

Can Intellectual Property Save the USPS?

How Recognizing the Increasing Importance of IP in the Postal/Parcel Industry and Harnessing the Power of Disruptive Innovation Can Revivify the USPS

John Callan, Ursa Major Associates

John Cronin, ipCapital Group

Nathan Doudera, ipCapital Group

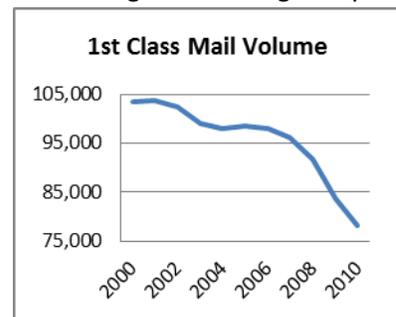
The United States Postal Service (USPS) is an organization flush with history and purpose. Since Benjamin Franklin's appointment as Postmaster General at the Second Continental Congress on July 26, 1775, the Post Office Department and its successor, the USPS, has been carrying out its lofty mission of "binding the nation together through the personal, educational, literary, and business correspondence of the peopleⁱ." The USPS has a "universal service obligation" (USO) to provide postal service, to all citizens, at affordable prices. In the past, the USPS was able to fulfill its service obligation while still maintaining a self-sufficient business; from 1971 to 2002, the USPS operated at close to breakevenⁱⁱ. However in the past several years, the USPS has sustained escalating losses.

A Broken Business Model

The current financial situation of the USPS is dismal, and the outlook is bleak. The USPS has lost almost \$27 billion dollars in the past three years, and following a loss of \$5.2 billion for the third quarter ended June 30, 2012,ⁱⁱⁱ is expected to lose \$15 billion dollars in fiscal 2012 alone. Without substantial changes, the USPS is projected to lose a total of \$238 billion dollars in the ten years from 2010 to 2020^{iv}.

Many point to the USPS's obligation to prefund employee's retirement benefits, mandated under the Postal Accountability and Enhancement Act (PAEA) passed by Congress in 2006, as the main cause of the USPS's losses, but while this represents a substantial burden to the tune of more than \$5 billion a year, it does not nearly account for all the losses the USPS is incurring. Eliminating the pre-funding requirement along with drastic cost cutting operating measures that the Postmaster General has proposed to Congress are essential to the USPS's recovery, but finding ways to rejuvenate the USPS's revenue streams could help mitigate some painful cost cuts that might eventually affect quality of service.

The USPS's revenue problem is a recent and accelerating phenomenon. The USPS's traditional cash cow has been First-Class Mail accounting for 47% of total revenue in 3Q 2012^v. However over the past 10 years this historically steady stream of revenue has been evaporating; from 2000 to 2010 First-Class Mail declined 30 percent^{vi} and its relentless volume decline continues in fiscal year 2012 at the rate of 4.8%.



The main cause of the decline in First-Class Mail is electronic diversion. An example of digital disruptive innovation affecting anything printed, electronic diversion includes things such as: online bill

payments, E-filed tax returns, E-invites, and most importantly E-mail. Commercial mailers as well as consumers are adopting electronic alternatives as they are faster, cheaper, and more convenient than traditional postal offerings. Even Social Security benefit mailings will be discontinued in favor of electronic deposits in 2013, saving the government 92 cents per transaction^{vii}. In addition to First-Class Mail, Standard Mail volume also declined dramatically during the recession due to companies scaling back advertising budgets. While the rate of decline has now slowed, volume and revenue continue to erode at the rate of 5.7% in fiscal year 2012^{viii}. A struggling economy and electronic diversion will continue to eat away at mail volumes, and the USPS must prepare for continuously diminishing revenues from both First-Class and Standard Mail.

In hindsight it is evident that the USPS did not anticipate, innovate and stay ahead of the wave of electronic diversion and it can now do very little to stem the ebbing tide of mail, even if it were to develop and offer electronic substitutions of its own. On the other hand it has responded opportunistically to the market opportunity created by electronic diversion from bricks and mortar to E-commerce in the retail industry by meeting the growing need for home delivery of parcels. The heavily advertised USPS "If It Fits It Ships" campaign promoting the Priority Mail Flat Rate Box has had great success and USPS's total shipping business volume is growing at a rate of 55.8 % while accounting for 19.2% of total year-to-date revenue in the third quarter of 2012^{ix}. But even rapid growth on a small base in parcels is not enough to solve the USPS's financial problems.

In its 3rd Quarter ended June 30, 2012, 10Q filing, The USPS reports:

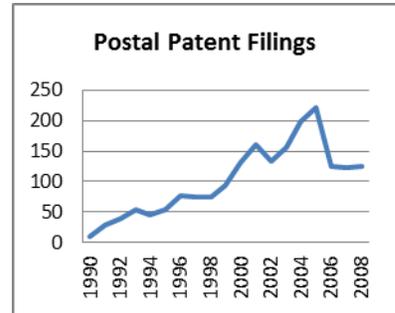
"The Postal Service continues to implement innovative new products to generate new revenue and to prevent existing revenue streams from migrating to electronic alternatives. Existing products and online services have been enhanced with "ease of use" in mind in an effort to grow business. However, ***it is not possible to achieve financial stability through revenue initiatives alone, without a fundamental change in the business model.***"

Discovering IP in the Postal/Parcel Industry

One area that may so far have been neglected by USPS that has proven to be tremendously important to innovation in many other industries is intellectual property (IP). In industries such as pharmaceuticals and electronics, and even in service industries like data management, IP is a key element of business success. IP enables companies to improve competitive advantage, define operational boundaries, expand and protect brand, generate licensing revenue, gain transaction leverage, and increase shareholder value. IP becomes more important in an industry as the industry transforms and becomes more high-tech. Such a shift is now occurring in the postal/parcel industry.

The postal/parcel industry is in the process of transforming from a legacy technology industry towards a high technology industry. In a legacy technology industry there is a limited prevalence of technology, often there are certain core technologies that are standard in the industry, and there is limited innovation. In a legacy technology model IP plays a minor role. In a high technology model, on the other hand, there is a high value on technology, technology is spread across the industry, and innovation is crucial. In a high technology model IP is paramount to success.

The transition from a legacy technology model to a high technology model in the postal/parcel industry is evidenced by the significant rise in postal related patent filings in the past two decades. Postal related patent filings have increased an average of over 20 percent a year in the period from 1990 to 2008^x. While the level of filings per year peaked in 2005 and then dipped in 2006 before leveling off in 2007, currently there are still more patents filed per year than ten years ago, and substantially more than fifteen years ago. In addition to the overall growth in patent filings, the filings are becoming more dispersed throughout the entire postal value chain.



At a firm level, UPS is the leader amongst postal/parcel carriers with 1491 patent filings. DHL follows with 870, then the USPS with 758, and finally Fed-Ex with 113. The largest portion of carriers' patents are for optical recognition of data and counting mechanisms, the second largest portion of patents are for sorting or labeling of thin materials. However, increasingly more patents are being filed for postage, tracking, and data management systems.

In addition to the patents held by the major postal/parcel carriers, there is a significant amount of postal IP that is held outside of these primary carriers. There are many companies, both small and large that focus on one or two segments of the postal value chain, but do not have the transportation and last mile delivery capabilities of the major carriers. Examples of this are value chain intermediaries like Stamps.com, which sells postage online. Stamps.com has an innovative approach to the postage segment of the postal value chain, and has well protected its position by generating substantial IP in this area; Stamps.com has 138 patent filings. Other companies that have substantial IP along the postal value chain include Neopost with 1530 filings and Pitney Bowes with 6083 filings. The major carriers might do well to pay attention to companies like Neopost, Pitney Bowes, and Stamps.com as often these niche competitors do a better job of developing IP than their large competitors, and have the potential to expand their positions along the value chain. Because of this potential threat, the USPS and other carriers would be well served to understand these companies and their respective IP directions and to consciously decide to either compete or cooperate with them.

Potential for Disruptive Innovations in the Postal/Parcel Industry

As technology pervades the postal/parcel value chain, it is important for the USPS and other operators to be aware of possible disruptions from IP. Disruptions can happen across the postal value chain, and can come in a variety of forms. Disruptions can be minor and affect just one segment of the value chain, or they can be systemic, seriously affecting the whole value chain. Regardless of their scale, disruptions threaten the status quo and change the landscape of the industry.



The mother of all disruption in the postal industry is email. Email completely changed the game by leapfrogging almost the entirety of the postal value chain. As with email and other disruptions, adoption is not immediate and there is a long road to full integration, but once a disruption occurs there is no going back to the way things were before.

While disruptions represent substantial business threats, IP can help turn disruptions into opportunities. While disruptions may hurt business for many players in the affected industry, the ones who can develop the IP to harness the disruption will benefit greatly.

While email is not a disruption that the USPS has been able to harness into an opportunity, it has been successful with other smaller disruptions. The USPS developed and implemented the Intelligent Mail Barcode (IMb) which has disrupted the traditional processes in the sorting and tracking segments of the value chain, and fulfilled a need for a system to easily identify mail for sorting and tracking. The IMb system provides greater information and functionality than previous barcode systems, and the USPS has protected its advancement in this space with IP related to the IMb. While the IMb has allowed the USPS to cut costs by streamlining its tracking and sorting, it is not designed to be a revenue boosting initiative.

Looking to the future, there are many disruptions that can be expected in the postal industry. These possible disruptions could happen across the postal value chain, and even small disruptions will have an impact on the landscape of the industry. Any sort of disruptive innovation presents both a threat and if properly handled an opportunity. Organizations, the USPS or its competitors, which generate the disruptions and the IP related to them, will be the ones that are able to benefit.

Generating Innovation and IP in the Postal/Parcel Industry

The best way for the USPS or any organization to avoid being affected by disruptions is to develop disruptions itself. The increasing prevalence of technology in the postal/parcel industry presents many opportunities for generating disruptive innovation and subsequent new IP. However, generating innovation is a difficult activity, and requires a concerted effort from all levels of an organization.

There are several key processes for generating innovation that can build a better innovation engine within the USPS. These processes include: combining business and technology, developing new business models, looking globally, seeking outside collaboration, promoting team behavior, and scanning for existing innovation within the USPS. Examples of some individual tools that the USPS could implement to increase innovation include: issuing innovation directives that measure and reward innovation, using outside subject matter experts, cross-pollinating between different business segments, and eliminating gate-keepers that prevent the natural process of innovation. These are only a few examples of the wide range of processes and tools that the USPS could use to increase innovation.

The USPS has both inherent advantages and disadvantages for innovation because of its organizational structure. The USPS is disadvantaged for innovation by its lack of capital, cumbersome business structure, monopoly/government culture, weak background IP, as well as the intense competition from narrowly focused private sector companies. However, the USPS has a strong advantage for innovation over its publicly traded rivals in that it does not have to satisfy Wall Street and shareholders with short-term gains, and thus can focus on long-term innovation and growth.

Due to the disadvantaged nature of the USPS one realistic way of generating innovation that can result in valuable IP and new revenue streams is through partnerships with the private sector and by operating more as a platform. In the past, the USPS has been reluctant to engage in public private partnerships for a variety of reasons. The USPS is often too demanding of private companies, and private companies have fears about how their ideas will be handled by the USPS.

More recently, the USPS has entered in to several technology partnerships with private sector companies. The USPS has engaged in partnerships with companies such as DYMO Endicia, Stamps.com, Neopost, and Pitney Bowes to offer electronically generated postage as an alternative to traditional indicia. Additional partnerships have been made with shipping and addressing software companies such as Abol, Grayhair Software, Satori, and Neopost.

These partnerships allow these private sector companies to integrate their products and services with the USPS, and open up new easy channels for mail to enter the USPS stream. This positions the USPS as more of a platform in which it provides the framework, and the private sector builds around that framework. While these partnerships represent progress for the USPS in broadening its business and being more open to cooperation they do not go far enough to make an impact on the USPS revenue problem. To make a real improvement to its bottom line the USPS should look towards higher level partnerships, and partnerships for co-developing systems and services where IP can be generated and leveraged.

Once the USPS has strong innovation processes in place to generate new ideas and inventions, then it needs an IP management strategy to protect and leverage those innovations. The key IP instrument to protect innovation is patents, however to properly protect its innovation the USPS should adopt a holistic IP strategy that includes not just patents, but also trade secrets, know-how and enabled publications as well.

Models for IP Management in the Postal/Parcel Industry

For the USPS to properly manage its IP generated from innovation it must adopt an IP management model that best suits its business objectives. The USPS's current model is a closed model. The USPS keeps its IP tightly protected in-house, and very selectively licenses or partners with the private sector. While this model served it well in the legacy technology stage of the postal industry when there were only a few key technologies that once developed needed to be safeguarded, in the current high technology stage of the industry there is no way that the USPS can keep up with technology trends with a closed IP/innovation model. Going forward there are four possible models that the USPS could use: open source model, free enterprise model, government use model, or a hybrid model. All of these models view the USPS as a platform, wherein the USPS provides the framework of the postal value chain and private sector companies build around the USPS. Each model would result in a substantially different IP landscape for the postal/parcel industry.

One model that the USPS could implement is an **Open Source Platform Model**. In this model, the USPS would open up all of its IP to the private sector to spur innovation. Then using the USPS's IP, the private sector would develop contributions to a postal platform. In this model the private sector would battle it out for IP rights and market position, and the USPS would serve as the platform to build upon. By doing this, the USPS could enjoy more cooperation, greater reach and coverage and added

revenues by sharing in other models. An example of this model in practice is how the Apple iPhone ecosystem; Apple develops the software platform, but uses an open application programming interface and provides a software development kit to let other companies build the applications. A downside of this model is that it would require the USPS to develop IP strategically for this purpose. For the private sector, this would be the most attractive model as it would allow it to benefit from the USPS's IP without having to pay royalties.

A second model is a **Free Enterprise Platform Model**. In this model the USPS would leverage its IP through litigation or licensing to the private sector to spur innovation. In return for the use of the IP, the USPS would receive royalties from the private sector. Using the licensed technologies from the USPS, the private sector would develop contributions to the platform. In this model the private sector would battle it out for IP rights and market position. This model would be difficult for the USPS to adopt because this model would require the USPS become much more innovative to develop IP strategically for leveraging with others, as the free market does today, a total IP culture shift for the USPS. For the private sector this model would not be ideal as it would make the USPS act as more of a direct competitor to the private sector.

A third model is the **Military Platform Model**. In this model the USPS would leverage its IP through controlled licenses to the private sector to spur innovation. The private sector would develop contributions to the platform using the licenses. In this model the private sector would battle it out for IP rights and market position, but the government may interfere to protect its interests. This model would require the USPS to control IP strategically, which would require major changes to how it functions as a semi-governmental agency. For the private sector this model could be beneficial depending on how tightly the USPS controlled its IP.

Additionally there could be a **Hybrid Model** in which the USPS controls its IP and in some cases leverages it through licenses to the private sector to spur innovation. Similar to the military model, the private sector would battle it out for IP rights and market position, but the government may interfere to protect its interests.

What IP model the USPS takes going forward will make a huge impact in how the USPS is structured and functions in the future. If the USPS adopts an open model, then it is likely that it will begin to function more as a facilitating platform, and that third parties will have a larger role in the industry. If a free enterprise model is adopted, then the USPS will continue as is, as if it were a private corporation, most likely losing to the private sector if it can't create the right IP. If a military platform model is adopted, then the USPS would likely maintain its control over the value chain, but allow more third party companies in to co-develop and operate specific aspects of service. Whatever model is chosen has a large impact for not just the USPS, but also for the private sector companies that operate along the postal value chain.

Monetizing IP in the Postal/Parcel Industry

The USPS has choices to make on how it will generate IP and how that IP will be managed. The USPS also has choices to make about how it will monetize its IP. Achieving ROI from innovation is essential and IP provides the means to do that. IP can help the USPS or any organization to improve

competitive advantage, define business boundaries, expand and protect brand, generate licensing revenue, and gain transactional leverage.

For direct monetization, there are several paths, and what path the USPS should take must be aligned with its IP management strategy. The ideal way that IP can be monetized is by using it to create new products or services. This is the main reason that IP is generated. When new products or services are backed by strong IP they are much more protected from competition. Additionally if competitors begin to move into that space, then the USPS has the relevant IP to litigate and prevent that.

In addition to monetization of IP through use in marketable products, there are other ways that IP can be monetized. For IP that does not grant a competitive advantage to the USPS, it could consider licensing that IP. Licensing would result in revenues in the form of royalties from licensees. On the reverse side of this, if the USPS wanted to develop a new product or service but did not have the IP behind it, then it could license that IP from outside sources.

For IP that the USPS doesn't use and is not strategic, then it could consider selling that IP. Some of the USPS's IP could be applicable outside of the postal/parcel industry, so the USPS would not have to necessarily sell the IP to a competitor. By selling IP, the USPS could generate significant revenue from IP that it is not currently being used and does not have plans to be used. On the reverse of this, if the USPS wanted to develop a new product or service and it didn't have the relevant IP, then it could buy IP in that space.

Case Example: Digital Identity Authentication Service

In the discussion of new services that the USPS might offer in the digital sphere, one idea that is getting a lot of attention is a digital identity authentication service. This possibility was discussed in detail in a whitepaper published in May 2012 by the USPS Office of the Inspector General, Risk Analysis Research Center. The paper, entitled "Digital Identity: Opportunities for the Postal Service" explains background, features, and opportunities of such an offering. Essentially what the idea entails is a USPS run system that would provide an authenticated digital identity that could be used to securely login to Internet sites. The digital identity would be tied to a physical address as a way to verify the connection between the digital and physical identity. This identity verification service could also be used in the context of email to provide for authenticated delivery.

This is a prime example of an area where IP is hugely important. Currently there is significant prior art in the area of online identity verification. A limited patent search for patents containing "identity authentication" or "identity verification" and "online or digital" in the title or abstract of the patent reveals 1344 patent families. These are only the most relevant patents; it is likely there are many more patents that deal with the technology of verifying a digital identity.

The USPS has an IP position in this technology, but it is very limited. The USPS holds patents #7,797,543 and #8,095,797, of which the latter is a divisional of the former. Both are entitled "Systems and methods for authenticating an electronic message". These patents cover the authenticated delivery aspect of a digital identity authentication service, but not the broader applications of an authenticated digital identity that could be used throughout the Web. Furthermore this patent does not tie the authentication process to a physical identity.

If the USPS is serious about wanting to pursue opportunities in digital authentication, then it must give substantial consideration to IP. The USPS must be aware of what IP is already in existence in this area so that they do not infringe on existing IP. The USPS must act to develop IP in this area, or acquire or license existing IP that is necessary. The USPS should then enforce its IP position by litigation and licensing.

The Government's Influence on IP in the Postal/Parcel Industry

In considering what IP generation, management and monetization strategies to implement, the USPS must consider how the Federal Government's interactions will influence IP in the industry. The Federal Government can have a large impact on the role that IP plays in a specific industry. Other industries where the Federal Government has influenced IP include banking, defense, and telecommunications.

In the banking industry, the Federal Government has exhibited an "enforcement" model. An example of this stems from a law passed by Congress in 2003. The Check Clearing for the 21st Century Act, or Check 21 Act, changes the rules for how banks handle checks. Prior to Check 21, the traditional system for clearing checks involved the bank where the check was deposited having that check transported to the bank from which it originated. Check 21 allows the bank where the check was deposited to generate an electronic image of the check and then transport that electronic image digitally to the bank from which the check originated. This truncation saves both time and money for banks.

Soon after Check 21's enactment in 2004 a small Texas company, DataTreasury, sued numerous banks for patent infringement. DataTreasury had been granted several patents covering check-imaging technology in 1999 and 2000, and charged that banks were infringing on these patents. DataTreasury has been successful in court, and has even withstood a reexamination of their patents by the USPTO. Since 2004, DataTreasury has made over \$400 million in licensing fees and legal victories for its patents related to Check 21. DataTreasury's proceeds could grow even larger, as the estimated annual savings that banks realize from using the electronic truncation method is between \$2 billion and \$4 billion.

Another model of the Federal Government's influence on IP is present in the defense industry. The Department of Defense frequently enters into joint development contracts with contractors, and although a patent owner usually cannot enjoin a contractor's use of a patent to perform a federal contract, or sue the contractor directly for patent infringement damages, the contractor may incur full liability to indemnify the government for government-compensated patent owners.

In the telecommunications industry, the government has operated on a hybrid model for IP. The FCC tightly controls the IP for the frequency spectrum, but not the IP for the technology that operates on the spectrum. By ignoring international open standards and opting for proprietary closed standards the FCC allows telecom companies to implement the anticompetitive practice of vendor lock-in, thereby preventing a free market. In this industry patent wars are prevalent because the technology IP is not controlled by the FCC.

How the Federal Government will influence IP in the postal/parcel industry in the future is an important factor that must be considered. The Federal Government could impact IP in the postal/parcel industry in a way similar to any of those explained previously. For example, if the Federal Government passed a law requiring all mail to be scanned and saved electronically. This would result in a push by the postal/parcel carriers to develop technologies to achieve this. These technologies would have IP

associated with them that may not have been as important if the Government didn't influence the industry.

Global Prospective on Innovation and IP in Postal/Parcel Industry

In the USPS efforts to increase innovation and IP generation to revitalize its business it is important that it look abroad to what other national posts have done. Internationally, many postal services have successfully innovated and generated new revenue streams through partnerships with the private sector, and some are making efforts towards generating more IP and using IP more strategically.

In Australia, the national postal service Australia Post has partnered with Pitney Bowes to implement a digital mailbox service using Pitney Bowes' Volly secure digital delivery system. The digital mailbox has been pursued by other national postal services as well. In 2011, New Zealand Post signed a licensing agreement with U.S. startup Zumbbox to provide a digital mailbox. However, NZ Post has recently dropped the Zumbbox based digital mailbox in favor of building its own proprietary digital mailbox. By choosing to build its own digital mailbox platform, NZ Post will benefit as it will own the IP that goes into the platform. Another national Post that has implemented a digital mailbox service is the national postal service of Switzerland, Swiss Post. Swiss Post has licensed the digital mailbox platform from Earth Class Mail, a Seattle based company.

These and other examples show how innovation and IP is becoming an increasingly powerful way of driving business growth in the postal/parcel industry. Many international posts have an advantage over the USPS because they have been commercialized and allowed to compete in more markets, but the USPS should still strive to be more innovative and better utilize IP.

Conclusion

The USPS's current business model is broken, the death knell is ringing, and a dramatic change is needed. Email disrupted the postal/parcel industry on an unprecedented scale. The results of that disruption are still very much being felt and the USPS has not found a way to adapt around the electronic diversion. More disruptions are surely coming and the best way for the USPS to protect its business is to be the one generating these disruptions. To do that, it must become more innovative and use IP strategically to protect and leverage its innovations. IP is already trending up in the postal/parcel industry, and is becoming increasingly distributed across the postal/parcel value chain. The USPS must make a strategic choice and adopt an IP management model that defines how it will handle its IP and deal with other players in the postal/parcel industry. IP has the potential to be the defining factor in the future of the USPS, and it bares implications not just for the USPS, but also for companies that operate along the postal value chain, and any company or individual that relies on the USPS for services.

ⁱ 39 USC § 101 - Postal policy

ⁱⁱ USPS. Plan to Profitability: 5 Year Business Plan. 16 Feb. 2012.

ⁱⁱⁱ USPS 10Q June 30, 2012

^{iv} USPS, Ensuring a Viable Postal Service for America. March 2010

^v USPS. 2012 Q3 Report ytd Revenue Pieces Weight report

^{vi} USPS. Postal Facts 2011.

^{vii} <http://newoldage.blogs.nytimes.com/2011/04/28/the-check-is-not-in-the-mail>.

^{viii} USPS. 2012 Q3 Report

^{ix} *ibid*

^x Thomson Innovation Patent Search: Title containing "Post" OR "Postal" OR "Mail" OR "Mailing" OR "Postage"