INTERNET SOFTWARE PLATFORMS

An ICG White Paper

Internet Capital Group

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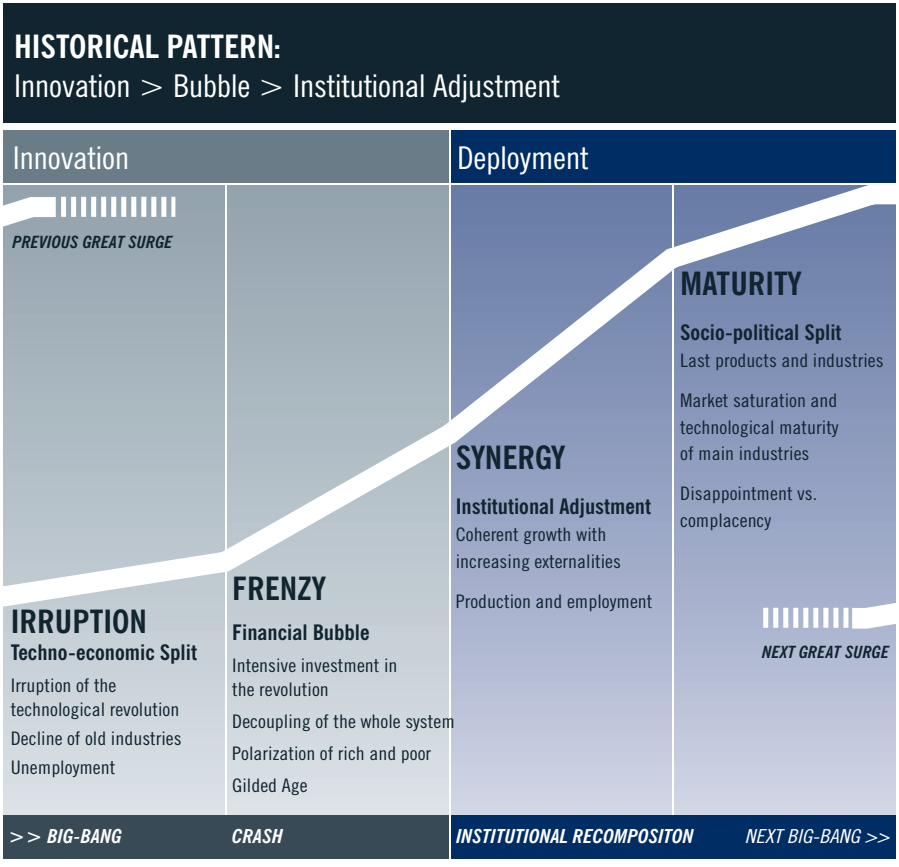
INTRODUCTION

Like most truly radical innovations, the Internet and surrounding information technology (IT) took 30 years to mature into a ubiquitous and reliable infrastructure. Having its roots in the U.S. Department of Defense's first ARPAnet connections in 1969, the Internet is today a core part of the world's communication infrastructure — so much so that most knowledge workers receive more emails in a day than phone calls, and spend far more time interacting with some form of Net-connected device than talking on the telephone.

Contrary to the view that IT has "matured,"[1] it is far more likely that, as with other major technology revolutions, IT has evolved from inception to slow diffusion to bubble to bust, and is now on track for several decades of excellent growth before maturing and giving way to the next major technology revolution.[2] Exhibit 1 shows the historical pattern of this process. Looking at the chart, we are in the early synergy stage. In fact, we are now at the point where the Internet will have a dramatic impact on how industries are structured and how firms within those industries interact with each other in complex industry ecosystems.



SOURCE: Perez, Technological Revolutions and Financial Capital

EXHIBIT 1: We are in the synergy stage currently. In fact, we are now at the point where the Internet will have a dramatic impact on how industries are structured and how firms within those industries interact with each other in complex industry ecosystems.

TWO OPPOSING FORCES

The Internet is driving two opposing, but dramatic, economic impacts on firms. First, every industry is experiencing pricing pressure that will not subside. This is so because the traditional seller's information advantage has vanished. The Internet drives a higher level of cost and price transparency than we have ever seen, and this trend will only continue. Today, an auto buyer approaches a dealer armed with the local market value of a trade-in and the dealer's cost of the new automobile desired. This can only work to the disadvantage of the seller, but does lead to less time negotiating and lower contracting costs. A shopper can search the Internet in moments for a specific product, and quickly determine the pricing landscape. At industrial scale, reverse auctions ferret out the market clearing price in a way that has never been possible on a global scale before. For all these reasons, innovations get "commoditized" more quickly* and what economists call "quasi-rents" are short-lived.

There is a counter-balancing force at work. The second significant economic impact of the Internet is that it dramatically reduces transaction costs between firms. As transaction costs decline and the communications infrastructure enables better collaboration between individuals in different firms, there is a natural tendency for firms to "unbundle"[3] and for industries to "disaggregate." Linear value chains evolve into value webs and complex ecosystems.[4] Fundamentally, firms outsource more and insource less; vertical integration yields to virtual integration,** and the entire industry becomes more efficient. Indeed, as industries evolve into complex ecosystems, it is unlikely that firms that do not exploit ecosystem economies can remain competitive.

To appreciate this, one need only consider the evolution of the computer hardware industry. When IBM introduced the System/360 in 1964, IBM owned the entire value chain. IBM did the research, design and development of all the subsystems, manufactured all subsystems, sold direct to customers, and provided all service after sales. Of course IBM utilized component suppliers, but the vast percentage of the total value-added was supplied by IBM. Contrast that with the PC industry — a true ecosystem. Different members of the ecosystem provide specialized components, all with standardized interfaces — disk drives, displays, keyboards, microprocessor, operating system, etc. Other firms in the ecosystem (e.g., Dell, IBM/Lenovo, Hewlett-Packard) focus on weaving together these totally standardized components into systems that deliver unique value, but even these firms do not actually manufacture or assemble the actual computer. Another segment of the ecosystem — the electronic contract manufacturers (ECMs) — specializes in the actual manufacturing and assembly. More and more, service after sales is provided by ecosystem members that specialize in logistics (e.g., UPS).

** For example, it took 18 years from the time DEC, Xerox and Intel agreed on an Ethernet standard until it was commoditized as an RJ45 plug on a PC. It took just 18 months for the 802.11b wireless protocol to become a standardized, integrated feature on the IBM ThinkPad Model 30.*

*** This is the essence of Coase's Law: firms should only do themselves what they can less expensively than others, after full consideration of transaction costs.*

The firms in the ecosystem that provide the basic components and the final manufacture enjoy economies of scale not available to any single "PC company" and these economies of scale lead to lower prices for the PC company and for the end user (ignoring for the moment the fact that monopoly positions still exist in some segments). With such a robust ecosystem, it highly unlikely that a new firm could enter the industry with a "we do it all" strategy of the IBM S/360. By migrating from an "integrated architecture" to a "modular architecture"[5,6] supported by an industry ecosystem, the industry migrates to a level of cost efficiency not possible with a fully integrated supplier structure. This is almost true by definition, as market dynamics would not drive disaggregation if it did not yield industry efficiencies and lower costs.

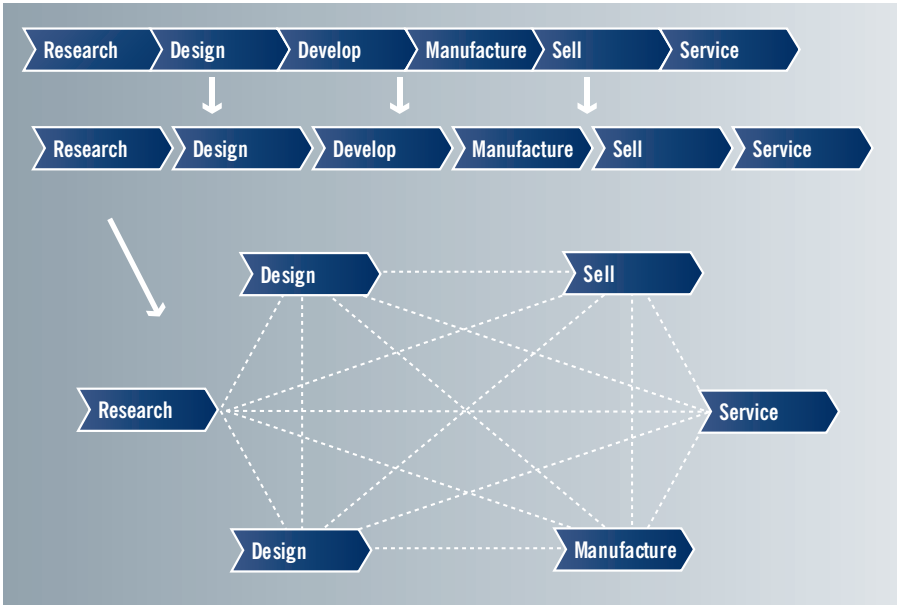
What do "PC companies" such as Dell do in such an ecosystem? Their major asset is their brand, and their core competencies are design and supply chain management. Design, as in weaving together standardized components into a unique value proposition, is more akin to designing Nike shoes than designing the System/360. Design is now a blend of design in the artistic sense and design in the engineering sense.

INDUSTRY DISAGGREGATION

In the computer industry, the integrated architecture model used in System/360 was the standard for all suppliers in the mainframe era. In a new industry, the initial participants often have no choice but to pursue an integrated architecture for two reasons. First, and most obviously, there are no subsystem providers in a new market, as was the case with mainframe computers. Secondly, in a new market initial products are typically challenged to meet customer needs for functionality and performance, and in such an environment integrated architectures will be used because they can deliver better performance. As the industry matures, products become "good enough," price becomes a significant buying criterion, and modular architectures become desirable, and even necessary, to drive down costs. Furthermore, the value proposition migrates beyond the device itself to include, for example, usability, brand affinity, experiential and financing attributes. Indeed, when the industry moves from performance driven to "good enough," industry structure migrates from an integrated architecture to a modular architecture very rapidly, standards evolve to specify the interconnection of modules, the industry disaggregates, and firms that try to cling to an integrated architecture quickly find themselves in a very non-competitive position. This process is shown in Exhibit 2, where the integrated value chain gives way to functional modules and ultimately to a disaggregated and interconnected industry architecture where modular specialization replaces an integrated architecture. A recent example in the computer industry is Sun Microsystems. In the late 90s, when performance was key, Sun's integrated architecture, built around their own Sparc technology and Solaris operating system, was dominant. As Intel architecture (with Linux or MS operating systems) increased in capability and reliability, it became "good enough" for many applications, with much lower prices than Sun, and Sun was driven into a niche supplier position, as their integrated architecture could not compete against the economics of modular architectures used by the PC industry.

INDUSTRY DISAGGREGATION:

EXHIBIT 2: The integrated value chain gives way to functional modules and ultimately to a disaggregated and interconnected industry architecture where modular specialization replaces integrated architecture.



We see this sort of disaggregation in many industries, from pharmaceuticals to automotive. Historically, the large pharmaceutical companies controlled the entire value chain, from research through development to clinical trials to manufacturing and distribution. Today, many of these firms outsource their research and clinical trial activities. Indeed, it is the large integrated pharmaceutical firms such as Merck that are struggling — and it was not that long ago that Merck was the most admired firm in its industry.

In August of 2004, Chrysler announced that it will outsource 60% of its manufacturing to tier one suppliers.[7] This leads to the natural question, "What does an automobile manufacturer do that does not manufacture automobiles?" The critical skill is no longer manufacturing (a "what we can make, we can sell" constraint), but rather design, supply chain management/logistics and marketing ("what we can sell, we can make"). If Chrysler is successful in outsourcing manufacturing, other firms will surely follow. What happens next? Demand for further cost efficiency will drive the auto companies more and more to use industry standardized components assembled by the contract manufacturers and an ecosystem will evolve in a similar fashion to the PC ecosystem — OEM component and subsystem suppliers, design firms like Chrysler that own the brands, contract manufacturers to do the assembly, and dealer networks to provide service after sales on much more standardized automobiles. The industry will become much more efficient because it is being forced to become more efficient in a world of

price transparency; and there is indeed room for major improvements in efficiency — after all, does the world really need hundreds of different form factors for mufflers? In a bygone era when the focus was on performance, perhaps this was the case. Today, in a "good enough" auto market, performance is far down the list for most buyers.

Toyota leads the auto industry because they were first to move to a "platform" structure to support a modular architecture — a small number of base designs are architected with standardized interfaces that become building blocks. These are then further refined to produce models across all the Toyota brands in a manner that optimizes manufacturing cost, logistics and efficiency. Beyond that, Toyota is now far ahead of their North American competitors in understanding how to cultivate strong supply chain relationships.[10] Dell and Toyota, leaders in their respective industries, clearly demonstrate that when an industry migrates to a modular architecture, supply chain management becomes the core competency.[8] See Exhibit 3.

EXHIBIT 3: When an industry migrates to a modular architecture, brand management and supply chain management become the core competencies.

INTER-FIRM (TRANSACTION) COSTS

Economists have long focused on transaction costs as the friction in the economy. Whether labeled as transaction costs (typically inter-firm costs), coordination costs (typically intra-firm costs) or interaction costs, the costs of "doing business" are a surprisingly large part of the economy.

In a perfect world, there would be no such costs. Consider a child's lemonade stand. All of the costs — the water, the lemons, the cups, the child's time — these are all direct costs. There are no transaction costs because Mom is very cooperative and the friendly neighbors go out of their way to find the lemonade stand. There are virtually no transaction costs involved in search, contracting and coordination.

If a child's lemonade stand seems a bit silly, consider the first true physical market places where buyers and sellers met and transacted. In these direct marketplaces, transaction costs of searching and contracting existed, but were very low.

** This is the central thesis set forth by Charles Fine in Clockspeed.*

Such is not the case in our modern economy. Worldwide GDP was $36 trillion in 2003.[12] While there are no sources for estimating spending on SG&A (sales, general and administrative expense), we believe that this amount is about $20 trillion, or over 50% of the final value of goods and services consumed. While this at first seems unbelievable, bear in mind that GDP measures the final output in the value chain and by design eliminates double counting; but in each step in the value chain there are indirect costs.

Consider this simple example. When IBM buys chips from Intel, they are accounted for as cost of goods sold on IBM's books and not part of IBM's SG&A. That same transaction appears on Intel's books as revenue, and associated with that revenue is Intel cost of goods sold and SG&A. Moreover, part of Intel's cost of goods sold is depreciation on capital equipment used to produce the chips. The supplier of that capital equipment books revenue when the equipment is sold to Intel, and that firm has SG&A expense. When IBM sells the ThinkPad containing the Intel chip, the value of the ThinkPad is included in GDP. If we look at IBM's income statement, we see the SG&A expense for IBM, but we do not see the SG&A expense for Intel, SG&A for the supplier of capital equipment to Intel, SG&A for the supplier of motors to the supplier of capital equipment to Intel, etc.

When you work your way through these supply chains, for every one dollar of direct value creation in the widget, there is an additional dollar required to support the actual production of the widget, sell the widget, coordinate along the value chain, etc. Some of these costs are intra-firm costs incurred by each firm in the supply chain (e.g., the HR department, Sarbanes Oxley compliance), and some are the inter-firm transaction costs of searching for partners, contracting with them, and coordinating subsequent activities. Viewed from this perspective, we participate in an extraordinarily inefficient economy with friction in every nook and cranny. The good news is that there is lots of room for improvement.

The bad news is that firms now face little choice but to drive for significant improvements in efficiency because of the relentless price pressure due to transparency described earlier. Given the inefficiency in our economy, great opportunity exists and it arises from two sources, one dealing with business processes within firms (e.g., HR) and the other dealing with business processes between firms (e.g., the interaction between a bank, a merchant and a customer in processing a credit card transaction). While there is always more to be done, most firms have been attacking their internal cost structures and inefficiencies for some time. It's the white space and the costs "between firms" (i.e., transaction costs) where the low hanging fruit lies.

As firms respond to price pressure and lower transaction costs by outsourcing intra-firm and inter-firm business processes, ecosystems evolve, specialization occurs and new firms arise to meet these needs. In some cases, these outsourcers build business models that are labor intensive, but efficiencies are achieved relative to their customers by greater economies of scale or by off-shoring some or all of the labor (e.g., Wipro). In other cases, the outsourcers are far more IT intensive than labor intensive, and provide a "platform" that serves a set of customers in a standardized fashion, achieving economies of scale and economies of standardization (e.g., Salesforce.com, Paychex).

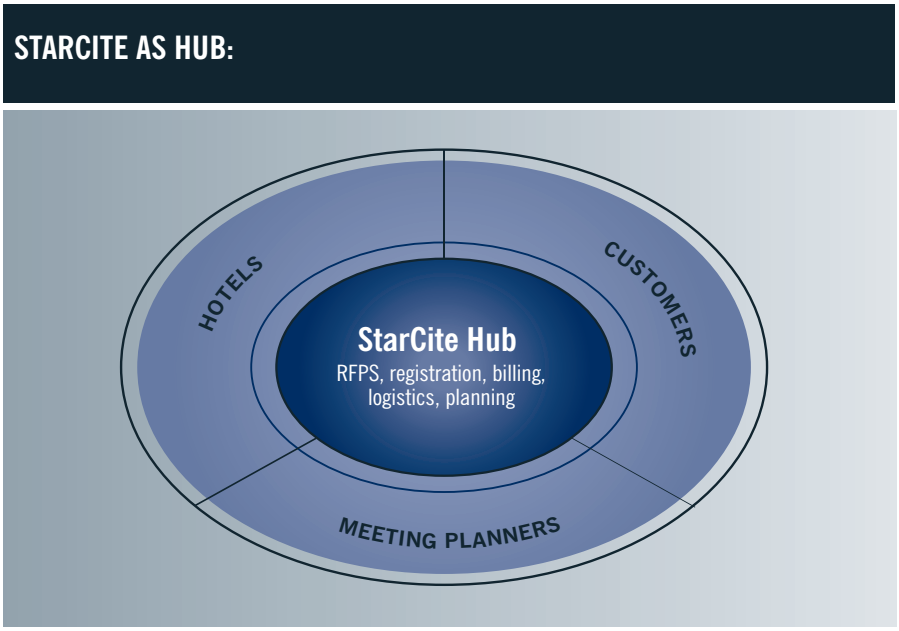
INTERNET SOFTWARE PLATFORMS

At a base level, a platform such as Paychex is a shared application service provided by a supplier to many customers — what we today call an Application Service Provider (ASP) or Software as a Service (SaaS). Each customer of the service realizes value from the service, but other than the supplier's economies of scale that are shared with customers, the value that one customer realizes is independent of the value realized by other customers. This makes perfect sense for the outsourcing of internal business processes such as payroll or accounting. As a result, many of the current business process outsourcing market segments are focused on these internal business processes.

The genesis of ASPs occurred in 1999 and 2000. Most of the early attempts were not successful, with the notable exception being SalesForce.com (payroll providers such as Paychex were viewed as "service bureaus" at the time and have since been reclassified as outsourcers or ASPs). Many of the early attempts were targeted at large enterprises, and proposed to outsource key enterprise applications such as SAP and Peoplesoft. It is unlikely that large enterprises will look to an ASP for these core applications for two reasons. First, large enterprises tend to need significant customization, and cannot live with a "standardized" version. Secondly, these ERP systems are information hubs, with tens or hundreds of "feeder applications" passing transactions in. IT departments had largely already paid the price to customize these applications and to "wire them" to all the feeder apps. The notion of outsourcing these applications made little sense.

Following the early failures, there was a trough of disillusionment, as always. There is now strong renewed interest in the ASP model. This is the case for several reasons:

EXHIBIT 4: StarCite is a hub for hotels and meeting planners, automating the RFP process, handling meeting registration, etc.



- Many of the new ASPs facilitate transactions between firms, as opposed to processing a firm's internal transactions in an outsourced manner. For example, StarCite allows large enterprises to gain control and spending visibility on meetings such as sales meetings, customer events, etc. A customer can interact with the StarCite platform, indicating city and dates, number of sleeping rooms required, meeting space requirements, etc. The StarCite platform generates an RFP to the appropriate venues, and manages the procurement process. After a venue is selected, StarCite creates a separate customer branded web site whereby attendees can register for the event, reserve rooms, etc. Even a very large consumer of meeting facilities would not build such a platform on their own, so there is no insource vs. outsource issue as there is with a core application such as an ERP system.

  There are many other examples. First Data provides value at the intersection of credit card holders, merchants and banks. The health care industry includes firms which operate at the intersection of providers, insurers and patients. Firms like Kelly Blue Book and Edmunds collect automobile sales data and operate at the intersection of auto dealers and customers.

- An ASP can provide all customers access to commonly required resources. Consider procurement platforms with integrated supplier networks. All procuring customers can access the network and route purchase orders through one integrated supplier network.

- Looking at common resources more specifically, the core value proposition of some ASPs is their content. Rather than distributing the content to everyone who needs it, it is simpler to maintain and keep current the content in one location, and allow customers to access the information on a subscription basis. Many would argue that this is actually the core value of payroll providers such as Paychex. Those who have managed payroll implementations quickly realize that the major challenge is not the computational process of generating paychecks but rather maintaining current and accurate tax rate data for hundreds or thousands of municipalities. Viewed in this light, payroll is a "content problem" and the access to tax rate content is the motivating reason to outsource payroll.

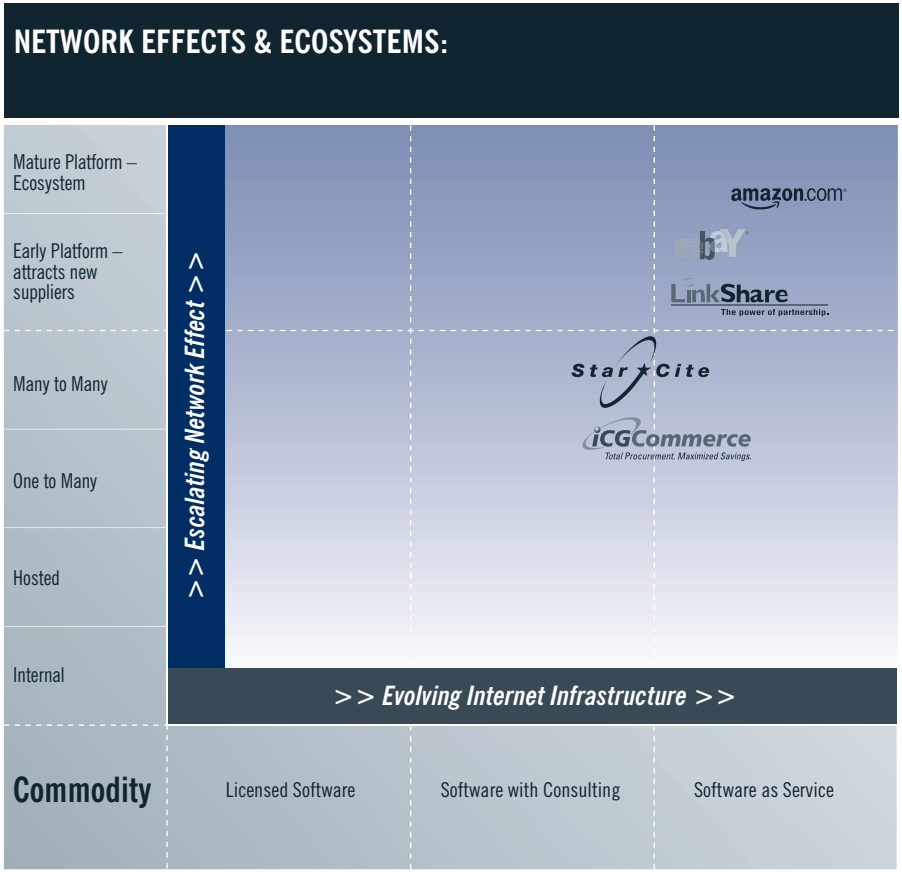
- Because of the Internet, and more specifically web protocols, it is simply far easier to access an application remotely than to install and manage the application in an internal data center. It is not unusual for ASPs to claim that they can have a customer productively using their platform before the customer could even form the project team to begin a large scale system implementation internally.

- From a purely economic perspective, it is usually far more expensive for a thousand customers to install and maintain the same software platform compared to accessing one instance of the application over the Internet. For this reason, most analysts expect the licensed software model to yield to the ASP model over time. As stated earlier, it will likely never be 100% ASPs, at least in large enterprises, because of existing investments in data center infrastructure and the hub nature of some applications. Nevertheless, the trend is quite apparent.

- Perhaps most importantly, as industries adapt to the Internet force of transparency and resulting margin compression by disaggregating, there is renewed interest in outsourcing to others in the ecosystem those activities which are non-core and/or non-differentiating. In many cases, this outsourced capability will be accessed through ASPs.

  Other examples of successful ASPs abound. Intralinks provides a platform for managing "deal related" workflow between principals, attorneys, accountants, etc., and between general partners and limited partners in large partnerships such as venture capital and private equity firms. Investor Force participates in the ecosystem of money managers, custodians, investors (e.g., university endowment funds or corporate pension plans) and consultants who advise investors on the selection of managers. Investor Force provides a platform that automates the flow of information from the custodians to the consultants, and provides a powerful tool for the consultants to provide performance information to investors in a much more flexible and timely manner. As a final example, several firms are attacking the paper-intensive inefficiencies in the residential mortgage market by providing better and far less paper-intensive coordination among the buyer, broker, lender, title company, etc.

EXHIBIT 5: Platform providers occupy a highly strategic and well-defined industry segment.



NETWORK EFFECTS

As customers use these platforms, whether for intra-firm or inter-firm processes, there are often opportunities to create network effects so that the value that one customer obtains from the platform increases with the number of customers. eBay is the obvious example of such a platform, as the value of eBay to the community of users increases with the number of users. "Social networks," such as Linkedin, drive a value proposition primarily based on network effects, as the value clearly increases with the number of members who are "linked in." Interestingly enough, photo platforms like Snapfish and Flickr can provide the same sort of network effect, driven by the sharing of digital photos, as a photo is almost by definition an artifact of a social network (hence, it is not surprising that Flickr was acquired by Yahoo and Snapfish was acquired by HP). Plaxo, a platform for sharing contact information, has strong network effects. If Salesforce.com provided business analytics across customer segments, so that one customer could compare their actual to forecast performance relative to the aggregate performance of all Salesforce.com customers in the same market segment, this would obviously provide a desired network effect.

Network effects build barriers to entry. If the value that a customer acquires from Salesforce.com is independent of the other customers, it is relatively easy to pull that customer to a competitive platform. If a competitor must hijack a collection of customers to maintain the network effect, the bar is much higher.

OPEN PLATFORMS

There is another aspect of these platforms that is noteworthy. It is very beneficial when the platform is architected in an open manner such that other suppliers can add value for the customers of the ecosystem by enhancing the capability of the platform, thereby adding value to the platform and extracting commensurate value. When this occurs, the platform provider often becomes a keystone of the ecosystem,[9] and becomes central to the health of the ecosystem. As shown in Exhibit 5, platform providers occupy a highly strategic and well-defined industry segment. In fact, a keystone provider makes a conscious decision to "leave room" for other suppliers, because the more suppliers that exploit the platform, the harder it is for competitors to displace the keystone platform provider. For example, when Paypal added functionality on top of the eBay platform to enhance the payment structure, the eBay platform was strengthened substantially, eBay members benefited from this functionality, and eBay itself also benefited from an enhanced and strengthened platform with greater barriers to entry. In this case, the function became so central to eBay's platform that eBay acquired PayPal.

Amazon.com has executed an open platform strategy very well, and has done so in two dimensions. By using its base merchant platform, it has been able to add other retailers at low marginal cost and now operates a destination site that is a shopping mall. Perhaps more importantly, by providing web services so that other sites can easily link to Amazon to sell books, it encourages thousands of other merchants to "point to Amazon" and pays them a commission for directing traffic to the Amazon transaction platform.

While Amazon is large enough to manage its own affiliate marketing program, this is not the case for thousands of other smaller firms. For them, LinkShare is a critical member of the ecosystem that links affiliates to merchants, manages the flow of traffic between the partners and is compensated based on that traffic flow. In effect, LinkShare provides the infrastructure for thousands of merchants to operate "open platforms."

INTERNET SOFTWARE PLATFORM DEFINITION

The term "platform" has been used in many industries to describe a meta-level capability. As indicated earlier, much of Toyota's success is attributed to its platform strategy, whereby Toyota architects a small number of basic automobile designs with highly standardized interfaces, and these are then refined into a large number of models across brands in a way that maximizes manufacturing efficiency and flexibility. In financial services, firms often tout their "platform" from which they can provide a wide range of services to clients.

When we use the term Internet software platform in this paper, we are referring to a software capability accessed by a set of customers in a standardized fashion through open interfaces, upon which other suppliers can add value, thus further enhancing the platform, creating an ecosystem around the platform, and making the platform provider a keystone member of the ecosystem. Ideally, customers extract value from the platform provider and from each other, creating network effects for the customers and a barriers to entry advantage for the supplier.

While some of these platforms will be for cross-industry horizontal processes such as "Procure to Pay" (P2P), far more will be in industry specific domains, where intimate knowledge of the industry ecosystems and drivers of change will be key. As ecosystems evolve, the profit zones[11] (i.e., those parts of the value chain where most of the total profit resides) are very much in play, and a deep understanding of this is key to developing profitable platforms. To be sustainable, a platform provider must deliver more value to the ecosystem partners than it extracts for itself.

SUMMARY

The Internet is accelerating price transparency and driving down margins in virtually all industries. This motivates firms to reduce costs by becoming more efficient.
The Internet also reduces transaction costs between firms. As a result, firms will tend to attack their cost structures by outsourcing business processes when someone else can do the same work less expensively. This usually begins with the outsourcing of internal business processes such as HR and procurement. As industries disaggregate and evolve into ecosystems, suppliers will also seek to increase industry efficiency by attacking the business processes between firms. This is often accomplished by providing an Internet software platform upon which firms can transact with other members of the ecosystem. The more successful platform providers will do this in a way that (1) provides network effects among ecosystem firms and (2) allows other suppliers to add capability and value to the platform, enhancing the keystone position of the platform provider and enhancing the value of the platform to all members.

This is all part of a natural evolution of organizational structures. Ironically, it has been communications and information technologies that enabled firms to become large and to become global — to get big. A global bank, a global airline — or any enterprise of substantial size — cannot operate in today's business world without communications and information technologies. Now, these same technologies may well allow firms to "get small" — at least in terms of headcount — by encouraging firms to focus on their differentiating capabilities and rely on others in the ecosystem to provide capabilities that are non-differentiating.

Adam Smith spoke of the "invisible hand" of economic drivers in 1776. Two hundred plus years later, the Internet is the latest instantiation of Smith's invisible hand. It will drive industries to disaggregate and industry ecosystems to form and flourish. Platform suppliers in these ecosystems will seek keystone positions, enhancing their positions by leaving room for others to add value, and searching for network effect opportunities.

ABOUT INTERNET CAPITAL GROUP

Internet Capital Group (ICG) invests in companies that exploit the capabilities of the Internet to improve business productivity. We focus on companies that participate in the "business to business" (B2B) segment of the Internet as opposed to the "business to consumer" segment. Historically, the Company invested in a broad range of companies that participated in the B2B market; recently, we have chosen to focus on companies that either:

- Operate in vertical markets, possess deep domain knowledge in their respective industries, and generate value by creating and supporting an Internet software platform accessed by customers to facilitate transactions between firms or to outsource IT intensive internal business processes. Such firms are a subset of the "application service provider (ASP)" market. Whereas ASPs, broadly defined, host software applications accessed by customers over the Internet, our focus is on firms operating within well defined vertical markets because we believe that such firms can construct barriers to entry based on domain expertise and industry specific content; or
- Provide business process outsourcing capabilities to customers in horizontal or vertical markets where there is a significant level of IT intensity to the function.

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