notes, team members explicitly detailed numerous suggestions and

initiatives that developed as they progressed through their work. Our group focused on the

three largest sub-categories within each category when finding support for recommendations.

These sub-categories are presented in Table 4 below.

Category	Most Reported Subcategories
Pre-Examination	• Preparation of a file before an examiner receives it • Changes to the current examination • Miscellaneous comments
Examination	• Classification of cases in an Art Unit • Changes to examination processes • Protocol for transferring applications
Post-Examination	• Quality Review and reexamination procedures • Miscellaneous comments • Amendments and petitions to existing cases
Tools/IT	• New features within existing programs and new programs • Current IT equipment in the office • Miscellaneous comments
Office Relations	• Communication between employees in the office • Availability of managers/supervisors and communication tools available to employees • Miscellaneous comments
Training	• Training concerning prior art and reviewing procedures • Training current mangers • Miscellaneous comments

Table 4: Table presenting the three most reported sub-categories, as defined by our open house analysis, within each of the seven main categories defined in Table 3.

4.3 Objective 3: Identification and Analysis of Human Error within the Patent Office

Our team hoped to alleviate concerns regarding social issues in the USPTO by obtaining responses from employees in the office. For this reason, the results received in this objective exist as data obtained from numerous interviews conducted at the USPTO. We felt that numbers and statistics would not be as effective as personal opinions in identifying human errors in the USPTO. Summaries of interviews with employees belonging to three different departments (Quality Review, Patent Examining, and Patent Training) are summarized in the following sections.

4.3.1 RQAS Interviews

We interviewed 16 Review Quality Assurance Specialist (RQAS) staff members to gather their insight on the current state of social interactions and business procedures within the USPTO. Because these employees were patent examiners earlier in their careers, we also sought any ideas they possessed regarding the patent examination process. Below, we summarize the answers to these main topics, and Appendix C includes detailed responses for the complete set of interview questions.

The experience of these RQAS employees ranged from 8 years at the USPTO to close to 30 years, with an average of 21 years of employment. The Examiner Hoteling Program was introduced in 2007, meaning that those interviewed worked for the agency before and after the program's implementation. Consequently, they were able to provide insight concerning the changes that the USPTO has undergone since the introduction of hoteling.

Employees working from home have many tools available to them in order to facilitate communications with other employees. These tools range from web cameras and voice communication software to having the ability to forward work calls to an individual's personal phone. When asking RQAS members to rate the effectiveness of these tools from the lowest rating of 1 to the highest rating of 5, 75% (12 out of 16) of them responded with a value of 1 (mean=1.70, range=1-5). They replied that they simply do not like using the webcam, and the current software does not integrate web chatting efficiently. Until the ease of use of the webcams is improved, these employees do not see themselves or others using this technology at all in the near future.

When asked for their thoughts on the current Hoteling program at the USPTO, we received very positive responses. The ability to work from home positively impacts employees' lives in a way that is not easily quantifiable. They expressed that an employee who belongs to the Hoteling Program can often times achieve and surpass the productivity of an employee working within the office.

As new examiners are trained and brought into the USPTO, they may find that fewer senior level examiners physically work in the office building in Alexandria, VA. This causes a social divide, where sometimes in order to ask questions, junior examiners must seek help by contacting someone working from home that they may have never met before. Many (9 out of 16) interviewees felt that less experienced examiners were not inclined to contact an examiner who belongs to the Hoteling Program for assistance or clarifications. However, all interviewees expressed that they felt comfortable communicating with junior examiners while working from home.

In order to become a part of the quality review staff, an employee must start off as a patent examiner. Our team asked questions regarding patent examination procedures to the RQAS members whom we interviewed, requesting that they draw upon their own personal experience as patent examiners to answer our questions.

When we asked the interviewees to identify a particular process that may take too long, our group received diverse answers. For these RQAS employees, the procedures and tools available to examiners now were not available to them when they were examining patents in previous years. They cautioned our team that any complaints they provide to us are quite outdated and irrelevant to the patent examination process of today. This also affected the responses we received when questioning what procedures seemed to be relatively easy when patent examining. Our group reiterated these same questions when interviewing patent examiners, to receive more accurate responses.

4.3.2 Patent Examiner Interviews

Our group interviewed 8 patent examiners; 7 junior and 1 primary. We inquired how many years each worked in the USPTO and to what Technology Center each was assigned. We were able to interview mostly new examiners who possessed little experience at the USPTO but were fortunate enough to interview a primary examiner who has worked for the USPTO for 27 years. Therefore, we gathered that of the examiners whom we interviewed, 7 out of 8 possessed less than five years of experience (mean=2.75 years, range=2-3). Out of the examiners we interviewed, 7 out of 8 belonged to the same Technology Center, while the final interviewee belonged to a different Technology Center. As stated in Chapter 3, our group was

able to interview examiners that we were personally introduced to, and examiners tend to be most familiar with employees within their assigned Technology Center.

The next question we asked was how many hours on average an examiner spends speaking to their supervisors on the phone. After interviewing the first few examiners we found that a common pattern formed; examiners rarely spoke to their supervisors on the phone. Examiners indicated that they preferred communicating with their superiors face to face. We found this interesting because when interviewing the RQAS they mentioned that they most preferred speaking to examiners through e-mail. This conflict in preference shows that while inexperienced examiners prefer face to face communications, RQAS staff prefers the speed and flexibility of e-mail. In fact, of the examiners whom we interviewed, all seven claimed that they spoke to management on the phone less than two hours a week. When asked how often the examiners spoke to management face to face, many said that the frequency of contact varied depending on whether it was a "count week" (when patent applications are signed by upper management for approval) or not, but two said that they spoke to their management up to ten hours a week.

We then asked the examiners to rank the volume of communication between themselves and their fellow employees on a scale from 1-5, where 1 indicated not enough communication and 5 indicated a proficient amount of communication. We found that 4 out of 8 ranked their communication a 2, and the four other examiners rated their volume of communication a 1, 3, 4 or 5 (mean=2.86).

The examiners were then asked to rank how effectively they felt the videoconferencing equipment was used by employees on a scale of 1-5, where 1 indicated no effective usage and

5 indicated ample use of the equipment. The response that we received were consistent, with 7 out of 8 employees rating the usage a 1 and just one assigning a rating of 2 (mean=1.13).

We then asked the examiners how the videoconferencing equipment could be better used. We found that many felt that it would be useful when speaking with employees who belonged to the Hoteling Program. One employee also mentioned that it could possibly be used to converse with applicants.

The examiners were then asked about their opinion on the Hoteling Program, which is an option for patent examiners of a Grade Scale of 12 or higher to work from home daily. Half of the examiners said that they felt the program was a positive one, but that they would not partake because they would miss the face-to-face contact with employees and the ability it provides to receive immediate feedback in the office. Two employees also felt that the program was beneficial for both employees and the USPTO, but felt that the required Grade Scale to participate should be lowered, thus allowing patent examiners who are enthusiastic about the program to participate in it earlier than is currently allowed. One employee expressed that the Hoteling Program may cause lack of communications, especially if in the future the organization is purely made up of telecommuting employees.

We then asked the interviewees if they felt that an employee not working in the physical office was beneficial or detrimental. Some examiners felt that as long as the employee was available for contact then it would be beneficial. Other employees felt that they could not make a decision because it depended on the employee. Some employees may be more proficient than others at maintaining quality and efficiency while telecommuting. Many participants in our interviews stated that telecommuting requires an enormous amount of self-

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discipline and familiarity with technology; our group feels that not all examiners in the USPTO are ideal candidates for the Hoteling Program as a result.

Next, we questioned examiners about their opinions on whether less experienced examiners were inclined to contact a telecommuter working from home for clarification or assistance. We found that 6 of the 8 examiners that we interviewed stated that an examiner would be inclined to contact a hoteling employee for assistance. The interviewees also mentioned that if an employee was trying to contact an employee working in the Hoteling program, contact by e-mail would be best because telecommuting employees are required to reply within 24 hours, whereas there is no required time frame for an employee working from home to return voicemails or phone calls.

Next, we aimed to learn more about the Patent Training Academy (PTA) and how prepared the examiners felt they were when leaving the PTA. We observed 6 of 8 examiners whom we interviewed felt that they were not adequately prepared when they left the Patent Examiner Introductory Program; while the other two examiners felt that they were adequately prepared. It was also brought to our attention that many examiners have no background experience in their particular art unit; this requires examiners to learn the material while they are examining.

The examiners were next asked what component of the examination process they feel is most time-consuming. The majority of responses (7 of 8) was that searching for prior art in order to find and understand literature that may discredit the claims of a current patent application took the most amount of time. The only examiner who felt that searching did not

take the most time indicated that understanding the specifications took the most time for them to complete when examining a patent.

The next question that we asked was what component of the examination process is least time-consuming. Unlike the previous question, each employee interviewed formulated a different opinion on what took them the least time when examining. One examiner felt that checking the validity of the patent took the least time, while another felt that writing took them the least amount of time. The other answers touched upon consulting other employees for help with searching for prior art, checking the specifications defined by the application, reading the application entirely, and working on the dependent claims, or claims that branch off of independent claims previously described in the application.

The final, and perhaps most helpful, question that we asked the examiners was an open-ended question that allowed the employees to speak freely about any concerns, comments or suggestions that they would like to voice. One interviewee felt that there was nothing more to voice, but the other employees all provided suggestions pertaining to how the USPTO could function more efficiently. We received quite a few concerns about a lack of consistency in terms of expectations from supervisors. A suggestion that we found interesting was that some examiners mentioned that they did not have a primary examiner to work with and were forced to contact their Supervisory Patent Examiner for guidance.

4.3.2 Patent Training Academy Professor Interview

We began our interview with the instructor in the Patent Training Academy (PTA) by asking the length of their involvement in the USPTO. This particular employee spent 23 years

working in many areas of the patent office. We learned that instructors spend around eighty

hours in the office each bi-week. We learned that the training program is not intended to train

examiners to the point where they will know how to complete every task of their job perfectly.

This instructor also mentioned that there are some aspects of examination that cannot be

included in training programs at the PTA because they can only be learned with experience.

We then asked the instructor whether he/she felt that junior examiners would be

inclined to contact an employee who participated in the Hoteling program for assistance or

clarification. We learned that it would most likely depend on the instructor that examiner

received at the PTA. The instructor mentioned that they always encourage examiners to

contact employees who belong to the Hoteling or telecommuting program for guidance,

because in some cases the only employees to contact for guidance may be away from the

office. For this reason, examiners need to become comfortable with speaking to unfamiliar

employees by email or telephone from the beginning. We were curious whether the PTA

instructor whom we interviewed felt comfortable speaking to less experienced examiners on

the phone. We received an interesting response to this question; we learned that this

particular employee was comfortable speaking to less experienced examiners on the phone,

but that some more senior telecommuting employees may not be. We were told that signatory

examiners would leave the office to work from home when they needed to finish a large

amount of work. They did this because employees would come into their office to ask

questions constantly, but our interviewee felt that junior examiners would be less inclined to

call an employee for assistance, causing the struggling junior examiner to search elsewhere to

find an answer to their question.

4.4 Synthesis of Results and Analysis

The goal of this chapter was to provide the results and analysis obtained by our team when completing each of our three objectives. By cataloging and quantifying the research compiled by the RPT we narrowed the scope of our means into a more manageable size. We transformed the data that we gathered through our research into recommendations for the USPTO, allowing our group to provide the patent office with the relevant suggestions. Finally, by conducting interviews with USPTO employees our team was able to obtain a series of personal opinions, which proved valuable in supplying our group with ideas which we formulated into recommendations.

5.0 Discussions, Recommendations, and Conclusions

The following sections make use of the data presented in our Results and Analysis chapters to provide recommendations to aid the current reengineering efforts of the USPTO. This chapter presents conclusions drawn from our results and findings that will alleviate current problems at the USPTO, and validate their proposed use in daily operations. The data in this chapter ranges from our group's extraction of plausible changes suggested by the Reengineering Process Team (RPT) to personal recommendations formulated by our team based on our own experiences and knowledge.

For expedited review, our team produced Table 5, which provides the section numbers in this report containing specific information regarding our individual recommendations.

Recommendations	Section in Chapter
Application Tagging	5.1.1
Application Drawings	5.1.1
Electronic Application Preparation	5.1.2
Art Experts	5.1.3
Restricting the Number of Claims	5.1.3
Direct Docketing Model	5.2.1
SPE and Examiner Designee Transfers	5.2.1
Two Touch Maximum Transfers	5.2.1
Time Restricted Transfer Requests	5.2.1
Central Transfer Unit	5.2.1
Addition of NPL Databases	5.2.2
Synonyms in Search Queries	5.2.2
MPEP Revisions	5.2.2
Relative Application Assignments	5.2.2
Time Restricted Transfers	5.2.3
Deadline for Amendment Processing	5.3.2
Petition Flag Tracking	5.3.2
Printer Rush Incentives	5.3.3
Art Specific PTA Literature	5.5.1
SPE Authored Training Material	5.5.1

Recommendations (cont)	Section in Chapter
Managerial Leadership Training	5.5.2
Accelerated Signatory Authority	5.5.2
Staggered Case Counts	5.5.2
Reinstatement of PTO University	5.5.3
Reinstatement of Examiner Education Program	5.5.3
Telecommuting Employee Locator	5.6
TC Specific Contact Database	5.6
Hoteling Meet and Greets	5.6
Telecommuting Office Hours	5.6

Table 5: Table designating where to find details on each recommended change formulated by our team in this IQP report.

5.1 Pre-Examination Procedures Discussion

Our team was able to synthesize data extracted from the Reengineering Process Team's work as well as knowledge obtained by our team from background research to identify methods that would improve the quality of the pre-examination phase that a patent application undergoes before reaching the desk of a patent examiner. Below, we identify and discuss the three sub-categories of the patent review process identified most frequently as problematic in the Open House data. First, we identify changes that can be made to the current patent application process, and predict how those changes would improve the process. We then

present our conclusions on how applications should be prepared for review by a patent examiner, in contrast to how they are prepared currently. Finally, we address miscellaneous comments and suggestions relating to pre-examination procedures.

5.1.1 Suggested Changes to the Current Patent Application

Our group feels that many changes should be made to the current patent application forms in order to ease workload of patent examiners and increase timely review of those applications. Currently, when a patent application is received an employee reads the abstract of the invention and the unique factors it claims in order to determine where the patent application should be classified in the office. A recommendation that alleviates some of the issues caused by classification is to allow the patent applicant to provide the USPTO with what they believe to be the category in which their application should fall. These 'key words' or 'tags' would allow employees some preliminary insight into the specific field of the invention when processing a new application. Instead of reading the patent application 'cold', or without any previous knowledge of it, by skimming over the 'tags' provided by the applicant, the employee gains insight into what the application will cover, and focuses more on the specific characteristics of a patent application rather than solely the initial comprehension of the literature.

While the patent applicant may be incorrect with their categorization, our group feels that even a small amount of support for classification employees would be beneficial. The process of adding 'key words' to an application would not be laborious for the applicant, since applicants/their attorneys possess extensive knowledge of the invention already. For USPTO

employees, this change would produce one more section on the application, which would be interpreted swiftly.

Another trouble area reported with patent applications is the format in which drawings, or visual representations of an invention, are submitted. Our team recommends stricter standards and limits on the submission of drawings. We noted numerous complaints in the open house data stating that sometimes applicants' drawings are too small to read and interpret, and the numbers that label specific parts of the drawing are unidentifiable. By implementing a minimum drawing size requirement, this problem may be alleviated. We recommend that patent applicants be required to submit drawings of a certain size, both in the main drawings and font size of part numbers, if they do not comply with this requirement their application will not be reviewed by the patent office. While there may be some transition time where applicants must learn the standards required by the USPTO, uniform drawing formats across all applications will lead to future improvements to software and tools used by the USPTO, such as automatically cross-referencing of numbers in a drawing and the claim in which they appear.

5.1.2 Application Preparation

One current point of frustration examiners face is the receipt of applications and the validity of data entered by the applicant. In order to ensure that both examiners and the tools used interface better with applications, we suggest that the USPTO move to an electronic-only filing (application) system. The internet is accessible to most, if not all potential applicants and attorneys in the United States. To simplify the interface between the electronic application and

the software that examiners use, we recommend that the USPTO modify the procedure by which applications are processed so that data can be easily extracted from the application into the examiner's workspace. This would result in a reduction in time wasted by the examiner filling in forms that a computer could do. An example of the application of this procedure would be to assign the application classification number automatically to the rest of the forms an examiner uses after an initial classification.

Use of only electronic applications would yield remarkable benefits to the USPTO. All correspondence would be conducted via e-mail and internet submissions alleviating issues surrounding delays in paper processing. These delays include accuracy issues brought up when the USPTO performs Optical Character Recognition (OCR) to convert text on paper applications and correspondences into a format which can be recognized electronically. The elimination of paper applications reduces the complexity of the system and allows information to be transferred more easily, accurately, and quickly.

5.1.3 Miscellaneous Recommendations

There are some suggestions created by our team that that cannot be sufficiently categorized within the previous sections in Pre-Examination procedures. Below are recommendations that would positively impact the USPTO in a variety of areas. We recommend that the USPTO develop "art experts" in each art unit that have a thorough understanding of the variety of material that examiners in their unit might see on a day-to-day basis. These staff members possess several years of experience in the process of examining patent applications. They would be tasked with examining a wide variety of applications which constitutes a

thorough comprehension of the art to which they are assigned. As a result, examiners with

questions or lesser experience would be able to communicate with these art experts who could

serve as profession development resource personnel.

Currently, when an inventor applies for a patent he/she can make as many claims as

needed. An applicant is allotted 20 claims free of charge, and any additional claims cost an

additional fee. The more claims an applicant creates, the more protection an applicant receives

from being re-created by a competing inventor. Although more claims can be beneficial, more

than 20 claims are often times unnecessary and many inventors do not use more than 20 claims

on their applications. In a study conducted in October of 2010, the average number of claims

that an applicant uses on an application is 20.4, thus leading our team to believe that allowing

more than 20 claims is generally unnecessary. (personal communication, J. Swann, 2010)

5.2 Examination Procedures

The next category analyzed by our team involved current patent examination

procedures used by the USPTO. Below, we separately discuss the top three sub-categories that

were conveyed in our open house analysis. First, any changes that can be made to the current

application classification proceedings are emphasized. We then present our conclusions on how

to streamline the current patent review process while maintaining quality and increasing speed.

Finally, our team provides new recommendations on how to improve the protocol by which

applications are transferred from employee to employee.

5.2.1 Recommendations to Improve Methods Classification of Cases in an Art Unit

One of the most involved processes in pre-examination is classification. The

classification of a patent encompasses the steps that a patent application undergoes in order to

be sorted into the correct Technology Center and Art Unit for examination. The main factor in

how an application gets classified is the content within the application. Different Technology

Centers deal with different types of inventions, varying from business methods to computer

architecture technology. Figure 13, below, illustrates a flowchart modeling the current

classification procedures followed by the USPTO.
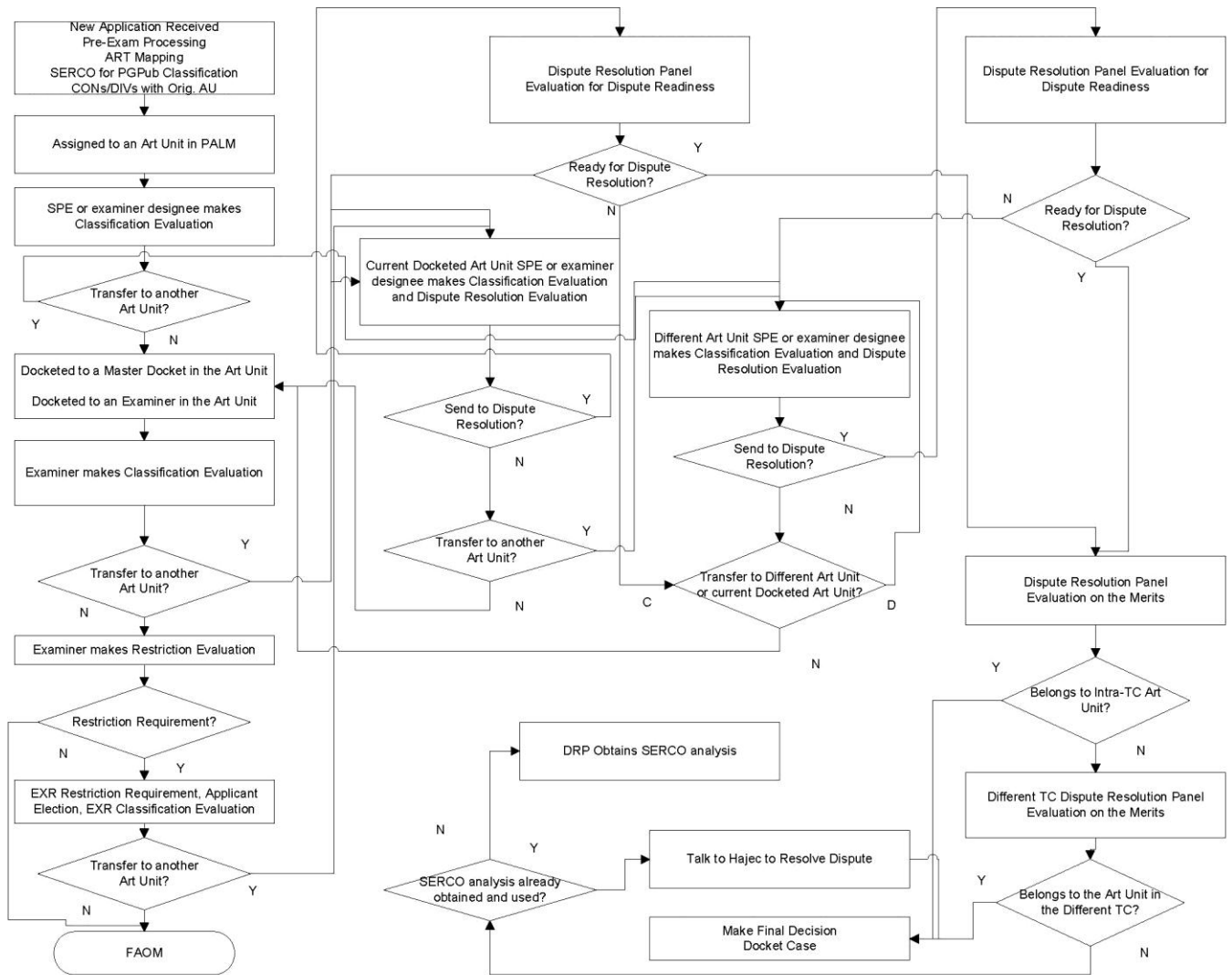
Figure 13: Flowchart illustrating the current steps a patent application undergoes to be classified upon receipt by the office. Many intersecting lines and the plurality of steps may lead to confusion and error when this flowchart is followed.

Graph created from data within Reengineering Team's data binder.

Direct Docketing Model

Our team has five suggestions to improve the current state of the classification system; each suggestion is italicized directly above the paragraph containing information pertaining to it. The first involves changing the methods by which an application is initially docketed. A docket is a patent examiner's specific work load, in which applications are specifically assigned to them based on their Art Unit and Technology Center. We suggest that the USPTO switch to a Direct Docketing Model, in which cases are assigned into a Technology Center based on a classification provided by SERCO, a third party classification contractor. This change will eliminate numerous steps in the classification process, and thus get the physical application in front of a patent examiner quicker than before.

SPE and Examiner Designee Transfers/Two Touch Maximum Transfers

The next recommendation our team makes involves transferring applications after their initial classification. Currently there are few to no rules regarding transfer procedures. We suggest that training be provided to Supervisory Patent Examiners (SPEs) and examiners that are designated to classify cases within their specific Technology Center. Employees should have the option of a refresher training course on the rules of classification and transfer requests. Also, we believe that one way to decrease the time spent transferring an application is to limit the number of touches on an application to a maximum of two before sending it before the Dispute Resolution Panel. A 'touch' is added to an application any time a new Art Unit analyzes the application for classification purposes. Our suggestion is that if two attempts fail to classify an application that the application should be sent directly to the Dispute Resolution Panel. This

differs from the current policy in which an application must have at least three touches recorded before it can go before the Dispute Resolution Panel.

Time Restricted Transfer Requests

One way to increase speed in the classification process is to impose time limits on transfer applications. If a patent application is re-docketed to a new Technology Center and Art Unit, and no one acts upon the transfer request within two weeks of receipt, the USPTO should assume that this is the correct docket in which the application will reside. This prevents applications from sitting unopened in an Art Unit's master docket, because examiners are not sure if that application will be transferred or not in the next few days.

Central Transfer Unit

Another way to decrease the number of steps in the classification process is to create a Central Transfer Unit (CTU). The CTU would handle all transfers within the same Technology Center, saving the Dispute Resolution Panel (DRP) time and effort. The DRP will concentrate more on applications that need to be classified from different Technology Centers. Members selected to work in each CTU should be at the least primary examiners who have worked in at least two art areas within the Technology Center.

If the USPTO were to follow all of our suggestions and recommendations, we believe the current classification process would be greatly streamlined and manageable. Figure 14 below illustrates a flow chart depicting the revised classification process if our recommendations are followed.
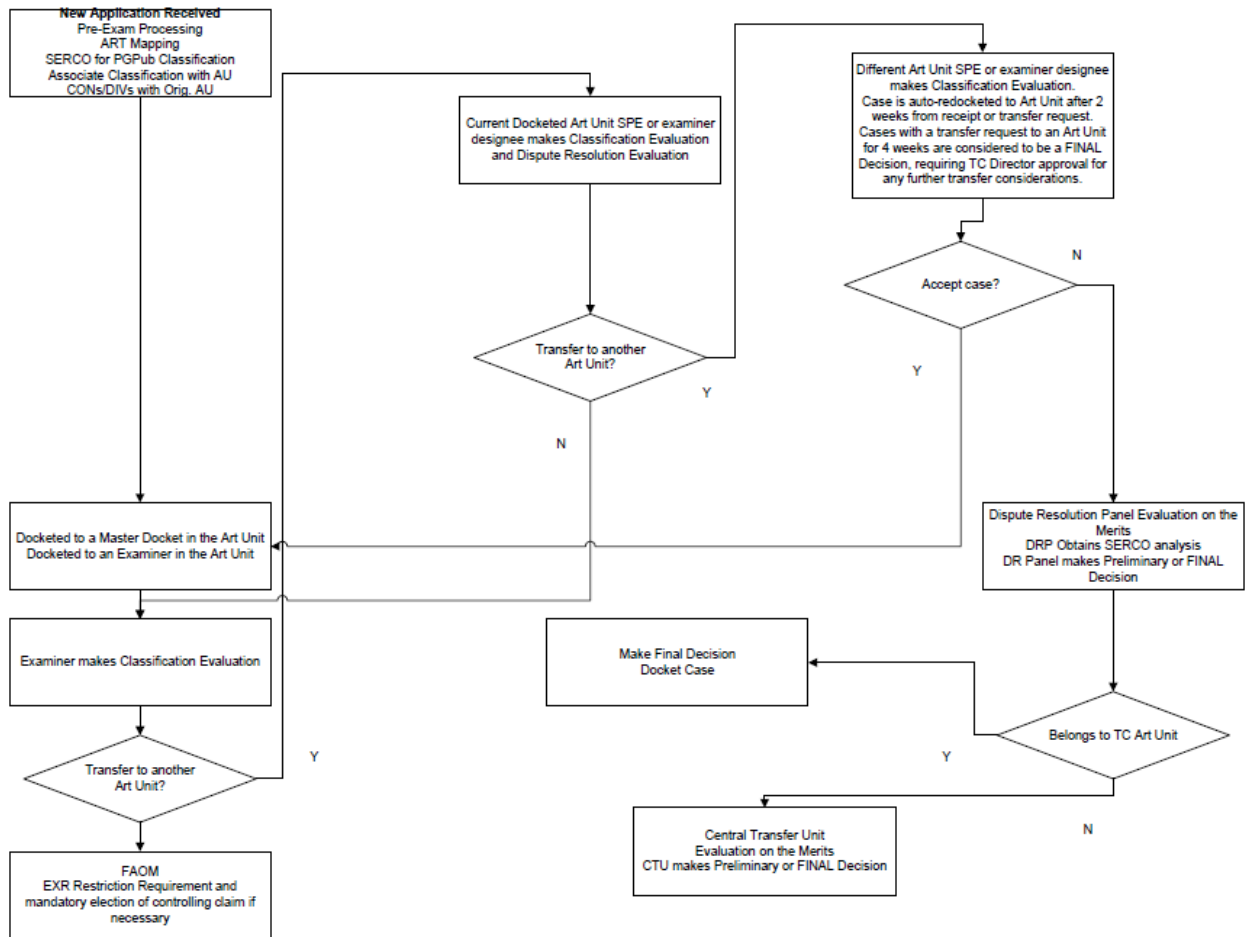
Figure 14: Flowchart of classification procedure in the USPTO after implementing our group and the RPT's suggestions. This classification procedure is more streamlined than the current procedure outlined in Figure 14.

Source: WPI Project Team

5.2.2 Suggested Changes to the Current Patent Examination Process

One of the lengthiest components of patent examination is the search for prior art. A patent examiner must spend a significant amount of time not only searching for previous intellectual documents that would disprove an applicant's claims, but also reading and understanding the prior art found. Copious amounts of prior art exists as of Non-Patent Literature (NPL), which the USPTO does not possess a centralized database of, for use by its employees. Integrating certain NPL databases into the searching capacities of the two most commonly used search software in the USPTO (EAST and WEST) would save both time and effort when searching for prior art. Instead of consulting the internet or another employee to find related NPL, results would be provided to a patent examiner when an initial search in EAST or WEST is conducted.

If the USPTO were to add existing external libraries or integrate existing search methods, such as the Google search engine, National Aeronautics and Space Administration (NASA) databases, and sources from the Institute of Electrical and Electronics Engineers (IEEE), our group believes that the quantity and range of prior art found by an examiner would increase. These NPL databases are valid sources in intellectual property debates, and should be acknowledged and integrated into the USPTO's current operations and training methods. Junior examiners should be informed of these vital sources, in order to facilitate their use in day to day prior art searches.

One process that our group recommends to the USPTO is the use of synonyms in the search process. When examiners are trained to use search tools to search for prior art, they should be instructed to also include similar key words and phrases to their search queries. Patent applicants have the freedom to express their inventions and ideas in whatever terms they

please. Examiners must acknowledge this fact, and be aware that there is more than one way to describe a certain idea. By stressing the use of synonyms in the search process, our group believes the examiner will spend less time searching for prior art and more time comprehending the sources they find, allowing them to move forward with the patent examination.

Another recommendation formulated by our team pertains to the Manual of Patent Examination and Procedure (MPEP). The MPEP is a training manual which contains the rules and guidelines that USPTO employees are required to follow. Currently, the MPEP is outdated and contains information that is either invalid or contradictory. We believe that the most useful suggestions and revisions to the MPEP would come from examiners who consult it on a daily basis. Therefore, we recommend that the USPTO create a monitored e-mail address, where employees can quickly alert the organization of any issues and problems they come across within the MPEP. With this information the USPTO can constantly update the MPEP to increase its validity.

Currently, examiners are not required to complete a designated number of patent applications each bi-week. The only requirement that they need to meet is to have completed their oldest new case and the remainder of the cases can be done at the examiner's discretion. Depending on the examiner's GS level, as long as the required count is met, the actual number of cases the examiner completes is insignificant.

Our group recommends that examiners only be assigned as many patent applications as they are required to meet their required count. This will solve the problem of applications being neglected for long periods of time and should decrease the backlog. The solution for

employees who strive to complete more than their allotted requirement of applications can request additional applications after they have completed their count requirement. This will ensure that employees do not pick easier or more interesting applications to examiner, but rather complete all assigned patent applications.

5.2.3 Improving the Protocol for Transferring Applications

Currently, if an application is incorrectly classified, an examiner may disregard the application in their docket before transferring the application to the appropriate people. To ensure that timely transfers occur, our group recommends that if an application possesses a pending transfer request for more than 15 days, that the application be submitted to be analyzed by the DRP or third party reviewers. Under this system, the amount of time required to transfer a case should never exceed either two transfer requests, or 30 days. The 15 day limit per examiner ensures that an examiner does not disregard a transfer application for 29 days and then complete the transfer to another examiner, only allowing the second examiner a day to complete a second transfer if the application does not apply to them. Our group also recommends that there be a penalty applied if a transfer is not completed within the 15 day allowance. For example, if an examiner takes longer than 15 days to transfer the case to the appropriate party, then they should be docked "other time". Overall, we feel that this system should enable the USPTO to ensure that the delays associated with transfers are mitigated as much as possible, and also ensures that accuracy is maintained in selecting the proper art unit that the case should belong to.

5.3 Post-Examination Procedure

Once a patent application is examined and approved, there are still numerous steps the USPTO must take. This section will discuss the recommendations our team found regarding any procedures taken by the USPTO after patent examination is completed. Below, we separately discuss the top three sub-categories that were conveyed in our open house analysis. First, we suggest changes that can be made to quality review standards and reexamination methods. We then present our conclusions on how amendments and petitions to reviewed patents should be addressed. Finally, any miscellaneous comments and suggestions relating to post-examination procedures are presented and validated.

5.3.1 Quality Review and Reexamination

During the course of our project, the Reengineering Process Team (RPT) held numerous 'report out' sessions. These sessions consisted of a subdivision of the RPT reporting their final conclusions and recommendations for a certain portion of the patent examination process. Our team attended one of these 'report outs' that covered reexamination procedures and how they should be handled in the future by the USPTO. After receiving confirmation from the RPT, we learned the changes suggested in that meeting were the final recommendations the RPT would be implementing regarding reexamination. Therefore, our team did not formulate recommendations for this component of patent review.

5.3.2 Recommendations for the Processing of Amendments to Patent Applications

In order to facilitate better understanding of amendments and petitions in a patent application, we recommend that the USPTO enforce more specific and rigorous guidelines regarding when applicants can amend a patent application. Currently, amendments can be made to patent applications at any time while the USPTO is examining the application. Applicants can change claims, alter drawings, rewrite specifications, and overhaul whatever part(s) of the application they deem necessary.

Drastic amendments to a patent application may require an entirely new application review, complete with prior art search and claim interpretation. Our group suggests the USPTO not accept amendments to patent applications after a final office action is reached. A final office action is when the USPTO either approves a patent application or denies the validity of the invention. Amendments should always be allowed after an office action, or communication with an applicant, is sent out by a patent examiner. These amendments are expected, for applicants are given a chance to change their applications based off of what an examiner deemed incorrect. However, after the office reaches their final decision, our team believes applicants should not be able to file new amendments to the USPTO. Any changes to an application after the USPTO's final office action should be filed as a new, separate application, as to not force examiners to reopen a closed case and redo work that they have already finished.

Petitions are also a significant source of delay at the USPTO. Applicants can file a petition to object to the action(s) of a patent examiner. This can become a problem, especially if the dispute cannot to be settled between the examiner and the applicant. In order to

alleviate the most common problems regarding petitions, we suggest that all petitions be submitted electronically to make tracking of petitions and their current status in a database much easier. When an application becomes the object of a petition, the application is 'flagged' by the USPTO. However, this flag will only state the name of the employee who placed the flag on file. Sometimes an examiner will ignore this warning flag and continue examining the application, since they do not know the nature of the flag on the file. It is important that an examiner investigates why an application is flagged, rather than bypassing the flag. Furthermore, if a petition regarding an office action is currently pending, we recommend that the case be flagged as "under review" and further prosecution of the patent be disallowed until the petition is resolved.

5.3.3 Miscellaneous Recommendations

When a patent application is completed and approved by an examiner, it is sent to the printing staff to be published. In some cases an employee will prematurely send an application to be printed and the printing staff will not be able to complete the patent because there is a problem with the application that needs to be edited. When such a situation arises, a Printer Rush occurs. When a Printer Rush occurs, we recommend that an examiner make the changes required immediately so that the patent can be printed and distributed.

Our group recommends the adoption of incentives which provides a reward of "other time" if a Printer Rush is completed within a week after the examiner receives it. If an examiner takes longer than two weeks to correct the error on the Printer Rush, they will lose a small amount of "other time". This suggestion will benefit inventors, by allowing their nearly finished

application to be printed and finalized quickly. This will also help the USPTO by removing

mostly complete applications from examiner's dockets. Supervisors should spend more time

reviewing their examiners work, in order to help defer Printer Rushes from happening. If the

reviewing supervisor is more thorough, the number of Printer Rushes should visibly diminish

because there will no longer be unnecessary mistakes in the examiners' work after the

supervisor reviews the case.

5.4 Recommendations to Improve Current Information Technology

The category of information technology and tools was the broadest and most reported

topic in the open house that our team encountered in this project. A separate reengineering

team was chartered by the USPTO, the Reengineering Tools Team, to help produce an 'end-to-

end' software solution to the patent examination process. Our project's scope was contained

within the work of the Reengineering Process Team, so any data accumulated by our group

relating to IT and Tools was packaged and sent to the Reengineering Tools Team to help aid

their efforts. No recommendations regarding software and tools used by the USPTO are

provided by our team, due to the overlapping interest with the Reengineering Tools Team.

However, their work is of utmost importance, for employees must have numerous windows

open at a time in order to access all the software needed to effectively complete an application.

Figures 15 and 16 below illustrate the clutter of current workers' computers desktop in two

different scenarios, examination of a patent application and approving an examiners work. The

Reengineering Tools Team hopes to develop a new software application that would condense
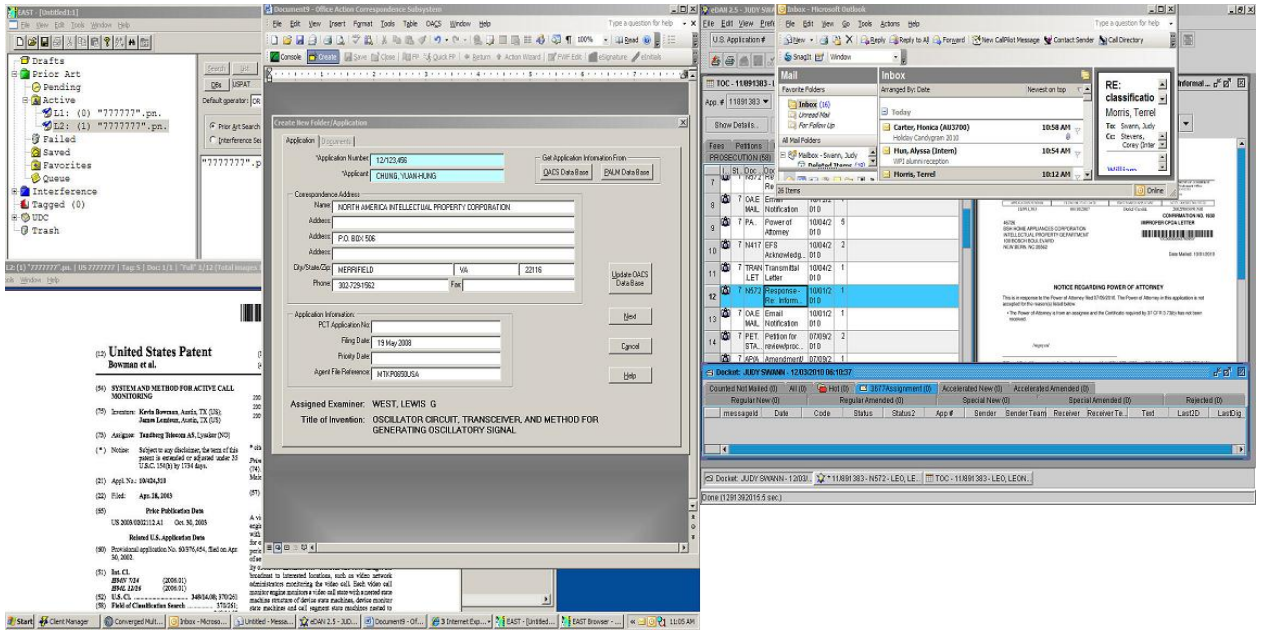
these windows into one program.

Figure 15: Screenshot of a computer's desktop while all the programs necessary to examine a patent application are opened.
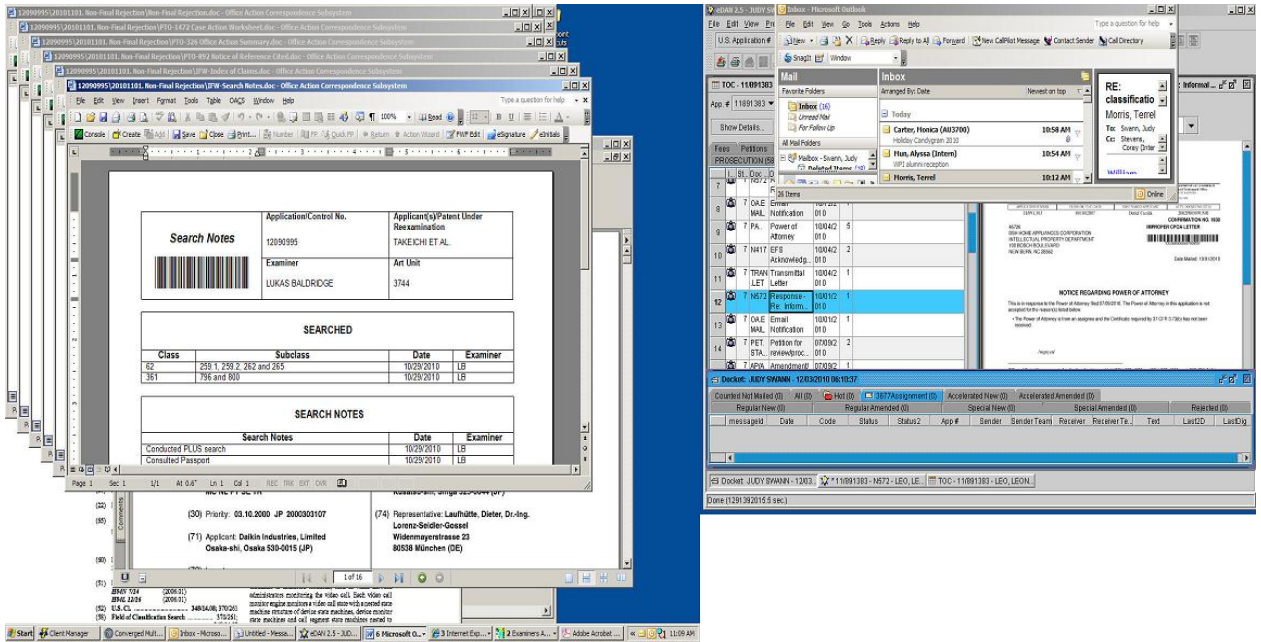
Figure 16: Screenshot of a computer's desktop while all the programs necessary for a Supervisory Patent Examiner to approve and review an examiners work on an application are open.

5.5 Changes to Employee Training Strategies

After combining both the RPT's efforts as well as our own we formulated

recommendations pertaining to current training programs and methods used at the USPTO.

Below, we separately discuss the top three sub-categories that our team observed in our open

house analysis. First, we address beneficial changes that can be made to the Patent Training

Academy or any other related procedures by which patent examiners are trained in the laws

and methods of patent examining. We then consider improvements to the training of senior

employees, primarily those in management positions. Finally, we discuss a set of miscellaneous

comments and suggestions generally relating to employee training.

5.5.1 Suggested Changes to Training Examiners in Patent Review Procedures

A patent examiner is presented with various patent applications when completing the

Patent Training Academy (PTA) curriculum. Currently, these "test" patent applications remain

the same regardless of the professional background of the examiners evaluating them. One

change we recommend the USPTO make involves the training material instructors employ. A

PTA class consists of examiners from many different Technology Centers and Art Units, making

total personalization of training materials unrealistic. However, if the Supervisory Patent

Examiner (SPE) for each Technology Center were to provide the training instructor with

previous applications that have already been processed, training materials may become more

effective. The training employee would still have a mixed sample of patent applications to

supplement his or her teaching, but this sample would comprise material that employees can

recall in the future. By following this suggestion, patent examiners leaving the PTA will possess

an existing background of art in their field, and consequently will be better prepared to start new cases.

In an effort to improve training within each art unit, we recommend that each SPE develop basic training material for new junior examiners on how to specifically search for art in their field. Since the PTA cannot take on any new responsibilities during their 6-month training period, we suggest the SPE in each AU to develop their own independent material to help supplement the more basic training received in the PTA.

5.5.2 Effective Training of Current Managerial Employees

In an effort to promote professional relationships between examiners and their supervisors, we recommend that the USPTO develop an in-house leadership development program in order to cultivate better office relations between staff. Specifically, we suggest that this training emphasize communication skills to ensure that junior examiners are able to easily speak with more senior examiners to gain the knowledge they require to perform their job effectively.

Currently, employees are required to work for the USPTO for a number of years and obtain a grade scale of 13 before they can begin the process of becoming a "signatory authority", or an examiner who has the power to give the office's approval on an application. This process can be quite lengthy, causing junior examiners to rely on their primary examiners and SPEs (Supervisory Patent Examiner) for a lengthy period of time. A possible solution for this problem would be to make signatory authority requirements to be a merit based system rather than only considering the number of years an employee has worked.

Signatory authority is a significant responsibility and for that reason we do not recommend that all junior examiners be given this expedited authority. We recommend that a junior examiner be able to inquire with their SPE about gaining signatory privileges. If a SPE feels that their junior examiner is experienced enough, the GS requirement should be waived and the examiner should be granted the privilege of entering "The Program". This program further tests their knowledge of patent procedures, helping to ensure that every examiner given signatory authority is properly prepared. We will leave the conditions and requirements for this program up to the USPTO, as senior staff have a more thorough understanding of the signatory authority process than our group currently has.

At the end of each bi-week, many junior examiners submit their cases for review, their SPE or primary will then review and either sign off on approved cases or pass them back to the junior because corrections are required. Currently, a majority of these occurrences happen during the last few days of the bi-week period. Many SPEs experience a large rush to get work approved at the end of the period, causing several issues. First, quality may be impacted by the urge to get cases either approved or rejected as quickly as possible. Second, many SPEs may be unavailable for consultation with junior examiners during this time due to a lack of available time as well as an overload of cases restricting them from spending time assisting examiners. In order to remedy this problem, we recommend that the USPTO explore a more graduated system of approving cases. Instead of counting all completed cases every bi-week, we believe that deadlines should be staggered evenly throughout the bi-week for all employees working underneath a SPE. This staggering would help in several ways, primarily because the workload placed on SPEs would be much more even, instead of a large amount of work at one time. SPEs

would be more reachable through the end of the bi-week as a result, and examiners would have better access to their supervisors throughout the review process. These so-called "count Fridays" and "count Mondays", or days that are commonly used to submit all applications for approval, would be nearly eliminated as sources of rush and irritation, and should provide for a much higher quality review process throughout.

5.5.3 Miscellaneous Recommendations

A recommendation our group suggests is the reinstatement of the PTO University and the Examiner Education Program. PTO University was a training program where an employee, usually at the management level, could request training to gain additional knowledge on the particular art unit that they are working in. In some occurrences, when a SPE is hired they transfer into a different Art Unit in which they are unfamiliar. In these instances SPEs may have less knowledge on the subject matter than their junior examiners. This forces SPEs to review purely on format rather than context until they are more familiar with the subject. It is important that when a SPE is transferred to a different Art Unit that the SPE obtain training from the PTO University so they may understand the material contained within the applications they review.

The Examiner Education Program was provided to patent examiners as a chance to visit work sites in America in which their technology was used. These locations varied from oil rigs and trade shows to manufacturing plants that may produce various components that an examiner's Art Unit may come across in their work. This program was quite beneficial for employees; not only did it allow examiners to personally observe their work, but it also

boosted moral in the office by allowing employees to leave their work for a small period and further their education.

5.6 Social Implications within the Patent Office

Currently, there are significant communication issues between employees at the USPTO. This includes junior examiners, examiners participating in the Hoteling Program, and primary examiners who struggle to communicate amongst themselves. This creates frustration because of examiners' inability to gain the knowledge they seek. In order to mitigate these issues, we propose several recommendations.

5.6.1 Suggested System to Locate Telecommuting Employees On-Campus

Our first suggestion addresses the issue of communication between on-campus examiners and employees who telecommute, we suggest that the USPTO develop a scheduling system which tracks when telecommuting employees plan to physically be in the office. The USPTO possesses 'Hoteling offices' which are utilized by these telecommuters whenever they visit Alexandria. However, an employee may be in a different 'Hoteling office' each time they are on campus. Upon arrival, these employees will update their specific location and telephone extension for that day, as well as the period of time when they will be available. Under this system, junior examiners who are seeking guidance and communication know where and when to seek out these employees for a personal interaction when on site in Alexandria.

5.6.2 Recommended Methods to Introduce Telecommuting Employees to Junior Examiners

One of the most frequent responses we gathered from the interviews we conducted revolved around the inability for junior examiners to determine who to contact if they have a question or problem. To solve this issue, we recommend that each SPE develop a small "phone book" of senior-level examiners, both of telecommuting employees and on campus employees, who are willing and able to answer questions from junior examiners. This phone book would not only contain basic contact information, such as phone numbers and addresses, but also more job specific data. For example, an employee's current Technology Center and Art Unit may be listed in this book, as well as any previous Art Units in which that employee has worked in. Knowing which Art Units an employee previously worked in will prove vital in determining whether or not to contact him/her regarding certain technologies. Accordingly, if a junior requires clarification on a certain subject matter, they will know exactly whom to contact, which will alleviate the current problem.

If the creation of a common document containing contact information of employees willing to help junior examiners would require unavailable resources from the USPTO, we suggest the creation of a 'meet and greet' session for new junior examiners. This session would be at regularly scheduled times where the SPE in each Technology Center would require any telecommuting examiners to come into the office and invite other senior examiners to get together and introduce themselves to new examiners. This would take careful planning to effectively balance all involved employees' schedules around this meeting, but the benefits of physically meeting coworkers for the first time would produce numerous positive effects. Many examiners we interviewed commented on how picking up the phone and calling an employee

who works under the Hoteling Program was a difficult task, because they never met whomever they were calling. Providing opportunities for initial face-to-face meetings within the entire Technology Center as early as possible will alleviate the awkwardness of communicating with employees not physically working in the office.

5.6.3 Developing Office Hours for Telecommuters

An additional suggestion our team believes will help promote communication between on-campus and off-campus employees is the instatement of 'office hours'. Employees in management positions, mainly SPEs and primary examiners, and employees participating in the Hoteling Program at the USPTO, would be required to designate specific hours during the week during which they are available to take phone calls and provide suggestions. Employees who work from home are just as inclined to answer work calls as other employees, but the common misconception in the office is that you would be disturbing these employees by calling them at home. By enforcing office hours, employees would know exactly when they could conveniently contact other employees. These hours would be the start of a steady line of communications between employees who work in the Alexandria headquarters and employees who work from home.

With the suggestions made to both the Hoteling Program and the Telecommuting program, our group believes that communication between on and off campus employees will greatly improve. These suggestions make it easier for junior examiners to contact superiors for guidance and provide them with ways to meet employees that they do not see on a regular basis.

5.7 Conclusion of Discussion and Recommendations

In conclusion, our team feels that by implementing any number of the suggestions provided, that the USPTO will observe an increase in the speed of the patent review process. By providing an outside prospective of flaws in the patent process the USPTO receives suggestions that they may have not previously considered. While providing recommendations from an outsider's point of view can be beneficial, the USPTO may need to make adjustments to our recommendations for easier integration into the daily operations of the USPTO.

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Appendix A : USPTO Quality Assurance Review Interview Questions

1. How many years have you been involved in the USPTO?
2. About how many hours per week, on average, do you spend speaking with examiners on the phone?
   a. On any instant messaging (IM) client?
   b. On webcam equipment?
3. In which areas of patent examination and procedures do you feel examiners should be better trained? Do you answer any questions on any one topic more frequently than others?
4. On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how would you rate the volume of communication between yourself and examiners?
5. On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how effectively do you feel the videoconferencing equipment (webcam, voice chat, etc.) is being used?
6. How should videoconferencing equipment be changed to be more productive or useful?
7. Have you been involved with any of the pilot programs that have taken place in the previous years at the USPTO?
   a. Peer to Patent Pilot
   b. Hoteling Pilot
   c. Accelerated Examination Program
8. If so, have you noticed positive or negative improvements in any aspect of office relations or performance as result of these pilot programs?
9. What are your thoughts on the current Patent Hoteling program at the USPTO?
10. Approximately how many hours do you spend per bi-week at the USPTO offices in Alexandria? Are there any particular days that you come into the office more regularly?
    a. Do you live over 50 miles away from the Alexandria campus?
11. Do you feel that less experienced examiners are inclined to contact a hoteling examiner working from home for assistance or clarifications? Why/why not?
12. Do you feel comfortable communicating with less experienced examiners using the various communication tools (phone, video, e-mail, IM)? If not, how could these issue(s) be remediated?
13. Is there a part of the patent review process that takes too long?
14. When reviewing a patent application, what is the easiest process?
15. When reviewing an application, which tool is the most convenient to use?
16. Which part(s) of the patent review process you would not want to see changed?
17. Are there any other concerns, suggestions or comments you would like to voice?

Appendix B : USPTO Patent Examiner Interview Protocol

1. How many years have you been involved in the USPTO?
2. To which Technology Center are you assigned?
3. About how many hours per week, on average, do you spend speaking with management on the phone?
   a. Face to face
4. Do you feel that junior examiners are adequately prepared after leaving Patent Examiner Introductory Training?
5. If not, in which area(s) do you feel examiners should be better trained?
6. On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how would you rate the volume of communication between you and your managers?
7. On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how effectively do you feel the videoconferencing equipment is being used?
8. Are there other ways you believe the videoconferencing equipment could be used in a better manner? For instance, videoconferencing between hoteling examiners and junior examiners?
9. Have you been involved with any of the pilot programs that have taken place in the previous years at the USPTO?
10. What are your thoughts on the current Patent Hoteling program at the USPTO?
11. Do you feel having employees not working in the physical office is beneficial or detrimental? Why?
12. Do you feel that less experienced examiners are inclined to contact a hoteling examiner working from home for assistance or clarifications? If no, why?
13. When reviewing a patent application, what step do you tend to spend the most amount of time on?
14. When reviewing a patent application, what step do you tend to spend the least amount of time on?
15. Are there any other concerns, suggestions or comments you would like to voice?

Appendix C : Results of RQAS Interviews

Each letter represents a response received by our team

1) How many years have you been involved in the USPTO?
    a) Over 14 years
    b) 15 years examining, 37.5 years at PTO
    c) 21 years (Examiner, SPE, QAS, Learning Academy)
    d) 26 + years
    e) 21 – 22 years, 6-7 years as an examiner
    f) 20, 8 as an examiner
    g) 27 years, 11 years examining
    h) 16. 9 as an examiner.
    i) 16 years, 9 as an examiner
    j) 21 years, 10 examining
    k) 20.5, 10 examining
    l) 28 years, 13 examining
    m) 20 years, 10 examining
    n) 8 years, 6.5 years examining
    o) 16 years, 9 examining
    p) 27, 9 as an examiner.

2) About how many hours per week, on average, do you spend speaking with examiners on the phone?
    i) Receive calls infrequently, assisting examiners on a full time basis would interfere significantly with production.
    ii) 6-8 hours per week overseeing reviewers
    iii) None, I e-mail with examiners exclusively.
    iv) 1 hr./week
    v) 3-5 hours
    vi) 15 hours
    vii) 6hrs.
    viii) 1
    ix) Hardly ever, primarily uses email
    x) Not often, uses phone and e-mail most often
    xi) 0, occasional emails
    xii) 1, more face to face than anything else
    xiii) 0
    xiv) Office hours/calls for questions approximately 10 hrs. prefer phone and e-mail.
    xv) 1-3 Tues at training academy. Normally contacted with e-mail.
    xvi) 2-3
    b) On any instant messaging (IM) client?
       i) 0 hours unless working on a specific project when working with an examiner.
       ii) No

iii) 0

iv) No

v) No

vi) Once in a while

vii) Yes

viii) 0

ix) No

x) No

xi) No

xii) No

xiii) No

xiv) No

xv) Rarely

xvi) Somewhat

c) On webcam equipment?

 i) 0 hours

 ii) No

 iii) 0

 iv) No, was interested at first, but now it is a distraction.

 v) No

 vi) Almost never

 vii) No

 viii) 0

 ix) No

 x) No

 xi) Used in beginning

 xii) No

 xiii) No

 xiv) No

 xv) 0

 xvi) When it first came out, now no one seems to use it.

3) In which areas of patent examination and procedures do you feel examiners should be better trained? Do you answer any questions on any one topic more frequently than others?

 a) Training is done relatively well

 b) Questions usually focus on claims and references, usually with new examiners, some occur on procedure. Affidavit practices & claim interpretation.

 c) Claim interpretation and 101s

 d) Searching

 e) Use of MCS tools, teleconferencing, need more training in tools.

 f) PTA doesn't train them well. Questions about making rejections.

 g) Searching/write-ups

 h) Combining references and how to search for prior art.

i) No specifics
j) Searches, technological, 102/103 statutes
k) Claims and searching, better vocabulary, more comfortable with English, forcing into templates, analytical skills, 103s.
l) Claim interpretation, searching, more practice
m) Combining references
n) 103 questions
o) Search, how to better use the applications.
p) Procedures: what the office standard is for various things.

4) On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how would you rate the volume of communication between yourself and examiners?
   a) 4
   b) 3- People don't know who to call to find out information, as well as communication is difficult on the phone vs. in person
   c) N/A
   d) 2
   e) N/A
   f) 3
   g) 4, speak with teleworkers
   h) 1, I am a last line of contact, if they can't find anyone else they come to me.
   i) 2, some people don't know I exist.
   j) 4
   k) Don't work with examiners but have constant contact with RQAs
   l) 3
   m) No need for contact
   n) 4
   o) 4-5
   p) 4

5) On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how effectively do you feel the videoconferencing equipment (webcam, voice chat, etc.) is being used?
   a) 3 – Some meetings are telecasted which is excellent because it doesn't interfere with telework
   b) 1.5- Lack of tools and knowledge on how to use them. Group conferences are difficult because people don't remember how to use the tools correctly. Perhaps signatory panels should be teleconferenced
   c) 1 – I tested the webcams, found that it sucked up bandwidth, could be useful for meetings so that people don't need to come to campus.
   d) 1, these tools are not always useful when working with patents.
   e) 1
   f) 1
   g) 1
   h) 1, never used it.

i) 1
j) 4
k) 5
l) 1, use email or IM
m) 1, too much to focus on
n) 1 – 2 works fine but I don't use it.
o) 3, don't use it
p) 1

6) How should videoconferencing equipment be changed to be more productive or useful?
   a) More user-friendly and more capable. When taking questions from a group, inefficient process by which questions are passed from audience to meeting chair.
   b) Use when it makes the most sense instead of not using at all. Again, perhaps use in signatory panels.
   c) N/A
   d) More simplistic, don't trust cameras.
   e) Bigger screen, focus just on face
   f) Make a way for employee's to know if their camera is on or off, they aren't sure if they are being recorded or not. An easy way to power on and off webcams.
   g) Personal preference – don't use so I don't know much about it
   h) No opinion, never used it
   i) The bandwidth is lacking and the technology needs to improve.
   j) No need for webcam
   k) Audio problem rather than video. Remote audio is horrible for the telecommuter/hoteler. Sharing documents works okay.
   l) Not a fan of cameras
   m) No idea
   n) Don't really need video just audio, video is good though to see who is speaking.
   o) No change, just not interested
   p) One interface for everything. Enable sharing file information between employees during it. Clarity of picture.

7) Have you been involved with any of the pilot programs that have taken place in the previous years at the USPTO?
   a) Peer to Patent Pilot
      i) No
      ii) No
      iii) No
      iv) Yes
      v) No
      vi) No
      vii) No
      viii) No
      ix) No
      x) No

       xi) No

       xii) No

       xiii) No

       xiv) No

       xv) No

       xvi) No

  b) Hoteling Pilot

       i)   Yes, in 2006 tested three different platforms for PMTP/PHP scalable pilot program where RDP – 1, RDP – 2, and CITRIX platforms were tested

       ii) Yes

       iii) Yes

       iv) Yes

       v) Yes for the past 5 years

       vi) No

       vii) Works at home but maintains an office here

       viii)Yes

       ix) No

       x) PMTP, using the CITRIX tool

       xi) No

       xii) Yes

       xiii) PMTP managers telework

       xiv) Yes

       xv) No

       xvi) No

  c) Accelerated Examination Program

       i)   No interviewees were involved

8) If so, have you noticed positive or negative improvements in any aspect of office relations or performance as result of these pilot programs?

  a) More flexibility is great, but the equipment has not kept pace with the increase in freedom

  b) Users vote on each platform in the scalable pilot

  c) Yes

  d) People don't take into account that people are hoteling.

  e) Hotelers get forgotten, people need to know that hotelers work.

  f) No, people are more social at work when on campus, but the hoteling program has increased productivity.

  g) All the same stuff, no improvements

  h) Examiners like it/upper management does not.

  i) Moral has improved because people are happier to be at home

  j) Communication needs work when working from home

  k) No

  l) Positive, ability to work from home – nothing like it, saves money and is flexible.

  m) Yes

n) No
9) What are your thoughts on the current Patent Hoteling program at the USPTO?
   a) It's great.
   b) Member of PMTP, good program but not excellent. PTO going national would be a tremendous improvement.
   c) OPQA should not be on the 1-hour requirement rule, if an employee doesn't need to come in they shouldn't have to, it wastes time and money just to meet a requirement.
   d) PHP is successful; I enjoy working from him to be with my family.
   e) Love it, ability to come in only when necessary.
   f) Very good, finds to be more productive at home and more social when coming into the office.
   g) Could be better. CISCO teleprompting looks appealing, as does programs such as iChat, due to their ease of use.
   h) Love it. Socializing is more difficult though.
   i) Works well for people who like to hotel all the time
   j) It works very well; it is difficult for manager to do it effectively, but great for examiners. Some employee's aren't disciplined enough to work from home.
   k) More flexible, but communication is a problem.
   l) It is really useful. Some people have a problem reaching out to contact hotelers. If they are not in the office, there may be some hesitation to call them.
   m) Good
   n) Love it, lets me be home with my family.
   o) Great for examiners
   p) Like to see it expand, some people may not be efficient at home
10) Approximately how many hours do you spend per bi-week at the USPTO offices in Alexandria? Are there any particular days that you come into the office more regularly?
   a) Signatory panels require me to come in once a week, but I will often stay the day to be more efficient.
   b) 32-40 hours, Tuesday/Thursday
   c) 6-10 on Tuesdays
   d) Tuesday, Wednesday, Thursday
   e) Works in the office
   f) 4, comes in on Tuesdays. Lives within 50 miles.
   g) 8 hrs. Normally come in on Tuesdays. Not outside the 50 mile radius.
   h) 16-32 hours a week, usually on Tues/Thurs
   i) 26 Hours. Tues/Thurs. Within 50 miles
   j) 20 hours, Weds and Thurs
   k) 5 – 10 at most, usually on Tuesdays.
   l) 36, Tues and Weds
   m) 8 hrs., usually Thursdays
   n) Don't mind coming in when needed, but usually have nothing to do on campus and therefore is a waste of time. Lives outside 50 mile radius.
   o) Half day – Full day, Tuesdays.

p) 2-3 Days

11) Do you feel that less experienced examiners are inclined to contact a hoteling examiner working from home for assistance or clarifications? Why/why not?
    a) Doesn't see enough contact, because people don't know who to talk to in order to get the correct information. Furthermore, first-time phone calls are difficult because there was not an initial face-to-face meeting to determine what type of personality the subject is.
    b) SPE's, trainers or primaries should always be available to answer questions, or at least have a daily scheduled time for all examiners, not just new examiners.
    c) No, if the room is dark people don't want to contact them by e-mail.
    d) No, but they should. Have a tendency to think that because they are at home they can't be bothered.
    e) XXX
    f) No. New people don't seek out contact because they don't want to interact.
    g) First contact SPE's then office employees and last resort is hotelers.
    h) Younger employees may be inclined, because the are more tech savvy, but for older employees they would prefer a face to face communication.
    i) Should but may not be, depends on the examiner. Some people aren't social, and they think if someone is not visible they are not reachable.
    j) Yes
    k) No, but if they make the effort to come in to meet them then they will
    l) Yes, they don't have a choice if that's where there primary is.
    m) They are less inclined to contact.
    n) Depends on personality, if they have dealt with them previously, they are more inclined to call.
    o) Yes, but by e-mail
    p) Overall they may be very hesitant to make a phone call.

12) Do you feel comfortable communicating with less experienced examiners using the various communication tools (phone, video, e-mail, IM)? If not, how could these issue(s) be remediated?
    a) Yes, I usually communicate with e-mail and phone, but am willing to use other tools as well.
    b) No- equipment is not user friendly enough and since it is used so infrequently, often times forget how to use tools.
    c) Yes, prefers e-mail, phone and IM.
    d) Yes, tries to encourage it. Informs new examiners that they need to become accustomed with calling hotelers.
    e) Yes, would like screen sharing
    f) Yes
    g) Yes
    h) She doesn't mind talking with them, however it depends on the complexity of the problem.
    i) Yes

j) Yes

k) Yes

l) Yes

m) Yes, examiners often call in for conferences

n) Yes, unfortunately technology is unreliable.

o) Yes, phone and e-mail

p) Yes

13) Is there a part of the patent review process that takes too long?

   a) For IPR's it would be better if I had more time to review cases, problem cases take days to complete, but we are only given 3.5 hours.

   b) Finding out who to go to in order to get answers

   c) Search, sometimes examiners don't develop a solid background to search.

   d) In EAST image flipping takes too long, google patents solves this problem. Mechanical examiners label drawings, perhaps applicants should label their drawings.

   e) Examiners don't go through the prior art and what they are searching. Formal aspect of app and claims.

   f) It takes approximately 10-15 minutes just to load an electronic file.

   g) Understanding how to work office actions

   h) Filling out forms. Maybe if there were a way to auto populate patent numbers in office actions.

   i) No

   j) No

   k) Claims paperwork & some examiners don't record their search notes and have to go back to find them.

   l) No

   m) Computer issues slow things down

   n) Programs could slow you down

   o) No

   p) Double patenting. It is not a statute, so they don't have to follow it, but office policy mandates they do.

14) When reviewing a patent application, what is the easiest process?

   a) Focus on the inventive concept early

   b) Understanding what the invention really pertains to which helps determine where to search for prior art

   c) Reading and understanding disclosure statements.

   d) EAST, with electronic systems, everything is easy.

   e) XXX

   f) XXX

   g) Reading actions.

   h) There are no easy jobs, everyone has specific work to do.

   i) XXX

   j) Reading the case

k) Tools are more sophisticated now and more experienced employees are more comfortable with the process.

l) Claim interpretation, finding out what the invention actually is

m) N/A

n) Signing IDSs, filling out forms

o) None

p) The fact that things are available electronically. You don't physically have to find the file.

15) When reviewing an application, which tool is the most convenient to use?

a) EDAN and EAST, take notes in Word.

b) EAST because of training; not because it's the easiest, but because it's the only tool available.

c) Examiner Portal, eDAN

d) EAST

e) STN vendor – prior search

f) PTO Zone to create a IFW file, and gets pdf's to reference

g) IFW File inspection, PALM expo, PTO zone, eDAN leaves a footprint so don't usually use.

h) EAST. eDan makes it hard to lose things (paper copies may be lost or misplaced)

i) EAST, examiners portal, and eDan somewhat.

j) eDAN, EAST

k) WEST

l) EAST

m) PTO zone and EAST

n) Google Patent, STN

o) IFW file inspection tool

p) EAST, eDan. Maybe if the programs would talk to each other more. Perhaps collaborative screen sharing.

16) Which part(s) of the patent review process you would not want to see changed?

a) Need to give employees other time if re-engineering is truly serious.

b) Making the patentability procedure determination (by Examiners)

c) Interview practice, Interactions between junior examiners and their signatures

d) XXX

e) Reviewer should always search all prior art

f) The thought that examiners job is to prove an application wrong. Patents are "innocent until proven guilty"

g) "Touch every piece of paper", classified search.

h) None

i) Prior art search

j) Not so much

k) Claim interpretation & searching need to stay together, do not give to separate departments

l) Mentoring aspects, juniors having access

m) Clarity with references with explanation, time consuming but important

n) Change most of it, replace eDAN with PTO zone.

o) Don't lose file inspection tool
p) EAST needs no fixing. OACS needs to be simplified.
17) Are there any other concerns, suggestions or comments you would like to voice?
   a) Person-Person communication is top priority; the job is learned by asking questions, not reading books.
   b) XXX
   c) The public needs to be more willing to assist the office in their endeavors.
   d) Not everyone wants to telecommute, single adults who want interaction, parents etc.
   e) Examiners need ready access to prior art. Online references are great, could use more. Translation staff, not enough.
   f) 1/3 of office actions prepared, if seen by the management, would not approve of them being sent through.
   g) Managers and Examiners don't understand classification system.
   h) Automation tools should be more user friendly. People don't know where to search in the MPEP. Classification sub classes shouldn't have a separate page loaded when viewing them. The last PTA lasted too long.
   i) Core days (days in which you are required to be in the office) should be brought back to help in arranging meetings and appointments around someone's work schedule.
   j) Satisfied with overall process, Stabilize office policy, Quality and production
   k) No
   l) Going in the right direction, Work at home equipment is good, IT glitches
   m) Supervisors don't spend time training, not there for examiners. Did away with classification, want it back.
   n) OACs is slow, keep it simple
   o) Happy with program, one app with all applications would be great.
   p) Unified systems for IT would be a great thing for the office; find what an examiner needs from a file, automatically create a folder for them that fills it with the info they need and stays updated throughout the case.

Note: (XXX) – Place filler used when interviewer did not ask question/interviewee did not answer question.

Appendix D: Interview Responses from Patent Examiners Following Appendix B

1. How many years have you been involved in the USPTO?
   a. 27
   b. 3
   c. 2.75
   d. 2.5
   e. 2.5
   f. 3
   g. 3.5
   h. 2

2. To which Technology Center are you assigned?
   a. 3700
   b. 1700
   c. 3700
   d. 3700
   e. 3700
   f. 3700
   g. 3700
   h. 3700

3. About how many hours per week, on average, do you spend speaking with examiners on the phone?
   i. <1 hour
   ii. 0
   iii. 0
   iv. 1-2
   v. 0
   vi. Little face to face
   vii. 1-2
   viii. 2
   a. Face to face?
      i. 8-10
      ii. 1
      iii. Varies
      iv. 5-10
      v. Nortel face
      vi. Nortel
      vii. Face to face
      viii. Face to face

4. Do you feel that examiners are adequately prepared after leaving Patent Examiner Introductory Training?
    a. Not adequately trained
    b. Yes
    c. No
    d. Relatively
    e. No
    f. No
    g. No
    h. No

5. If not, in which area(s) do you feel examiners should be better trained?
    a. Restrictions, procedure and practice, technical background in their art unit- their trainer doesn't know their tech.
    b. Depends on primary
    c. Substantially different between management
    d. Experience
    e. "examining patents"
    f. 112 rejections, restrictions (shorten prosecution)
    g. Class/subclass search, writing styles of office action
    h. Technology

6. On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how would you rate the volume of communication between you and your examiners?
    a. 2
    b. 5, less now but more in beginning
    c. 1, Not consistent
    d. 3
    e. 2
    f. 2-3 not available, assume you know
    g. 4
    h. 4

7. On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how effectively do you feel the videoconferencing equipment is being used?
    a. N/A does not feel qualified to comment
    b. 1
    c. Only used during meeting with hotelers
    d. 1
    e. 1
    f. N/A
    g. 2
    h. 1

8. Are there any other ways you believe the videoconferencing equipment could be better used? For instance, videoconferencing between hoteling examiners and junior examiners?
    a. Might want to explore examiner-applicant interaction using videoconferencing equipment.
    b. If working with hotelers
    c. Bandwidth issues, nobody tries.
    d. Nice to use with hotelers and supervisors
    e. "yes"
    f. Yes if available to talk to hotelers
    g. Make it mandatory to use the equipment with employees in the hoteling program
    h. Yes, for having employees who belong to the hoteling program speak with art units.

9. Have you been involved with any of the pilot programs that have taken place in the previous years at the USPTO?
    a. Involved with pre-appeal conferencing
    b. No
    c. No.
    d. No
    e. No
    f. No
    g. No
    h. No

10. What are your thoughts on the current Patent Hoteling program at the USPTO?
    a. Wonders if it will transform the organization and other organizations? When he started, personal communication was a big thing. How much will people working from home help the office?
    b. Great, don't want to do now.
    c. Doesn't seem necessary for GS12+
    d. Good idea, won't participate. Tell examiners to do things and don't tell supervisors.
    e. Sounds great
    f. Good concept, bring down to GS11
    g. Not a fan, would rather interact with people face to face
    h. Good opportunity

11. Do you feel having employees not working in the physical office is beneficial or detrimental? Why?
    a. Can't particularly say- personal interaction between juniors and searching is an important aspect. It will change the way the PTO operates, and there is no way

to tell because of how many variables there are. Furthermore, there is a lack of socialization after work that promotes office culture.
  b. Beneficial when having primary.
  c. Depends
  d. As long as available, good.
  e. Beneficial and detrimental for examiners
  f. Doesn't matter
  g. Not good
  h. Neutral feelings

12. Do you feel that less experienced examiners are inclined to contact a hoteling examiner working from home for assistance or clarifications? If no, why?
  a. It's up to the individual person to decide whether they will contact someone, some new examiners actively seek help but some should make more of an effort.
  b. Less likely
  c. More likely to email, answer within 24 hours
  d. Yes, by email
  e. "yes"
  f. "yes"
  g. Yes
  h. No, often times don't know how to put question into words and it is helpful to be able to show them the problem you're having.

13. When reviewing a patent application, what step do you tend to spend the most amount of time on?
  a. Searching for art, with some applications, "takes more time to read it and understand it."
  b. Searching.
  c. Searching
  d. Searching
  e. Searching
  f. Understand spec
  g. Formulating search, review forms
  h. Reading and search

14. When reviewing a patent application, what step do you tend to spend the least amount of time on?
  a. Checking the validity of an application, formalities that don't affect the merits of the case.
  b. Writing
  c. Consulting others about search
  d. Checking spec, review formal matters
  e. Reading application

f. Dependent claims
g. Spec.
h. Formalities

15. Are there any other concerns, suggestions or comments you would like to voice?
    a. PTO has had a few stabs at reengineering, improve the IT infrastructure, programs don't interact/mesh well together, publish allowed applications on the internet the next day, keyword searching of applications allows applicant to "lexigraph" their invention.
    b. N/A
    c. Lack of consistency in supervisor qualifications, expectations count system (supervisor choose production credit) make it same; transfers-classification ridiculous. Update searches, split subclasses
    d. Finding supervisor, no primary; provide listing of who to contact about what process, PALM, PCT, OACS is awful about communication, PFW
    e. Shorter academy is good, practice in academy. Pick application step by step.
    f. Juniors assigned to primary, not SPE
    g. N/A
    h. More time per case

Appendix E : Interview Results from Patent Academy Instructor

1. How many years have you been involved in the USPTO?
   - 23 years
2. Can you describe your position in the USPTO?
   - Works in the training academy, creating lecture materials and training incoming examiners. Most interesting position was being a popper rat for the union.
3. Approximately how man hours do you spend per bi-week at the USPTO offices in Alexandria?
   - 80 hours
4. About how many hours per week, on average, do you spend speaking with examiners on the phone?
   - Half an hour; IM – half an hour
5. Do you feel that junior examiners are adequately prepared after leaving Patent Examiner Introductory Training?
   - "Adequately prepared for what"? They are trained the best they can be in the amount of time given, but experience is important.
6. If not, in which area(s) do you feel examiners should be better trained?
   - Examiners need to understand that there are some things you can't teach, some things need to be learned from experience.
7. On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how would you rate the volume of communication between you and fellow examiners?
   - Depends on the examiner, some think they know everything right from the beginning.
8. On a scale from 1-5 (1 being the worst possible, and 5 being the best possible), how effectively do you feel the videoconferencing equipment is being used?
   - 1
9. Are there any other ways you believe the videoconferencing equipment could be better used? For instance, videoconferencing between hoteling examiners and junior examiners?
   - I have used it once, I don't feel it is necessary, people can communicate without it.
10. What are your thoughts on the current Patent Hoteling program at the USPTO?
    - Sufficient surface area, two monitors is important and makes everything much more productive.
11. Do you feel that less experienced examiners are inclined to contact a hoteling examiner working from home for assistance or clarifications? If no, why?
    - Depends on their training, I would make my examiners contact people for help whether hoteling or not.
12. Do you feel comfortable speaking with less experienced examiners over the phone? If not, how could this issue be remediated?

- Yes, some are not comfortable speaking with examiners on the phone.
13. When reviewing a patent application, what step do you tend to spend the most amount of time on?
    - Searching
14. When reviewing a patent application, what step do you tend to spend the least amount of time on?
    - Interference searches
15. What part of the patent review process would you not want to see changed?
    - Examiners need to keep doing the searching themselves, it is a great learning experience and it adds to your knowledge library for future examinations.
16. Are there any other concerns, suggestions or comments you would like to voice?
    - It would be great for IM to contain a tool for document sharing.

Appendix F: Glossary of Abbreviations

AU – Art Unit

CCPA – Court of Customs and Patent Appeals

CDS – Classification Data System

CTU – Central Transfer Unit

DOC – Department of Commerce

DRP – Dispute Resolution Panel

EAST – Examiner's Automated Search Tool

eDan – Electronic Desktop Application Navigator

FAOM – First Action on the Merits

GS – Grade Scale

IFW – Image File Wrapper

IT – Information Technology

MCF – Master Classification File

MOC – Manual of Classification

MPEP – Manual of Patent Examination and Procedures

NPL – Non-Patent Literature

OACS – Office Action Correspondent System

OCR – Optical Character Recognition

P2P – Peer to Patent

PALM – Patent Application Location and Monitoring

PETTP – Patent Examiner Technical Training Program

PFW – Patent File Wrapper

PPH – Patent Prosecution Highway

PTA – Patent Training Academy

RPT – Reengineering Process Team

RQAS – Review and Quality Assurance Specialist

SPE – Supervisory Patent Examiner

TC – Technology Center

TQAS – Training and Quality Assurance Specialist

USPC – United States Patent Classification System

USPCLASP - United States Patent Classification Standards and Procedures

USPTO – United States Patent and Trademark Office

WEST – Web Enabled Search Tool