

# The MIT Center for Digital Business

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## A Digital Postal Platform: <sup>1</sup> Definitions and a Roadmap

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# Introduction

The posts have been facing declining volume of physical mail and low utilization of its physical assets. Much of this is caused by users moving to digital communications for letter mail and by advertisers moving to online media such as Google AdWords, Groupon, and Facebook. Changing mail flows result from multiple secular trends. Broadcast media and mass mailings are becoming interactive and personalized. Digital bill presentment is moving online. Mobile devices enable individual tracking and broader reach regardless of location. Power is shifting from senders to receivers as information overload reduces the effectiveness of un-targeted communication and as screening technologies let recipients choose which communications they will receive when and where. New entrants and players in niche markets, like Zumbbox, Volly, and Amazon's drop shipping, are challenging the traditional markets held by Posts. Many firms and industries – in analog photography, analog telephony, newsprint, video cassettes, DVD rental, and music discs – have been reshaped by digital competition. Organizations in such industries have shrunk, transformed, or exited.

*At its core, the principal problem facing Posts is competing on transportation and targeting in physical space against transportation and targeting in digital space. The latter has an overwhelming cost advantage.*

Posts have been trying to address the move to digital communication by launching applications such as hybrid mail, secure digital eBox, digital identities, and other products and services. We believe that the Posts, with their diverse assets and competencies, can also become digital platform players yet need to avoid single standalone offerings. In this paper we will discuss the general characteristics of digital platforms and their application to posts.

## Scope of Task

The task at hand is to provide a suite of ideas on generating revenues using a digital business model. To accomplish this task, this white paper will frame the discussion of complex tradeoffs and provide precise definitions for a digital platform. From definitions, the article will proceed to articulating answers to two questions: Is there a Postal digital business model equivalent to Posts' physical business model? If so, how would it work?

We have interviewed dozens of experts of different postal services and their competitors and will highlight different applications and strategies Posts are implementing in order to enter digital markets.<sup>2</sup> Drawing on extensive literature on platform economics, we will also highlight when and why different platform strategies work.

The next section is a general platform tutorial independent of postal developments. The section immediately thereafter is a set of recommendations specifically applied to Posts.

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<sup>2</sup> See the list of interviewees in Appendix 2.

# Platforms: Background & Tutorial

The key areas of focus for discussing digital business models include: platform definition, understanding closed versus open, free versus charged, cooperation versus competition, and understanding roles and governance. Specifics later emerge from understanding core principles.

## Literature

Platforms have been defined in various contexts by different people but the common underlying theme is that a platform is composed of a stable core component and a set of several complementary components (Tushman, 1998) as well as interfaces that developers use to make components; and components use to communicate with the core platform (Greenstein, 1998; Boudreau 2007). Similarly, Gawer (2009) defines platform as the building blocks that act as a foundation upon which an array of firms, sometimes called a business ecosystem, can develop complementary products, technologies or services. One must be very careful to distinguish between *industry* platforms we discuss here and *product* platforms, which simply represent reconfigurable building blocks, like Legos™, that do not involve innovation by any other party. Cusumano (2010) cites two important differences for industry platforms. One is that, while an industry platform provides a common foundation that a firm can reuse in different product variations, similar to an in-house product platform, an industry platform provides this function as part of a technology “system” whose components come from different companies often called “complementors.” Second, the industry platform has relatively little value to users without these complementary products or services. Finally, a third essential difference for industry-wide platforms is “network effects” (Eisenman, Parker & Van Alstyne 2006, 2011). These are demand side economies of scale such that the value to existing consumers rises as new consumers adopt the platform. They influence user willingness to pay (WTP), user adoption, and thus a platform’s value (Shapiro & Varian, 1999b). As demand-side economies of scale, network effects are distinct from supply-side economies of scale that come from high fixed and low marginal costs. Network effects can also be observed across “two-sided” markets where an increase in the number of consumers increases the attractiveness of the platform for developers, while more development increases the attractiveness of the platform to consumers (Parker & Van Alstyne 2000, 2005).

## Platform Definition

A platform is the set of components used in common across a product family whose functionality can be extended by third parties (Boudreau 2007) and which is characterized by network effects (Eisenmann, Parker & Van Alstyne 2006, 2011).

Examples:

1. Desktop OS: *Unix, Mac, Windows*
2. PDAs: *Palm, Psion, Newton*
3. Game Consoles: *Wii, Xbox, Playstation*
4. Network Switches: *Cisco, IBM, HP*
5. Multimedia: *Adobe/Flash, MS/Silverlight, Google-Apple/HTML5*

6. Payment Systems: Paypal, Google Checkout, Visa, Apple, Mobile Felica
7. Mobile Devices: iPhone, Android, Symbian, Blackberry
8. Enterprise Systems: Salesforce, Oracle, i2, IBM, SAP
9. Social Networks: Facebook, MySpace, LinkedIn, Monster, Twitter
10. Voice over Internet Protocol (VOIP): Skype, Nextiva, Yahoo!
11. Web Search: Google, Bing+Yahoo!,Baidu
12. Ebooks: Kindle, iPad, Nook, Sony

All components of a platform are rarely developed within a single firm and in fact, for most successful platforms, it is the ecosystem these platforms spawn that gives the platform its strength. In a typical platform market, value is exchanged between participants in a triangular relationship where the platform provider extracts rent by charging one side of the market for access rights. Figure 1 in the next section provides an illustration.

## Key Concepts & Platform Roles

Platforms require a non-traditional business model and a different way of working. Because of the nature of networks, platforms, and the ecosystems that arise around them, do not have standard linear supply chains. These are not one-off products but are rather *ecosystems* with many cross-dependencies. As a result, the design, governance and execution need to be done with a more holistic approach such that the interests of ecosystem partners are balanced.

Decisions regarding (i) open versus closed, (ii) free versus charged, and (iii) cooperation versus competition will influence the success of the platform in both size and longevity:

- 1 Market creation
- 2 The size and sustainability of the ecosystem
- 3 The ability of the platform to encourage and capture network effects

Key themes in platform design are:

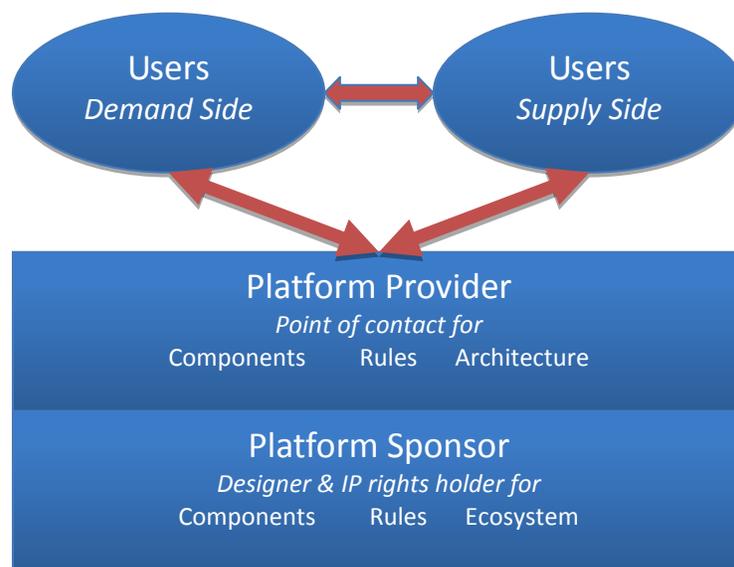
- Great platforms beat great products. Apple became valuable by developing a great platform. It offered an inferior gaming device relative to the dedicated Sony PSP and an inferior camera relative to the dedicated Canon Powershot yet iPhone outsells both of them.
- The overall ecosystem that is built around the platform is what makes the platform work; therefore an understanding of the components of the ecosystem is required to develop the required platform.
- The platform must have standards to provide clarity for how components interact.
- The platform must have rules that define how various parties interact. The rules of participation make the ecosystem work for the benefit of *all* parties in the ecosystem.
- Governance must establish responsibility and accountability. This includes commitments on what the platform will promise developers. It also ensures participants are rewarded for the value they add to the network overall. Platforms can fail when the owner thinks only of what to take from the ecosystem and not what to give back.

- Network effects result from *both* a volume of users and a volume of content creating a virtuous circle. The more users you have the more valuable the network becomes to existing users.
- In the open vs. closed choice, a closed architecture is more profitable for short term gains, but will limit the size in the long-term. Being too closed can even cause the platform to collapse as Apple learned in the 1990s.
- The more commoditized the service/solution the more open the platform must be.
- A proper functioning network rewards participants for the value they bring and fosters creativity and innovation across the ecosystem. The creativity and innovation ensure that the platform remains relevant over the long-term.

## Roles

There are four key roles to consider when building a platform. These are based on a two-sided network in developing a platform and the supporting ecosystem around that platform.

**Users (demand side):** These are the target consumers of the platform solutions and services. They can be individuals, businesses, organizations.



**Figure 1: Elements of a Platform-Mediated Network**

**Users (supply side):** These are content and application developers. They provide the specific items that attract the users to the platform – music, games, information, services, answers.

**Platform Provider:** This is the point of contact for common components, rules and architecture. The provider is typically the contact point for the users of the platform – both the consumer of the content and the developer of the content. This role can be done by one firm or many firms

**Platform Sponsor:** This is the overall designer and IP rights holder. The sponsor sets direction and controls the underlying platform technology. It also provides the overall organizing structure for the platform via rules, governance, and ecosystem support. It can help the ecosystem work by helping participants see how they are better off by being part of the system rather than outside of it. This role can be done by one firm or many firms.

Eisenmann, Parker and Van Alstyne (2005), provide models for how to organize platforms in the provider and sponsor roles as these roles form the basis of the platform and ecosystem. The sponsor is critical to success and serves as a social planner providing the organizing structure for the ecosystem ensuring that the right balance of openness and access is achieved to encourage participation and innovation and discourage “take-overs”. The sponsor helps to *consummate the match between the demand side and the supply side* so that both parties are better off. As the ecosystem evolves that may mean that the sponsor absorbs common components to ensure standardization, control over development direction and interoperability. This also ensures that the sponsor remains relevant to the ecosystem.

*The role of the platform is to consummate the match, whether between buyers and sellers or between senders and*

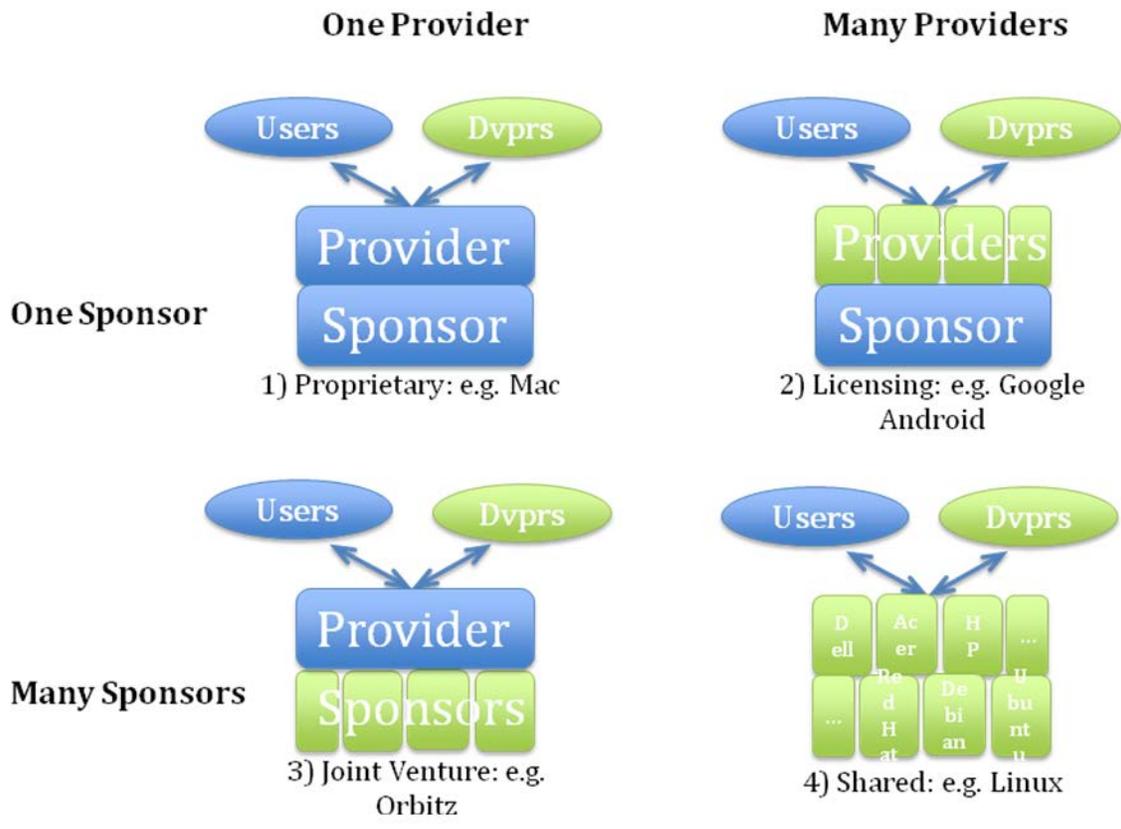
The sponsor also needs to be aware of how the underlying technology is evolving and recognize where markets are still determining the best underlying technology and be prepared to change directions as the users and content providers move. A reminder that platforms are only successful when they are able to facilitate a match between content providers and the consumers of that content – volume matters and if the underlying technology does not facilitate the match...be ready to change and adapt. Other critical decisions include determining which functionality is part of the platform and which is supply-side content, which components are parts of the provider layer and which are part of the sponsor layer.

The provider role is the contact with the user on both side of the network. This is a valuable position as the provider quickly learns what is of value to both the user and the content providers. They are in a position to see what is valued, which creates the traffic and where the trends are. The ecosystem sponsor needs to be working with the providers to be able to identify commonly used/needed functionality from the supply side and how/when to absorb into the platform.

## **Open vs. Closed**

Given the four layers of the platform for a two-sided network platform, a mixture of openness is possible. Open means that the platform creators are willing to give up some of their own profits in order to seed interest, increase overall value and build an ecosystem through others.

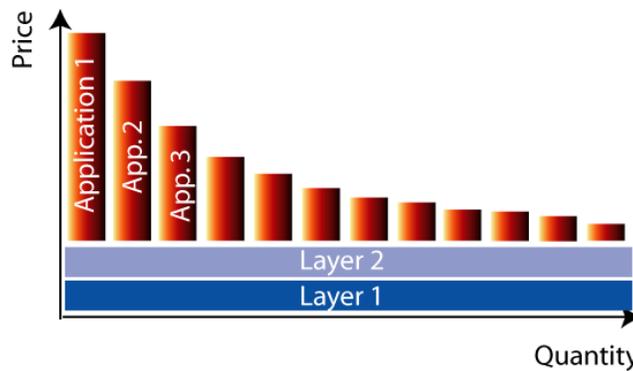
The choice as a creator of a platform is openness at what level? Too open – such as Linux means no one is driving the bus, which does not optimize the value of the platform, and therefore builds a smaller network. Too much control means not enough innovation, not enough meaningful and relevant content, and therefore not a big enough ecosystem to create a meaningful match – Apple in the 1990s. Openness is a balance of access, providing value to the ecosystem partners and value to the platform.



**Figure 2: Models of Openness for Organizing a Platform**

While closed platform do create value – they tend to be limited in both scope and market penetration. When Facebook opened itself to developers, they experienced massive growth relative to MySpace which had entered the market earlier. Openness in the right place works because developers then push out the demand curve themselves by innovating and creating more value. It happens over and over again. Openness at the demand and supply side are critical to building out the ecosystem, creating volume and thus value.

Platform scope represents a decision regarding which complements are made by the platform owner and which complements will third parties in the ecosystem develop. Ideally the platform sponsor would want to develop the most valuable complements to its platform while letting external developers address niche applications or applications in the long tail of applications developed on the platform. This is depicted in Figure 3 where a few applications at the head of the distribution are controlled by the platform while the bulk of applications are controlled by third parties. If a platform sponsor tries to capture all applications, it fails to create an innovating ecosystem. If a platform sponsor captures none of the applications, it risks being disintermediated and pushed down the value stack.



**Figure 3: A handful of the most valuable applications can potentially be developed in house. Less valuable applications can and should be developed by third parties.**

The advantage of letting third party developers develop niche applications can be directly seen in stronger network effects as the platform acquires more customers that it would have lost otherwise to competing applications or platforms.

The postal organization needs to truly understand what the critical control points are in the overall ecosystem and own them. These are the highest value elements without which the ecosystem and therefore the platform will not thrive. Control points for a postal platform can be the first mile/last mile touch points with users – the address, the postal code, the delivery route.

### ***Platform Economics***

So how do platforms make money? A key rule of platform design comes into play here, you must design for the good of the ecosystem to ensure that the ecosystem survives. The platform creator needs to understand what is of primary value to the system, and *subsidize* that side of the ecosystem. This could mean a combination of factors:

- Identify the marquee content developers (supply side) and attract them through pricing incentives
- Ensure that governance rules attract third parties who will add value. Participants need a reason to be part of the ecosystem
- Identify influential consumers (demand side) who will talk up the virtues of the platform and attract other users – through incentives for tweets, posts etc.
- Understand the market dynamics so that charges apply to the price *inelastic* side of the market while subsidizing where there is low marginal cost
- Pricing should adjust to the opportunity cost of the recipient
- Charge for the utility of the service/information not for the transport

## **Six Platform Pricing Rules**

1. *Capture the cross-side network effects.* In consummating the match, the platform must ensure it takes a fee, either to participate or to transact, to run the platform. This fee should not create undue resistance to participation. Netscape gave away free Internet browsers but the complement, Internet servers, were not proprietary complements so Netscape made no money.
2. *Subsidize the price elastic side and charge the price inelastic side.* Platforms need critical mass so to launch they bring one side on board by giving that side value. They make up this value by charging the other side. To get digital documents into the PDF standard, Adobe gave away the reader and charged for the writer.
3. *Subsidize the creators of value.* The consumer demand curve shifts out when there is more value added to a platform. All major operating and gaming companies subsidize developers with free access to Application Programming Interfaces (APIs) and heavily discounted System Development Toolkits (SDKs).
4. *Platform subsidies should involve negligible marginal costs.* Information goods and hosted services make good giveaways. Free PCs make poor giveaways. Platforms must understand what the costs of what they give away.
5. *Avoid interfering same-side effects network effects.* If a platform forces one side of its market e.g. suppliers/developers, into fierce competition, then they might choose to avoid the platform entirely.
6. *Cater to marquee users.* Certain large consumer groups or individual developers can get better deals because they bring with them other large user groups, they add critical value, or the platform needs them to stay away from competitors.

## **The Bottom Line**

The platform provider and/or sponsor is an intermediary facilitating an exchange – its value lies in the ability to facilitate an exchange that would not otherwise happen. Who gets charged by the platform and how you will define how the platform and ecosystem grows.

# Postal Platform Elements

In the physical world, postal business models can be thought of as platforms, two-sided networks that match senders and receivers. Most Posts also play both a sponsor and provider role, senders provide the content for a fee to the receivers who receive content for “free”. How can this platform and network be leveraged and enhanced to be relevant in the digital age?

## Principles

- Make it end-user centric – help the end-user control who connects with them
- Build an ecosystem that will grow
- Open the environment to encourage integration and interoperability
- Encourage the development of market-driven finished services
- Do not try to provide all these services alone
- Facilitate open and equal access for all - Public service
- Be an enabler, partner, cede some control
- Be the last resort provider at lowest cost
- Reward participants in proportion to the value they create
- The modern postal platform could be built on a foundation of authenticated users linked to a physical location

## Attributes

- Secure
- Authenticated
- Private
- Confidential
- User-friendly
- End user control
- First mile and last mile delivery control points
- User ability to choose physical or digital
- Identity management capabilities
- Location aware

## Roles

- Posts manage the control points – these include the first mile and last mile access points playing the intermediary role and the relationships with both the supply side and demand side.
- Posts are the platform sponsor, setting the standards for participation, security, authentication, incentive systems, and governance.
- Posts are a custodian of the connections between individuals and their corresponding address(es) whether physical or digital (provider role).
- Posts are a service provider for first mile collection and last mile delivery.

## Sensitive Issue

*Should Posts analyze transactions data occurring across any new digital platform?*

This question was not part of the original charter for this white paper yet it came up frequently in discussion. That Posts have a trusted brand seems much in evidence. Being able to use this brand has also been a deeply held assumption among those with whom we spoke. Will this continue to be true?

At issue is whether trust in the physical domain will translate into trust in the digital domain and whether a similar business model can use trust in the same way. There is reason to believe that it might not.

On one hand, maintaining a reputation as a trusted neutral party implies that the content is "sealed against inspection." On the other hand, data analysis is exactly what Google, Facebook, and Apple do in order to provide value. A primary role of any platform is to help "consummate the match" between the two sides of a market (or aid exchange among members of the same side). Commercial firms currently do this by analyzing the consumption preferences and behaviors of users in order to connect them to others. Connections can be other individuals, as on Facebook, or connections can be business, government, and content (among others), as on Google and Apple.

We examine this issue specifically under Recommendation topic 8.

# Recommendations

## 1. OPEN PLATFORM TO 3RD PARTIES, AID THEIR BUSINESS MODELS

In order for IPC members to offer platforms – as distinct from standalone products and services – portions of the ecosystem must be opened to third parties as described in the section on platform principles. Portions that can be opened include the sponsor role, the provider role, and the content developer role. The developer role especially *must be open*. For Posts, this can be content or applications developers, larger mailers, or mail houses. Currently, openness is not the norm among hybrid mail providers and secure digital eBox services as many Posts have chosen to "go it alone" in terms of who develops a service and who provides it.

The consequence of failing to open can manifest both as slow rates of innovation and slow rates of ecosystem growth. One EU post, for example, has spent 10s of millions of Euros to promote adoption but barely has 1% of the target population. Harnessing third parties will help.

*When NTT DoCoMo first introduced mobile phone services, engineers thought ring tones were a foolish idea. They had the wisdom, however, to let third parties offer whatever services they wanted and to promote services that were succeeded. The ring tone market exploded. Lesson: Allow the ecosystem to help you innovate and it will uncover new opportunities including those you might not have conceived.*

Opening to third party developers implies having a public set of Application Programming Interfaces (APIs) and a suite of System Development Toolkits (SDKs). These are now commonly used as a source of competitive advantage in other platforms such as Facebook and iTunes. In fact, Gartner Consulting has predicted that 75% of the Fortune 1000 will offer APIs to their business platforms within three years.<sup>3</sup>

Assisting developers with APIs and SDKs helps with the new product / service *creation* process but opening the platform should not stop there. Successful platforms also assist with the new product / service *distribution* process which in turn establishes additional income sources. This implies supporting developers by opening a digital store like that of Apple's iTunes or that of Salesforce's AppExchange. In addition, it implies helping partners find their markets via recommender systems and matching systems such as those on Amazon. This highlights the importance of helping "consummate the match". Amazon's tools facilitate transactions that might never have happened otherwise.

One of the biggest assets of IPC member organizations is the extensive coverage of homes and businesses in off-line space. One opportunity is to transition these same customers to the on-line space and facilitate developers reaching these markets.

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<sup>3</sup> Charles Babcock (2011) "Easy-to-Use-APIs Key to Business Growth" *Information Week* Oct 17; p 14.

Developer relationships can leverage existing business relationships that already look like platform plays. For example, Swiss Post partnered with (and then acquired) Mailsources. What would it take to widen the collaboration to other players?

There are multiple advantages of opening a postal digital platform. First, IPC members can harness third party innovation and pull in ideas that Posts have not considered. Successful projects then increase the size and value of the market. Second, it creates a framework for sharing risk. Not every project will be successful so this creates a cushion for the platform sponsor who cannot afford to conduct all market experiments alone. Third, it creates an additional revenue stream that further enhances the value of the platform.

## 2. ENUMERATE FUNCTIONS THAT CAN SERVE AS PLATFORM FOUNDATIONS. CHOOSE FEATURES CONFERRING CONTROL

A number of IPC Member Posts have had the wisdom to realize that platform business models exist. A handful have even opened or sought partnerships to push this forward. Yet a platform should not be a single function application. Instead, it needs a suite of functions that can be combined in novel ways to create a space of opportunities.

For example, the bulk of applications on iTunes were neither built nor even anticipated by Apple. Yet Apple provided core functions that third parties could build upon. In the case of the iPhone, these include such *functions* as video display, wifi access, camera & scanner, fast processor, accelerometer, 3G mobile, Bluetooth, audio playback, internal clock, geolocation capability.

These underlying functions then serve as the services that applications providers access and recombine to provide custom news, location based ads, music, calculators, web browsers, remote control devices, star charts, task lists, flight trackers, restaurant recommendations, games, business card readers, voice recording, etc.

The point is that a digital postal platform must articulate similar underlying functions offered as core platform competencies – many of them, not just one – in order that they can be recombined to create new business models.

A non-exhaustive list of functions that could represent core elements of a postal platform with the potential to be recombined by third parties includes:

- Digital Signatures
  - Identification and Authentication
  - Non-repudiation
  - Privacy/Encryption
  - Time stamping
- Location
- Archiving
- Search
- Profile management

- Preference Declaration/Elicitation
- Billing methods
- Payment services
- Reputation Management
- Legally Binding / Legally Protected Transmission

The first mile access and last mile delivery capabilities in particular represent unique advantages of Posts in physical presence and delivery that can be leveraged and ported to digital delivery.

Having articulated platform elements, the next step is to articulate architectural, legal, and business control points that allow postal operators the capability to charge for services that access these functions. To do this, IPC members must examine the postal platform, in particular understand the *information* flows and how services are created and delivered internally. Then Posts decompose the platform at clear breaks between layers and allow external entities access to key resources within the platform. For example, by offering the free operating system Android for mobile devices, Google gains critical access to the information flows upon which it bases its services. It allows others to build on its maps and advertising while guaranteeing that third party developers display only Google supported ads on Google supported services.

Functions that do not offer architectural, legal, or business control points allow competitors or even developers to route around them. One reason Apple disallowed Adobe Flash on its iPhones and iPads was that this powerful programming language allowed developers to bypass iTunes for in-application charges, weakening Apple's ability to exercise revenue control.<sup>4</sup> SAP uses the quality review process, required before new applications can be posted in its store, as an architectural and business control point. For IPC members, quality review and functions such as legally binding and legally protected communications are especially good opportunities for architectural control points. Use of these control points will allow IPC members to capture platform related revenues.

### 3. REDEFINE THE UNIVERSAL SERVICE OBLIGATION

While this is a regulatory issue, IPC Member Posts must individually and collectively understand how their roles change as citizens move online. As in the case of trust, the universal service obligation in physical space is unlikely to be identical to that in digital space. Certain countries, for example Finland, have already moved to add broadband delivery to the rights of citizens along with physical delivery while other countries such as the UK are moving in that direction.

Itella has adopted an innovative strategy to understand how users would want their USO needs met. Experiments linked to understanding preferences for various delivery models were undertaken in a 'living lab' in the small town of Antilla. For example, people can pick up their mail any day of the week at the post office. Mail will get to the house 1x per week if people do not want to travel. Or mail can be delivered instantaneously if the access is digital. Note that the digital USO can interact with the physical USO.

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<sup>4</sup> This move by Apple was so damaging to Adobe that the latter has opted to support HTML5 on mobile devices.

Another factor, raised at the 2011 IPC Annual Conference in Rome, is the extent to which understanding the digital USO entails understanding competition with cable companies, mobile phone companies, banks, email and archival services, and social networks. The problem of building a digital platform is like that of playing 3-dimensional chess. Each of these competing industries has a role to play in delivering digital goods and services, and matching consumers with advertisers. Further, each of these organizations can benefit from a digital USO in the same way the benefitted from a physical USO 200 years ago. They have an assured means of reaching customers and also means of getting paid.

Defining the USO for each country and analyzing the scope of local business competition goes beyond recommendations that are possible in this paper. Indeed, conditions vary widely among Finland, Germany, Italy, and the US to name but four. Yet, USO issues must be flagged as an issue and resolved. Banks, social networks, and telecommunications firms will be tough competitors if not co-opted to play a role on a postal digital platform.

Decisions regarding how the USO will be honored and who will be responsible – among posts, telecommunications firms, banks, search firms, etc. – will help define which ecosystem partners can build on the platform functions defined in the previous section. We now proceed with strategies for creating leverage relative to such powerful players.

## 4. USE A VISA MODEL FOR ORGANIZATIONAL STRUCTURE

Managing ownership is, in effect, the management of incentives. Divided and competing ownership implies divided and competing incentives. IPC Member Posts offer a variety of independently controlled digital services that have the potential to garner much wider adoption if standards are set in a coordinated fashion. The tale of the demise of AM stereo radio provides a cautionary lesson (see sidebar). One difficulty is that innovation occurs independently and then access requires multiparty negotiation.

*Stereo AM radio failed as a viable business despite existence of good technology. Automobile companies, radio broadcasters, and radio manufacturers each sought to offer and control their own version of the standard. As a result other competing standards, notably FM stereo, completely displaced them from the market (source Shapiro & Varian 1999).*

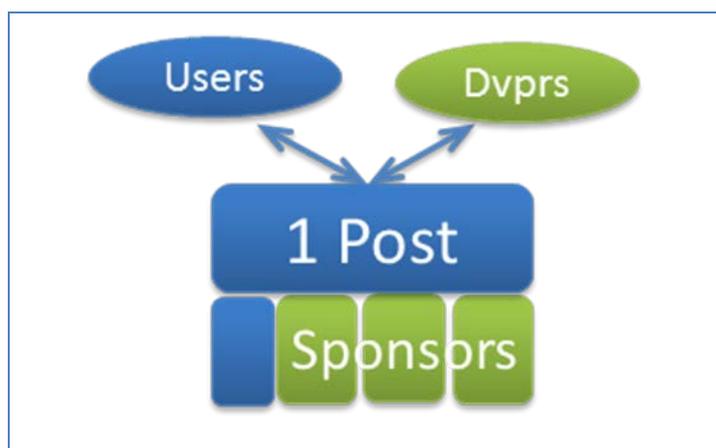
*Lesson: Too many competing standards can prevent any one of them from gaining critical mass.*

One solution would be to create an intellectual property (IP) holding enterprise analogous to that founded by VISA member banks. Another example is the DVD holding company DVD6C that pools multiple essential technologies necessary for producing the whole ecosystem around DVDs. Academic literature often describes such organizations as "patent pools". IP is transferred into the patent pool with substantial and continuing royalties going to the original IP owners. Third party access is then provided to all members on a Reasonable And Non-Discriminatory (RAND) basis. The patent pool holding organization can also seek to acquire independent firms and technologies that benefit the pool's members.

This has multiple advantages relative to divided and competing ownership. First, complementary technologies can be combined such that the platform can offer best of breed components across the platform as distinct from having to offer more limited

functionality in certain areas. Second, user acceptance tends to be substantially higher. When multiple competing standards exist, from divided and competing platforms, users limit their participation because they do not know which platform will dominate. This occurred, for example, in the case of HD-DVD versus BluRay formats in gaming platforms. When these competing standards first emerged, potential consumers hesitated buying. Just as in video cassette recording, no one wanted to get stuck with a Betamax when the market converged on VHS. Third, even the original IP owner can potentially earn more profit by contributing to the pool than staying independent if terms are negotiated correctly. The reason is that markets grow faster via coordination; 5% of a €1,000,000,000 market is worth more than 95% of a €1,000,000 market.

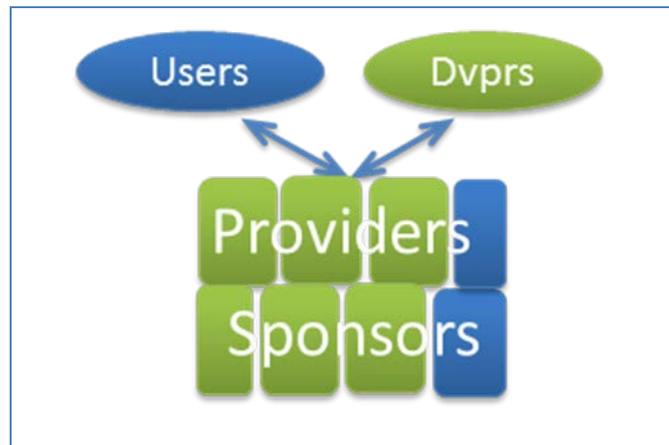
### ***Market Openness: Model 1***



**Figure 3: Within country, a single IPC member can represent the point of customer contact. Intellectual property can be shared among IPC members.**

Within country, a single IPC Member Post can serve as the provider making connections between content developers and users and one of potentially several other member sponsors of the platform. In this case, other member sponsors could include other posts, telecommunications companies, banks, logistics operators, and Government. While the IPC Member Post might not provide all of the services, that Post controls the provider layer and can contract with others, as they do today, with the physical platform to do elements of provision. The focus for the IPC Member Post is on the connection points with the users and controlling that connection as described in the previous section. The goal is to serve as the matchmaker between users and the content those users wish to have.

Across countries – and Posts such as Royal Mail, Swiss Post, Itella – the IP ownership picture looks more like that illustrated in Figure 4.

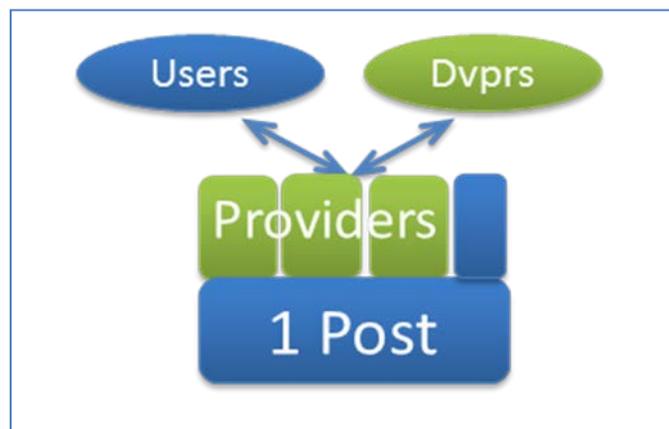


**Figure 4: Across countries (markets), there can be multiple points for customer contact.**

**Market Openness: Model 2**

A second view might have the IPC Member Post own the sponsor role. In this role, the Post defines the structure, the design of the platform, and the network ecosystem. It would also have a provider role with the connection to the consumer but that could be rolled into other services and solutions. As a sponsor, the Post would need to create the rules for interaction and facilitate how the various elements of the ecosystem work together.

Figure 4 is not a recommended structure for within country platform organization. It cedes too much control and relegates that particular Post to a position that can be squeezed by other providers and sponsors. Changes in direction also require complicated negotiation with other ecosystem participants.



**Figure 5: An alternate within country (market) view could have a single post keep their own IP but allow multiple points of customer contact.**

Many postal organisations have adopted this model to manage their retail network where many other parties serve as a point of contact and offer postal services out of convenience stores operated by third parties. This model resembles that of the Microsoft Windows™ desktop operating system and the Google Android™ mobile operating system. It can work for individual Posts in the digital world but

requires very strong underlying intellectual property. It also requires an independent capacity to support a multi-function platform along the lines described in the previous section.

## 5. FROM A SPACE OF PLATFORM OPPORTUNITIES, DEVELOP 1-2 DEMONSTRATION PROJECTS

Developers can need motivation to invest in a risky new platform. Intel has solved this problem using what it calls a "rabbit strategy" of targeting a platform complement with a high probability of success and assisting the developer in highly public and visible fashion.<sup>5</sup> Other investors then follow after observing that developer succeed.

Consider the following platform<sup>6</sup> applications:

- E-Government
- Certified, Authenticated, Delivery Confirmed Digital Mail
- Hybrid & Reverse Hybrid Mail
- Reputation Systems
- Digital Concierge, Archiving, Search, Universal Login
- Digital Currency Exchange
- Digital Storefront

Given a platform with the capacity to support applications in these spaces, IPC members could partner with firms such as Symantec to provide secure authenticated digital mail or firms such as Adobe to provide concierge services for archived documents. From this set of applications, IPC members should conduct trial implementations with partners, use these to showcase successes, then use successes and failures to learn and improve on each iteration of postal platform evolution.

Applications providers should not be offered exclusivity but merely first mover advantage in the creation of the digital postal ecosystem. Also IPC members *should* collect tariffs from these partners rather like Apple collects tariffs on sales through its digital iTunes store.

It is worth reiterating that IPC Member Posts should not seek to go-it-alone as they develop demonstration projects. Rather, demonstrations should prove that third parties can build successful enterprises on the postal ecosystem. This can mean eschewing vertical integration. In Europe, this can mean loosening control and accepting a different risk profile, yet partners help share risk and again 5% of a €1,000,000,000 market is worth more than 95% of a €1,000,000 market. In the US, this can mean solving legislative challenges in order to partner with industry.

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<sup>5</sup> Cusumano & Gawer (2002) "Elements of Platform Leadership" *Sloan Management Review* 43(3); pp 51-58.

<sup>6</sup> Based on an applications list appearing in "The Postal Service Role in the Digital Age Part 2: Expanding the Postal Platform" Risk Analysis Research Center. Working Paper WP-11-03.

## 6. USE PLATFORM ENVELOPMENT, SEEDING, AND PARTNERSHIPS TO SOLVE THE CHICKEN-AND-EGG LAUNCH PROBLEM

The classic difficulty for building a platform is the chicken-and-egg launch problem. Users of a platform want content and applications before they will use it; developers for a platform want users before they will provide content and applications. Each side wants the other side to commit before it will spend resources to adopt the platform. This is a "critical mass" problem. There are several strategies to promote successful launch.

**Seeding Strategies** – Portable Document Format (PDF) has become such a ubiquitous standard that most people do not recall the difficulty Adobe had building its ecosystem. Originally, consumers had no reason to bother acquiring PDF readers because there was no content. Document publishers had no reason to buy the PDF writer because no one had the reader.<sup>7</sup> Adobe adopted one brilliant strategy and offered the government massive discounts to place all tax forms online for free. This maneuver saved the government millions in printing and distribution costs. It also created a very large corpus of documents that tax payers could access at will so long as they had a PDF reader.<sup>8</sup> IPC Member Posts could take a very similar strategy in providing access to all kinds of e-government documents and services. If the presence of a seed is a benefit, the absence of a seed is a problem. One ePost service has only 15,000 messages a day spread over 1 million users. On average this produces only 1 message every two months, not enough to drive interest or traffic. The point is to seed the platform with content or applications, preferably material that is already in high demand, in order to attract users.

**Marquee Strategies** – Another common launch strategy is to identify key user groups or key developers and offer them attractive reasons to participate. Microsoft, for example, convinced Electronic Arts to offer popular sports games on the Xbox in order to give users a reason to buy Xbox. Here, the postal equivalent could be to target bulk mailers and offer them attractive reasons to reach large populations associated with the postal digital platform. These businesses naturally prefer to shift to digital delivery due the cost savings and also increased tracking ability. They will shift eventually so it makes sense to shift them to a postal platform rather than a competitor. A continuing theme is thus to help reduce business risk. Note that commercial enterprises like Zumbox and Hearst Corporation with services such as Manilla, are already doing this, indicating they could be partners or competitors in this space. Among IPC members, Itella is leveraging a student portal and a bank to increase its channel visibility and access.

**Platform Envelopment** – If a platform sponsor has an existing platform, the user base is a remarkable asset that can be used to expand into adjacent platform markets.<sup>9</sup> Consider that the iPhone emerged into an eBook space that was already crowded with eReaders from Sony, Amazon, Samsung, and numerous others. When Apple then introduced the iPad 1, the firms simply bolted eReader applications

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<sup>7</sup> Parker & Van Alstyne (2005) "Two Sided Network Effects: A theory of Information Product Design" Management Science pp 1494-1504.

<sup>8</sup> Tripsas (1995) "Adobe Systems Incorporated," Harvard Business School Case 801-199

<sup>9</sup> Eisenmann, Parker & Van Alstyne (2011) "Platform Envelopment" Strategic Management Journal, 32(12) 1270-1285

onto an iPhone with a larger screen (while cutting the phone and camera capabilities) thereby tapping its large iPhone user base. It expanded into eBooks, displacing existing players, without any true upgrades to its core feature set. If IPC members can establish a digital relationship, say for eGovernment services, involving a large citizen population, it can then absorb adjacent platforms into the user base by adding applications. IPC members have such a large pool of users, it should use platform envelopment to involve users in other new elements of an emerging platform ecosystem.

**Converters & Interoperability** – If a Post lacks a platform from which to envelop adjacent platform markets, it can borrow one from a competitor using a converter. Further, the various digital postal providers must interoperate as in the case of mobile phone networks. It should not matter which provider consumers choose, they should always receive the same calls. In the early 2000s, when Apple had a much smaller PC network than Microsoft, its personal computers could read and write disks formatted in the MS-DOS format. This ensured that it could piggyback on the larger network. In cases where Posts have fallen behind other communications networks, they can choose to interoperate with an existing platform to reduce consumer switching costs and grow their own platforms.

**Articulate Whitespaces** – To show its ecosystem partners where to invest, SAP provides its developers with a 12-24 month roadmap of where its own new developments are occurring. This gives developers at least two valuable pieces of information. First, it indicates what new features are coming so developers know the functions upon which they can build. Second, it indicates where SAP is not going to compete so developers feel safe investing. IPC Member Posts can and should adopt this same strategy. Posts can individually and collectively, via the proposed VISA organizational structure, articulate which spaces Posts will develop and which spaces Posts will leave for developers in order that ecosystem partners have clear guidelines on where to invest.

## 7. PRICE TO DRIVE ADOPTION USING 2-SIDED NETWORK STRATEGIES

Numerous sophisticated organizations have made pricing errors determining how to make money in platform markets. Even the best platform firms have made serious mistakes because prices on one side of a market are connected to purchases on the other side. Adobe originally tried to charge for the PDF Reader at a time when there was not yet PDF content for consumers to view, causing their business model to fail.<sup>10</sup> In the 1980s, Apple charged \$10,000 for its system developer toolkits, which drove developers to Microsoft.<sup>11</sup> Surprisingly, Salesforce.com repeated this mistake in the 2000s.<sup>12</sup>

For platforms, IPC members should *not* price to marginal cost or price to extract the most revenue from a given user group. In short, the standard economic pricing rules lead you astray. They do not build markets. Instead, Posts must price to drive *adoption*, maximizing revenues across *both* sides of the platform. A full set of six implementation rules for pricing was provided in section on platform principles.

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<sup>10</sup> Op. Cit. Tripsas (1995).

<sup>11</sup> Op. Cit. Eisenmann, Parker & Van Alstyne (2005).

<sup>12</sup> Op. cit. APLxxx (xxx).

Currently, almost all major postal models have the sender pay. Recipients get service for free. In general, this is the correct model.

However, because platforms couple developers and consumers, there exist reasons to *subsidize* one side of the market in order to increase revenues on the other side of the market. IPC members should note that Google paid \$5.5M in prizes for the best new Android applications in order to promote Android adoption. It has now overtaken Apple's iPhone in the total stock of mobile phones supporting Android. In the digital mail context, Zumbbox is covering all costs on behalf of consumers to support scanning, bill collection, presentment, payment, archiving, and single sign-on across users' various accounts. This is a subsidy. Having a captive set of consumers allows Zumbbox to charge merchants and mailers *more* than if they had no such pool of users. Additional revenues will later come from providing advertising access to these consumers on a consumer permission basis.

Value-adding services for which recipients are willing to do exist. Intercepting physical mail and having it directed to an alternate destination, for example, can be a very high value adding specialty service that recipients can cover. Recipients can also designate custom news, recipes, mortgage offers – digital transmissions they *want* to receive – that they are willing to pay for. Specialty services should be sought and examined carefully for their network effects. Consider that do-not-call lists, do-not-FAX lists, and do-not-spam lists applied to bulk (digital) mail at users' requests could make users happy yet could also significantly reduce advertisers' participation. Again, price distortions on one side of the market drive participation on the other.

A key insight for IPC members is to offer free pricing to general consumers, subsidize developers at the point of first creating new postal applications (e.g. eGovernment, hybrid mail, digital concierge, currency exchange, etc.), and subsidize consumers when their adoption creates network effects (e.g. the Zumbbox strategy). IPC members can increase revenues by offering specialty services (e.g. custom news, legally binding transmissions) and charging the price *inelastic* side at key architectural control points as in section on platform pricing rules.

## 8. RE-EXAMINE “TRUST” IN THE DIGITAL SPACE. IT’S NOT THE SAME AS IN PHYSICAL SPACE

To the computer science community, a "trusted" transaction has five properties. Maintaining "trust" in a digital space, as distinct from a physical space, implies that these properties should exist in a digital platform.

- 1) Users are "authenticated," meaning the sender or receiver is in fact the right party.
- 2) They are "authorized," meaning they have permission to do what is proposed (e.g. spend from an account or buy alcohol).
- 3) The transaction has high "integrity," meaning the parties each receive what they expect to receive.
- 4) The transaction is "private" meaning 3<sup>rd</sup> parties cannot observe its contents without permission.

- 5) The transaction is "non-repudiable," meaning the recipient cannot lie about not receiving a parcel, summons, or transfer when the transfer did in fact complete.

All five factors represent sources of trust yet most analysis focuses on violations of topic four.

In order of increasing loss of privacy, we can articulate several possibilities regarding data analysis for Posts.

- a) Continue with a commitment not to analyze transactions data in any form and help safeguard user privacy, keeping it always sealed against inspection. This will likely limit interest and therefore the ecosystem to a niche market of privacy and security conscious citizens, enterprises, and consumers. The market for such services has, somewhat surprisingly, never grown very large. Based on actual behaviors, the bulk of consumers appear willing to have their transactions data analyzed in exchange for value adding services. If Facebook is any indication, users will even volunteer information in exchange for value adding services.
- b) Offer services that "consummate the match" based on declared user preferences rather than observed user behavior. This has the benefit that it does not require transactions data analysis and user profiles can make public only that which users wish to reveal. The downside is that such declarations omit many topics users have not thought to declare, actual behaviors can differ from declared behaviors, and users must act positively to provide such data as opposed to having it passively collected on their behalf by observing what they do.
- c) Offer services that analyze masked data rather than raw data. This option is frequently overlooked. The purpose of masking is to reduce the semantic interpretability of any specific message or transaction yet still be able to offer value adding services based on a user's global pattern of activity. It is possible to secure individual transactions against inspection and yet accurately describe broad properties of sets of transactions. An example is provided in Appendix II on Masking Content.
- d) Offer services based on analysis of raw data. This is what typical businesses do, based on the transactions of their customers or based on data they purchase from other sources.

All uses of data should adhere to the "fair information practices" of gaining consent, informing people about any data being collected, identifying the uses to which it could be put, giving them means to inspect their own data and correct any data errors, and keep the data secure against third party misuse. Ironically, few commercial enterprises give users control over their own data allowing them the opportunity to reveal only what users themselves are comfortable revealing.

Revenue models increase across steps a-d in direct proportion to the loss of privacy. A business model based on option (a) is unlikely to compete successfully against a business model based on option (d). An economic logic is straightforward. A business model based on identifying and providing what people want can provide relatively more value than a business model based on protecting the privacy of transactions that are, on average, not terribly sensitive.

A business model for Posts could be based on (b) or (c) with additional caveats. Among commercial enterprises, the platform manages the transactions data for the interest of the platform. On a postal

platform, maintaining users' "trust" could be a matter of managing transactions data for the interests of the users themselves, not commerce and not government. Giving users the ability to control exposure of their data, while maintaining its accuracy, could well be a revenue opportunity welcomed by consumers relative to current commercial practice. Offering to mask this data, to afford additional privacy, while permitting broad pattern analysis could make this opportunity even richer.

The importance of this issue goes well beyond the transition from physical transport to digital transport of information for Posts. Analysis of information flows is statistically associated with improved marketing effectiveness, improved healthcare delivery, and improved operational efficiency.<sup>13</sup> In fact EU regulations banning the use of personal data are associated with more than a 50% drop in banner advertising effectiveness, which in turn is associated with a loss of competitiveness and economic growth.<sup>14</sup> This problem was not observed for non-EU countries that did not enact this legislation. Transitioning from physical transport to digital transport of information implies that privacy policy has become part of a society's innovation policy.<sup>15</sup>

The point for IPC members is that simply assuming Posts' trust based on a physical framework does not imply trust will translate to a digital framework. Failure to understand how data are being used can lead to a non-competitive revenue stream.

## 9. PERMISSION BASED ADS CAN RAISE REVENUES

From the recipient's perspective, advertising is not necessarily good or bad. A positive perception depends on whether an ad fits a user's interests. In movie theaters, previews of "coming attractions" are nothing more than ads for forthcoming movies. But moviegoers enjoy them because the genre of these ads matches the genre of the movie the audience paid to see. Well-targeted ads are a bonus. In contrast, mis-targeted ads, displayed merely because the audience is captive, meet with frustration and annoyance. Moviegoers do not want to pay in order to have some advertiser waste their time. For the most part, bulk mail fits the second category, as users must dispose of the "junk mail" they do not want.

Permission-based ads resolve the problem of how to match users' perceptions. Households and businesses are willing to receive, and are generally happier to receive, information they have declared they want. Better still, advertisers will pay more per capita to reach consumers for whom their ads are effective. Posts should take advantage of this fact, avoid bulk digital transfers (otherwise known as spam), and use permission-based techniques to deliver ads and increase revenues.

There are known methods for doing this such as Amazon's consumers who bought X also bought Y, Amazon's user reviews of books, and Travel Advisor's user ratings of hotels. The latter is more straightforward as users must act positively to volunteer such information. To respect trust, the issue for IPC members is to let users decide what they wish to receive, honor these preferences, and give

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<sup>13</sup> Goldfarb & Tucker (2012 Forthcoming) "Privacy and Innovation." in *Innovation Policy and the Economy Volume 12*. Eds. J. Lerner and S. Stern. NBER <http://www.nber.org/chapters/c12453>

<sup>14</sup> Goldfarb & Tucker (2011) "Privacy Regulation and Online Advertising" *Management Science* Vol. 57, No. 1, January 2011, pp. 57–71. These authors claim the drop is in fact 65%.

<sup>15</sup> Op. Cit. Goldfarb & Tucker (2012 Forthcoming).

users' control over updates and changes. Help the users receive what they wish to receive and IPC members can run very profitable businesses.

## 10. APPLY PLATFORM CONCEPTS RETROSPECTIVELY TO PHYSICAL ASSETS (NOT JUST DIGITAL ASSETS)

IPC Member Posts should apply the openness strategies introduced in Figure 2 retrospectively to physical plant and infrastructure, delivery services, and logistics. Allow third parties to help Posts innovate. The point is to open spare capacity in ways that other interested parties can figure out new ways to use them. This is a point often missed in digital platform discussions yet it remains one of the key opportunities for IPC Members Posts.

- i. Le Groupe La Poste and Deutsche Post DHL are considering very clever models of absorbing new and existing services onto the postal platform. Given that postal workers already reach homes and offices, they can also perform meter reading, deliver meals, pick up medical prescriptions and drop them off. Postal workers can check on the elderly. Imagine an adult child using the Internet to schedule a knock on the door of an aging parent to see if his or her parent is OK and taking medicine. This highly valuable service requires feet on the ground and overlaps with routes already taken by postal workers. This is a physical form of "platform envelopment."
- ii. E-commerce lacks the opportunity for people to try floor samples, test fit, heft, texture & quality. The trick is to find merchants who want use this opportunity, do not have a retail presence, and can drop ship directly to the location or send on to the home. In this platform extension, the merchant takes the risk that the sample sells, not the Post. Note that the IPC Member Post does not even need to know which merchant will be successful. To solve this information problem, the Post can allow merchants to bid on the retail space, accepting the highest offer that also fits with community values.
- iii. Amazon is partnering with 7-11 Stores to drop ship purchases to retail stores nearest to buyers. There is no reason Posts cannot adopt the same model and do it better. IPC Member Posts can offer a shipping discount for delivery to a postal service center relative to home or business delivery (it can also be conditional on the item being picked up in a reasonable time). Wholesalers can then ship to postal service centers where price sensitive consumers can trade time for money.

IPC Member Posts should examine the retail space and decide whether to (1) sell the space like Royal Mail and move into other spaces such as convenience stores, (2) diversify and expand the offering of products/services like Poste Italiane did with mobile phones and banking or (3) open their physical business models to match digital business model equivalents.

## Conclusion

There is considerable hope for IPC Member Posts. In answer to the questions posed on the scope of tasks, we have several results. If the core question is whether there exists a digital platform strategy for postal services, the answer should unequivocally be “yes.” If the question is whether current IPC members will be the ones to seize the initiative and own these services, the answer is “maybe.” It depends on IPC Member Posts willingness to pursue digital strategies analogous to but quite different from their physical strategies. If the question is how to proceed, the previous section provides ten separate recommendations to get there.

IPC members possess a number of remarkable assets – large user populations, dedicated workers, more contact points than most businesses, and even government protected services. These can form the basis of a digital platform. By organizing around a VISA like structure, IPC members can gain critical mass and market power. By defining low level functions and opening the system, IPC members can create a platform. By seeding the platform, partnering with marquee users, and enveloping adjacent markets, IPC members can launch and expand. These partnerships can also mitigate risk. By pricing in two-sided fashion at architectural control points, members can gain new revenue streams. By applying these insights retrospectively to physical assets, they can recover lost ground and grow long-term sustainable business models.

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# Appendix 1 – Masking Content: A method to permit analysis but protect privacy

## ***Property Preserving Secure One-Way Functions***

*Idea:* We can protect the privacy of any text message or document while facilitating valuable analysis of that document, even at the word level. Protecting privacy refers to the ability to prevent third parties from learning the exact semantic content of a communication with a level of certainty that is strong and cryptographically precise. At the same time, it is possible to preserve properties of content contained in the original document that help us learn how information behaves at the word level. Together these properties allow us to understand such phenomena as information diffusion, topic diversity, content overlap, and ad word targeting without subjecting people to extraordinarily intrusive levels of monitoring. This increases willingness to participate and share data. It also reduces recording bias as people are less likely to alter their behaviors when subjected to such detailed levels of scrutiny. Although targeted at the professional cryptography community, this result has widespread business relevance.

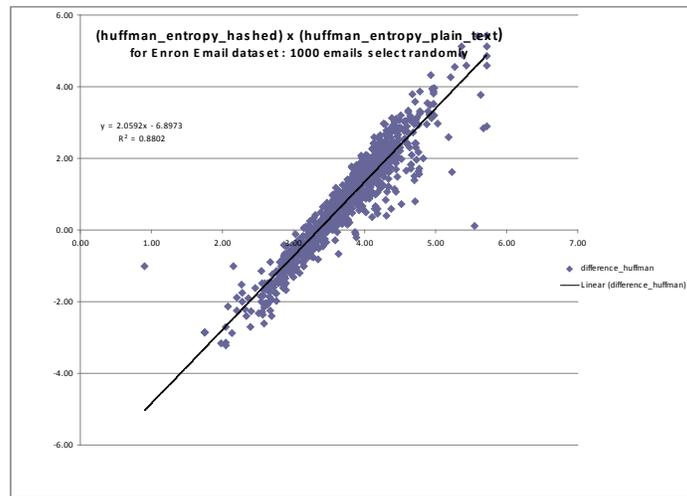
*Applications:* This method can be used in such contexts as:

- Analyzing the word level communication of employees without Orwellian intrusions into people's personal or professional lives.
- Preserving properties of corporate documents without creating liability from the legal process of discovery.
- Offering consulting advice on communication flows without gaining access to trade secrets.
- Advertising to consumers without learning the specifics of their communications.

*How it Works:* The algorithm balances two competing properties – protecting privacy and analytic insight. The first step involves masking and the second aggregation.

The first step applies a form of lossy compression that permutes raw text and reduces the total available information. This property systematically makes individual words difficult to recognize by using morphological properties of language to shed linguistic detail while retaining root structure. It also throws away certain information so that subverting the algorithm via cryptanalysis also becomes difficult. The second step bundles the masked text from individuals, supplying a corpus large enough to provide statistically meaningful inferences about the overall pattern of information stocks and flows. A more aggressive first stage provides greater privacy. A more aggressive second stage provides greater confidence in any analysis.

Mathematically, we can demonstrate that (i) the correspondence between plaintext and hashed text differs by no more than a fixed constant, (ii) the functional value of any plaintext can be recovered from hashed text by increasing the volume of hashed text by this amount, and (iii) invertability of both the value function and of the correspondence function is not sufficient to invert the hashed text.



The image above shows the correspondence between the original information in communications and that in the masked (private) information in communications based on publicly available data. The corpus is the Enron data set entered into the public record.

Statistical correspondence is quite high, demonstrating the feasibility of offering analysis services on top of masked communications.

Further Information: US Patent 7503070. Issued March 10, 2009.

## Appendix 2 – List of Interviewees

Juhani Strömberg	Senior Vice President, Corporate Strategy	Itella
Adrian Humbel	CEO Swiss Sign	Swiss Post
Beat Friedli	Head of Business Development Swiss Sign	Swiss Post
Luca Toremba	Manager, Innovative Projects for Communication and e-Government Services/Strat. Planning	Poste Italiane
Vincent Santacroce	Integrated and On-Line Services Marketing Manager within Marketing/Digital and Logistic Services Marketing	Poste Italiane
Jordi Escruela Soldevila	Deputy Director in Innovation and e-Business	Correos
Delphine Desgurse	Head of marketing intelligence and strategic planning	Le Groupe La Poste
Soraya de Montgolfier	Manager Innovation and Partnership, Internet Activities	Le Groupe La Poste
Bettina Schletter	Strategy and Competitive Intelligence	Deutsche Post DHL
Michael Klingels	Strategy and Competitive Intelligence	Deutsche Post DHL
Peter van Buijtene	Manager Business Development	postNL
Jan Harskamp	Innovation Officer	postNL
Nick Pendleton	Director, Corporate Strategy and Innovation	Royal Mail Group
Tamás Klotz	CIO	Magyar Posta
John Payne	CEO	Zumbox
George Kliavkoff	CEO	Hearst Corporation

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