

Delivering Business Critical Information Systems As A Service: A Taxonomy Of Application Service Providers

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ABSTRACT

This paper considers the emerging application service provider (ASP) industry which represents the third wave in global IT outsourcing (Currie 2000a). This is fundamentally different from first wave, traditional service bureau outsourcing, and second wave, enterprise system outsourcing. ASPs offer a new business model in the form of application outsourcing (AO), enabling large and midsize customers to rent business critical software applications which run over the Internet or a local area network. The utility model offered by ASPs is an attractive value proposition for companies since it may lower their total cost of ownership (TCO) of IT and enable them to scale their business according to their own timescales. The market for branded application outsourcing services is expected to grow to \$21 billion by 2001.

This paper draws from the findings of a large-scale empirical study on the ASP industry in the US and Europe. It develops an analytical framework in the form of a taxonomy of ASPs, and evaluates their strategies for deploying, hosting, managing and pricing applications on behalf of their customers. Using case study research into pure play, enabler, enterprise, vertical, and horizontal ASPs, the paper seeks to evaluate the opportunities and pitfalls of the ASP business model. It argues that simple choices concerning outsourcing or insourcing are irrelevant in the ASP model, since many SMEs, dot.coms and start-up firms, alike, all of which are seeking hyper-growth, are precluded from sourcing IT capabilities and skills in short time scales - unless they outsource.

INTRODUCTION

The global IT outsourcing market has grown significantly in the last two decades (Broadbent and Weill, 1999). Although the statistics should be treated with some caution, most surveys continue to show an upward trend in this market. One study claims the global IT outsourcing market is estimated to be growing at a compound annual growth rate (CAGR) of 20.1 per cent. This study claims the global market was \$151 bn in 2000, with the US market comprising \$116 bn of this figure. According to IDC, the western European market is expected to reach \$33.6 bn by 2001. This is approximately a 30 per cent increase from \$22.7 bn in 1996. IDC claims that the western European market represents 26 per cent of the global market and that four of the top 10 outsourcing companies are European in origin. Similarly, Infoserver claims that total European IT outsourcing was estimated to be \$15 bn in 1997 and expected to rise to around \$27 bn by 2001. Whilst the US is the largest market, the most active markets in Europe are found in the UK, France and Italy, with the UK market about \$7.6 bn. The less developed markets in Europe such as Germany, Belgium and Italy are now becoming more interested in outsourcing. Similarly, in other parts of the world such as SE Asia, Australia, Canada and India, large outsourcing suppliers are eager to win new business with companies keen to reduce their costs and gain access to technical and human resources.

Much of the academic and practitioner work on IT outsourcing thus far has concentrated on the client-side (Currie, 2000b). Studies have considered the strategic benefits of outsourcing (Henderson, 1990, Quinn and Hilmer, 1994), managing outsourcing alliances (McFarlan and Nolan, 1995, Cross, 1995) competing models and frameworks of outsourcing (Currie, 1998) and the maturing outsourcing market (Currie and Willcocks, 1998). Whilst some studies have focused upon the supply-side of IT outsourcing by classifying the different types of IT vendors (Mitchell and Fitzgerald, 1997, Currie, 2000b), few studies seek to understand the strategic positioning of companies in the software and computing services industry. However, an understanding of the supply-side of outsourcing is critical in the light of the convergence of software IT infrastructure towards an Internet environment.

In the last few decades, software has evolved from custom coded, proprietary applications to pre-packaged or off the shelf applications, and now to the development of Internet applications. Internet-enabled software applications will further develop e-commerce, communication and the management of information content.

Coupled with this, IT infrastructure has evolved from a closed, mainframe environment to distributed computing towards an Internet infrastructure linking many different stakeholders. Two key points arise from these changes. First, companies must look towards the marketplace to source some or all of their IT requirements. This has resulted in the massive expansion of global IT outsourcing. Second, existing IT suppliers and new entrants are positioning themselves to offer application outsourcing services in this expanding marketplace. To this end, the application service provider (ASP) offers a new business model for enabling companies to develop their competitive B-to-B and B-to-C electronic commerce strategies. An application service provider "*managers and delivers application capabilities to multiple entities from data centres across a wide area network. An ASP may be a commercial entity, providing a paid service to customers or, conversely, a not-for-profit or government organisation supporting end-users*". (ASP Industry Consortium).

This paper explores the ASP model as a new form of application outsourcing. It is divided into three parts. First it gives an overview of the three waves of IT outsourcing beginning in the 1960s. They are technology-centric, business-centric and industry-centric, respectively. This paper is mainly concerned with industry-centric outsourcing where ASPs will play a leading role. Second, the paper introduces an empirical research study which is currently being undertaken by the author in the US and Europe. The ASP business model is discussed in more detail. Third, the paper introduces an analytical framework, which is a taxonomy of ASPs currently emerging. The paper concludes by exploring some of the key business drivers for the ASP model and also looks at potential benefits and pitfalls to customers.

THIRD WAVE IT OUTSOURCING

An important debate about the ASP phenomenon is the extent to which application outsourcing is different from traditional outsourcing. The impetus of the ASP industry is currently vendor-driven, with limited customer reference sites from which to observe different ASP scenarios. The transition from traditional outsourcing to application outsourcing formed part of the research agenda, with ASPs and their customers being interviewed on this topic. Table 1 gives a breakdown of traditional and application outsourcing.

Traditional Outsourcing	Application Outsourcing
One to one	One to many
Applications owned by customer	Applications owned by ASP
Significant up front costs	No up front costs
Legacy applications paid for by customer	Pricing based upon usage
Located at customer site or sometimes with third party	Application located at ASP or third party

Table 1. Comparison of traditional outsourcing and application outsourcing

In the traditional outsourcing model, the customer tended to establish a one-to-one relationship with the supplier. To some extent, the ASP model revisits the service bureau model of the 1960s and 1970s. During this period, many companies signed outsourcing contracts with a service bureau. The term outsourcing was rarely used, as facilities management contracts involved mainframes, datacentres and bespoke software. First wave IT outsourcing was the domain of the larger company, with few affordable services available to the small or medium sized company. During this era, outsourcing tended to be *technology-centric*, since few additional services (consultancy, training, system integration, etc) were available to the customer. The service bureau model was moderately successful but experienced many problems due to the availability of relatively inexpensive hardware, inefficient communication linkages and lack of cost effectiveness.

In the 1980s and 1990s, IT outsourcing tended to proliferate for a variety of complex political, economic and technical reasons. Client server technology operating in a distributed computing environment created many new opportunities for vendors. This second wave of IT outsourcing was *business-centric*, and there were many debates about transferring responsibility for IT from technical staff to general or line managers. This period witnessed the growth of enterprise outsourcing where, along with mainframe and data centre outsourcing, companies were outsourcing additional IT work from systems development, testing and maintenance, to business functions (accounting, HR and procurement) and business processes (supply chain management, help desk and call centre services). This era opened up many new opportunities for independent software vendors to the big five management consultancy firms. During this time, companies moved away from bespoke software to 'shrink-wrapped' software. This off-the-shelf approach was seen to be more cost effective and attractive by management rather than undertaking risky software development activity in-house.

Although there were many examples of unsuccessful, large-scale outsourcing deals during the 1980s and 1990s, outsourcing became prolific as vendors offered their services world-wide. But as outsourcing continued to gain momentum, there were concerns that small and medium companies with low IT budgets were unable to reap the benefits afforded to their larger counterparts. Indeed, enterprise resource planning (ERP)

systems were offered to customers with large IT budgets who would purchase several modules on a company-wide scale (Holland and Light, 1999).

More recently, however, this situation has changed with the development of the Internet and all its possibilities for small and medium sized firms. IT outsourcing has now entered a third wave, which is *industry-centric*. In this era, outsourcing will undergo a significant shift from centralised computing in the 1960s and 1970s, to distributed computing in the 1980s and 1990s, to remote computing in the 21st century. ASPs will play a central role since they will increasingly offer a *utility model* to customers where they will purchase applications on a pay-as-you-go basis. This will be a one-to-many model, unlike traditional outsourcing, which was characterised by a one-to-one approach.

THE RESEARCH STUDY

An empirical research study on the emerging ASP industry began in mid-1999. The key themes of the study are outlined in Table 2. Application outsourcing providers manage and maintain software applications for their customers. The provider assumes the responsibilities associated with the application. ASP and application maintenance outsourcing are sub-sectors of the application outsourcing market. As a relatively new phenomenon within the IT outsourcing market, the research study focuses upon key theoretical and practical debates including: core competency thinking; strategic alliances and partnering; economics of IT outsourcing and economies of scale.

Key Themes	Focus
Application Service Providers (ASPs): a sub-set of application outsourcing (AO)	<ul style="list-style-type: none"> • Evolution of IT outsourcing • Core competency debate • Strategic alliances/partnering • Economics of IT outsourcing • Economies of scale
The emerging role of Application Service Providers in the US and Europe	<ul style="list-style-type: none"> • Cross-national comparisons • Strategic positioning of suppliers • Vertical and horizontal market opportunities • ASP taxonomies
Business benefits and dis-benefits to the customer and ASP	<ul style="list-style-type: none"> • Market opportunities • Business models • Outsourcing • Resourcing issues • Financial • Customer requirements • Technology enablers

Table 2. Key themes in the emerging ASP model

The study further considers cross-national comparisons on the emerging ASP industry in the US and Europe. IT suppliers on both sides of the Atlantic are currently evaluating opportunities for entering vertical and horizontal markets. It is likely that considerable merger and acquisition (M&A) behaviour will result from this activity. Finally, the research study explores the business benefits and dis-benefits to the customer and ASP in this dynamic and changing market. Previous research by the author has found that although IT outsourcing is often treated as a panacea to enable companies to reduce costs and gain access to new staff and skills, many outsourcing deals are unsuccessful (Currie and Willcocks, 1998). To some extent, the current interest and hype about the ASP industry reflects past and present optimism about outsourcing. However, this research study perceives the emerging role of ASPs as a sub-set of the outsourcing market and, through extensive field research, aims to produce a balanced picture of success and failure scenarios.

THE VALUE PROPOSITION OF APPLICATION OUTSOURCING

As the global IT outsourcing market matures, companies in the software and computing services industry are repositioning themselves to develop and enter new markets. The well established IT consultancies and service providers have entered into 'mega' outsourcing deals worth many \$millions (Currie, 2000a). Forrester Research predicts the market for branded application outsourcing services will grow to \$21 billion by the year 2001. The large companies have developed strategic alliances and partnerships with other companies to provide customers with a seamless service. To some extent, this activity has reinforced the position of the major players and served as a barrier to entry to other, less well-resourced companies. Companies involved in the ASP industry include computer software and hardware companies, network service providers, Internet service providers (ISPs) and ASP companies. The major IT service providers are expanding their service offerings and many of them may

either establish an ASP arm or partner with other ASPs (Currie, 2000c). The success of an ASP will depend on how well it develops, co-ordinates, manages and nurtures these relationships.

At present, the relatively new concept of ASP is creating some confusion in the market. An ASP may be a commercial entity, providing a paid service to customers or, conversely, a not-for-profit or government organisation supporting end users. Whilst ASPs are currently more prolific in the US, they are emerging in greater numbers in Europe and the rest of the world.

In May 1999, twenty-five companies established the ASP Industry Consortium. Its mission is to 'promote the ASP industry by sponsoring research, fostering standards, and articulating the measurable benefits of this evolving delivery model'. This organisation was set up to reflect the growth in the worldwide ASP industry. One estimate is that the western European ASP market was \$14 million at the end of 1999. The market is expected to be \$100 million by the end of 2000, \$340 by 2001 and \$1.5 bn. IDC believes that the western European enterprise ASP market is growing at a CAGR of 156 per cent for the period 1997-2003. The US is the lead market with significant spending in 1999, though Europe is expected to grow significantly over the next five years.

Although there is some variation in the definitions concerning the core activities of ASPs, they share a number of key characteristics. In short, ASPs procure and implement complex systems for their customers. Some ASPs provide customers with a comprehensive alternative to building and managing internal information technology operations. Like traditional outsourcing contracts, the customer may use an ASP because they seek to control their IT costs through entering a scheduled payment scheme agreed with an ASP. But unlike traditional outsourcing, the application service is managed at a central location and not at the customer site. The core business of ASPs is to offer an applications centric service to customers. Over time it is likely that software will not be sold directly to customers as a package, but instead be licensed through the services of an ASP. The ASP will establish a 'one-to-many' relationship with customers as opposed to a one-to-one relationship. The ASP seeks partnerships with other suppliers to package off-the-shelf or standardised solutions. A key goal is for the ASP to *own* the customer relationship. This is a move away from traditional outsourcing relationships where the customer may encourage competition between its suppliers. Figure 1. Outlines the key players in the ASP industry.

The large enterprise resource planning (ERP) vendors, for example, are entering the ASP industry to develop a new customer base. The financial performance of the five largest ERP vendors fell sharply in 1998, following concerns that it would not be possible for them to sustain their previously high growth rates. Given that more than 60 per cent of Fortune 1000 companies had already implemented core ERP applications, future market opportunities for these firms appeared to be receding. The JBOPS group of companies which include: J.D. Edwards, Baan, Oracle, Peoplesoft and SAP, are therefore revising their business strategies in search of new opportunities. One fertile area is the under-exploited midsize market. The large ERP application vendors, because of perceived low profit margins, have previously ignored this market. Midsize companies simply could not afford to purchase expensive ERP systems, and smaller suppliers were unable to fill this gap because of the high development costs and ongoing maintenance and support requirements. In recent months, the ERP application vendor market has changed substantially, with all the JBOPS companies setting up ASP offerings:- J.D. Edwards JDe.sourcing.com; Baan - E-Enterprise; Peoplesoft - eCenter; Oracle - BusinessOnline Service; and SAP - MySAP.com.

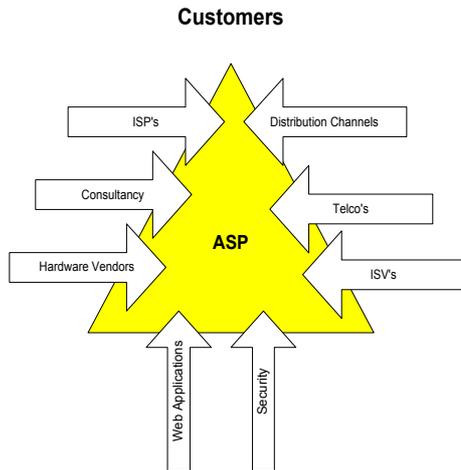


Fig 1. Partnering relationships in the ASP industry.

The objective of this strategy is to offer tier one ERP applications to both large and medium size companies. Notwithstanding the above market changes, ERP applications remain expensive for the mid-size company given the large capital investment to support this type of infrastructure. Serious IT skill shortages persist and this factor drives up the cost of implementing ERP applications as well as initiating other IT-enabled change. Midsize companies (with annual sales of \$20 million to \$500 million) will need to invest heavily to benefit from an ERP system. One example is that \$300k may be needed for infrastructure, \$300-400k for software, and \$1million on implementation. Many mid-size companies are reluctant to make such an investment (Bender-Samuel, 1999).

In order to change the mindset of the mid-size company, the ASP business model offers these firms new opportunities to procure and use software offered by the large software vendors. Coupled with this, large and mid-size companies are increasingly evaluating the benefits from applications systems and software. The rapid pace of technical change, marked by frequent upgrades in systems and software, encourages companies to favour a different pricing mechanism. Responding to this change, the new business model is the hosting of these highly sophisticated, expensive and complex applications on a remote computer environment that is Web-enabled. This technology is affordable to the mid-size company via the services of an ASP. Over time it is unlikely that software will be sold directly to customers as a package, but instead be licensed through the services of an ASP. Thus, 'In contrast to traditional outsourcing, the ASP model involves renting access to core business applications over the Internet or some other network - not simply handing over operational control of your existing data centre' (Lauchlan, 2000, p.29).

The offerings of ASPs will be varied according to which vertical or horizontal markets they cultivate. Mature vertical markets are found in banking and financial services, and to a lesser extent in healthcare and government. With the deregulation of the utilities, such as telecoms and energy, ASPs will emerge to serve these sectors. Similarly, the types of software applications demanded by customers from ASPs will be in areas such as, website hosting, payroll/billing, e-mail and e-commerce applications. CRM, ERP and HR applications will take some time before customers access them via an ASP. This is largely because the larger customers already have such applications running and may be reluctant to re-invest to access them over the Internet. However, the strategies adopted by SAP and J.D. Edwards to offer their applications over the Internet to mid-size companies will extend their market presence (Currie, 2000c).

According to a recent survey, the UK and Germany are the most promising European countries for ASPs to enter in the next 18 months, as 66% of the sample in these regions expect to be purchasing application services for websites, e-commerce and email from ASPs in that time-frame. The report claims that the industry sectors most attracted to the ASP model in Western Europe are banking and financial services, transport and utilities, and travel and tourism (Ring, 2000). Whilst ASPs largely procure and implement complex systems for their customers, some ASPs provide a comprehensive alternative to building and managing internal information technology operations. Like traditional outsourcing contracts, the customer may use an ASP because they seek to control their IT costs through entering a scheduled payment scheme agreed with an ASP. But unlike traditional outsourcing, the application service is managed at a central location and not at the customer site. In essence, the core business of ASPs is to offer an applications centric service to their customers. But for the model to work, the ASP will need to achieve economies of scale by offering a 'one-to-many' service rather than the one-to-one relationship found in traditional outsourcing. ASPs also need to establish viable partnerships with other suppliers to package off-the-shelf or standardised solutions. The ASP further aims to *own* the customer through establishing a direct relationship. The ease with which ASPs will achieve this depends on the types of applications and services they offer to their customers. Currently, the ASP market is immature, yet dynamically changing. In recent months, five distinct types of ASP have emerged.

A TAXONOMY OF APPLICATION SERVICE PROVIDERS

Whilst the ASP concept of providing applications and services to customers on a rental model is reminiscent of previous service bureau offerings discussed above, it has significant implications for changing the structure and scope of global IT outsourcing and beyond. The current turbulence in the industry is marked by companies developing their ASP strategies to take advantage of perceived new opportunities. The ASP industry is changing rapidly, with many existing players in the industry developing their own ASP model. Microsoft, Unisys, Cisco, EMC and StorageTek recently announced ASP 2000, a European initiative to meet the end-to-end infrastructure needs of ASPs. Microsoft, for example, is keen to enter the European ASP market with a strategic plan to offer applications to SMEs on either a lease or licence agreement, although pricing will be 'dictated by ASPs and their needs'. A strategic alliance has been signed between Microsoft and Cable & Wireless to this affect. This deal enables the telecommunications provider to exploit their expensively developed networks by hosting popular business software such as Microsoft Office. It is likely that many more such deals will emerge in the short term.

Against a background of a fast moving and unpredictable industry, research conducted in the US and Europe reveals that five distinct types of ASP have emerged. The antecedents of some of the companies may fall outside the ASP arena, i.e. the large ERP vendors, telecommunications and independent software companies. However, the taxonomy of ASPs is a useful framework from which to analyse and monitor trends in the industry.

Enterprise ASPs

The large ERP vendors are now targeting mid-size companies by offering them end-to-end enterprise solutions either through their own channels (e.g. MySAP.com, JDe.sourcing, etc) or through another ASP (e.g. Corio, Aristasoft or USinternetworking). There are a variety of issues facing the traditional ERP vendors in embracing the ASP concept, not least because moving to a rental or *utility* pricing model will significantly impact on the traditional pricing model (e.g. software + licence + maintenance + service, etc). These concerns are also shared by independent software vendors (ISVs), many of whom are currently deciding whether to web-enable their software and offer it through an in-house or external ASP service. Notwithstanding these concerns, the trend is for ERP vendors, ISVs and others to seek new opportunities in the ASP space, if only to acknowledge the inevitable competition which will emerge as the ASP market develops. This competition has forced companies like J.D. Edwards to identify eight vertical markets from which to offer end-to-end enterprise software 'available a la carte or as an integrated whole via JDe.sourcing'. These applications comprise front office, manufacturing, supply chain, logistics/distribution, human resources, and financial processes.

In addition to the JBOPS companies entering the ASP market, enterprise applications are offered by a new *pure* breed of company in the form of enterprise ASPs. They include USinternetworking and Corio, among others. USinternetworking, founded in January 1998, is currently the largest 'pure breed' ASP offering a full suite of enterprise applications software through its Internet managed application provider (iMAP) service. This company offers the most comprehensive suite of software products in the market including: Ariba (eprocurement); Broadbase (analytics product extensions); Broadvision (ebusiness) Lawson (HR, financials, supply-chain management, ecommerce, procurement); Microsoft (ecommerce, Exchange and Site Server, and SQL server); Niku (professional services automation); Oracle (database); Peoplesoft (financials and HR); Sagent (data warehousing) and Siebel (CRM). USi is the most valuable public company in the ASP space with an estimated revenue of \$100m.

Similarly, Corio, founded in September 1998, originally offered Peoplesoft applications for its customer, Excite.com, also based in Silicon Valley, US. Corio offers a broad range of enterprise applications: Broadvision (ebusiness); Cognos and E.piphany (business intelligence); CommerceOne (eprocurement); Peoplesoft (financial management, HR and distribution); SAP (manufacturing and accelerated eshop); Siebel (CRM). Both USinternetworking and Corio have a potentially huge customer market in the form of the SMEs, most of whom will not have access to enterprise offerings.

Pure Play ASPs

A second category of ASP is the pure play. These companies offer ASP solutions which are web-enabled. In the UK, Netstore claims to be 'Europe's leading ASP'. Netstore was set up in 1996 and is a 'special partner' to Microsoft. Netstore offers a range of products and services to its key customers: Cisco, Avon Cosmetics Ltd and the Opus Group. These range from hosting Microsoft Exchange; on-line back-up, secure PC Refresh™ to weekly management reports and web hosting consultancy. Aspective is another UK-based pure-play ASP. This company was only formed in 1999 and describes itself as a 'Wireless ASP'. This is in recognition that, with the growth and development of mobile phones, ASPs will need to offer applications remotely. Aspective was founded in December 1999 and initially acquired two leading UK consultancies which had expertise in offering eCRM and

eCommerce implementations. With £40 million second round venture capital funding, Aspective is positioned to become a leading ASP with strategic partnerships with BroadVision, Siebel, Lotus, Exodus, StorageNetworks and EMC. Aspective is the first European wireless ASP to deliver integrated front office, e-commerce and WAP-enabled mobile Internet services. It offers both mobile and desktop users access to managed e-commerce and front office services for a fixed monthly fee.

Pure play ASPs offer horizontal applications or point solutions to their customers who are typically dot.coms or other high growth start-ups. Whilst pure play ASPs may serve large customers, they do so by offering web - centric applications which they can scale according to growth and demand.

Vertical ASPs

Vertical ASPs such as Aristasoft and Learningstation.com target a specific market section like high tech equipment manufacturing or education. This type of ASP is expected to enter a hyper-growth stage with a wealth of new opportunities across vertical markets. Aristasoft offers end-to-end ERP and customer care solutions. The company was founded in January 1999 with backing from Crosspoint venture partners. An interesting observation is that Aristasoft, whilst targeting a specific vertical market, also offers J.D. Edwards OneWorld suite for financials, logistics and distribution. This raises the issue of whether dual ASP offerings from a major ERP vendor (J.D. Edwards) and a vertical ASP (Aristasoft) will generate a channel conflict, especially if customer support varies between the two vendors. Another example of a vertical ASP company is The Learningstation.com which offers a comprehensive suite of education software products through a virtual private network over the Internet. This offering is to be used by school students and on adult education programs. Teachers and instructors may also use planning tools and other applications. Key customers are primary schools and adult education centres.

Enterprise	Pure play	Vertical	Horizontal	Enabler
JBOPS	Netstore	Aristasoft	Wydom solutions	AboveNet
USInternetworking	Aspective	Learningstation.com	NetLedger.com	Digital Island
Corio	Agillion	Trizetto Group	Vivao	Exodus
Futurelink	Employease.com	Velocity.com	Critical Path	Citrix
Interliant	eALITY	Covation	NetEx	Digex

Table 3. A Taxonomy of ASPs

Horizontal ASPs

Horizontal ASPs tend to offer collaboration tools which include email, calendaring and scheduling, task lists, newsgroups and other applications involving large numbers of people. The key advantage of these tools is the benefits of accessing them from remote locations over the Internet. Although email is not usually equated with ASP offerings, many would argue that it is by far the most prolific application. Companies like Critical Path and Mail.com have now developed much expertise in providing this service to customers. It is likely that more companies will turn to horizontal ASPs to source their collaboration tools, especially as the cost and time of managing them in-house is financially unattractive. Indeed, email, like other software applications, is a business-critical tool, with downtime causing significant problems to management and staff alike.

Other horizontal applications include a computer-aided design (CAD) package. The Cadcentre, which is a UK company, is transforming itself into an e-procurement company. It plans to become an ASP by offering commodity applications, such as CAD and procurement software applications for rental by the day. This is a revolutionary step in providing software applications since the economics of so doing would attract many more customers, notably, SMEs. Another example is Royalblue, the maker of financial and helpdesk software. By web-enabling these applications and offering them for rental, the company will add smaller banks and financial institutions to its customer base, thus improving its revenues. The potential to offer horizontal (collaboration tools) or commodity-type applications is immense. Analysis of the current market suggests that numerous large and SME companies are web-enabling their software applications to compete in the ASP industry. Other dot.com and high growth start-ups are also emerging.

ASP Enablers

The final category, the ASP enabler does not usually offer an application direct to the end customer, but instead, supports the infrastructure in three key ways. First, it may provide hosting services to companies wishing to become ASPs. The example, above, of an ISV deciding to web-enable its software will require the services of a company such as Digex. Second, ASPs may require the services of a co-locator such as Exodus or AboveNet. Exodus provides Internet data system and network management solutions for businesses with mission -critical web-based operations. ASPs use companies like Exodus to co-locate their servers. Third, they may provide

infrastructure equipment, tools and services to enable firms to embrace the ASP model. CenterBeam offer a unique outsourcing solution based upon a one-stop-shop utility model. This includes: office infrastructure, data-center services, private Internet access, business services and customer care. ASP enablers are critical to the ASP industry since their customers, who may be SMEs with an inferior IT infrastructure, need to acquire these offerings before they can source applications and services from other ASPs.

DEVELOPING THE ASP BUSINESS MODEL

The taxonomy of ASPs is an *ideal-type* categorisation where no two ASP companies sharing the same label will offer identical applications and services portfolios. Competition in the ASP industry will continue to grow with many new entrants, particularly in pure play and vertical sectors. The ASP has been described as the *next killer-app*, where the development of web-centric applications and services will create a multi-billion dollar market. Figure X. presents the ASP diamond which captures the inter-play between enterprise, pure play vertical and horizontal ASPs. ASP enablers will form partnerships with all types of ASP.

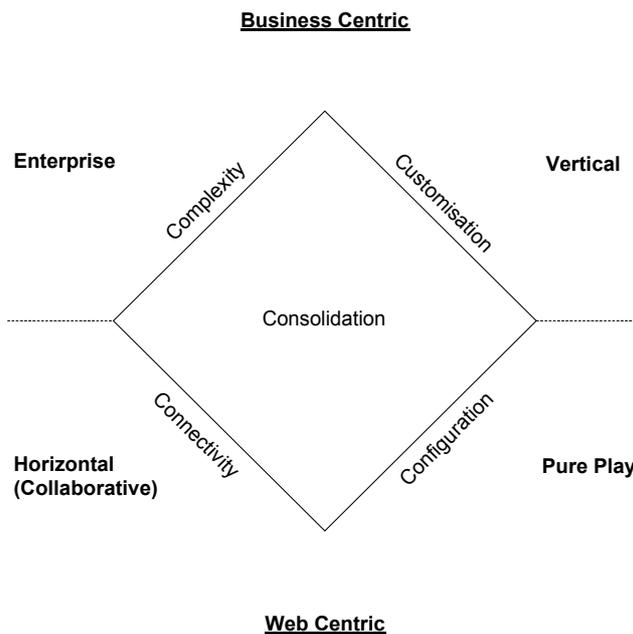


Fig. 2. The ASP diamond

Whilst new business opportunities are open to all ASP types, it is likely that some will emerge stronger over time. Enterprise ASPs, for example, are increasingly looking towards key vertical markets as channels to offer their applications and services. ERP vendors have a wealth of experience, most notably with large companies. However, Enterprise ASPs will need to partner with vertical ASPs if they are to offer the level of customisation required by customers in specific sectors (financial services, healthcare, education, etc). Traditionally, ERP vendors, through systems integrators, have installed complex systems at customer sites. This complexity has often involved linking core business processes from financials, HR, distribution to supply chain management. The challenge for the Enterprise ASPs is to create the right balance between cost and customisation. Whilst it would be more cost effective to offer *vanilla* (non-customised) ERP modules across vertical sectors, it likely that some customisation will be necessary based on the diversity of targeted markets. This will create a massive opportunity for vertical ASPs, many of whom may target only one sector, such as healthcare. To this end, vertical ASPs will customise the applications and services they offer. Whilst this may not involve large-scale modification of applications, customers will be offered a value-added service from their vertical ASP in the form of domain and consultancy expertise. Enterprise and vertical ASPs essentially offer business-centric applications and services. Whilst they are moving towards a web-centric approach, it is likely that customers with existing legacy systems will only seek to replace if an affordable alternative is offered.

In addition to developing partnerships with the large ERP vendors, opportunities will emerge for vertical ASPs as other sector-specific software applications become web-enabled. First mover advantage is likely to become important. For example, Aristasoft claims to be a leading ASP in the high-tech equipment manufacturing sector. It further identifies itself as *'The IT Department of for High Tech Companies'*. The

company has targeted emerging enterprises that develop high tech equipment such as networking and computing devices. Its customer base has a long history of outsourcing so embracing the ASP model is not perceived as a serious issue. Aristasoft has also developed links with contract manufacturers and OEMs. Clearly, the vertical ASP sector offers many opportunities, although a strategy which pursues specialisation in the form of domain expertise will need to be weighed against one based on commodification.

Horizontal ASPs and pure-play ASPs tend not to share the problem of integrating legacy applications with web-centric applications. This is because the applications being offered are designed for the web. Horizontal ASPs offering a wide range of collaboration tools are widely embraced by customers since they use the power of the Internet to connect users worldwide. Connectivity is the key benefit of the horizontal ASP offering. What is important in the horizontal ASP sphere is market differentiation.

Pure play ASPs tend to configure their offerings, which may be vertical or horizontal, to customer requirements. Netstore, for example, provides a Microsoft Exchange hosting solution which is scalable and secure. If the customer wishes to add 50-100 seats, this can be offered within hours. If an individual customer reports the loss of a laptop PC, the data, which is stored on mirrored Netstore servers, can be installed on a new PC and returned to the customer within hours. Pure play ASPs tend to outsource the majority of their own business and IT needs. Their primary focus is to develop core competencies in providing ASP solutions which are configured for dot.coms and high growth start-ups.

Whilst ASPs all purport to offer customers an attractive value proposition based upon the utility model where software is rented as a service rather than purchased as a product, the different types of ASP will all need to develop a viable business model to differentiate their applications and service offerings within the marketplace.

CONCLUSION

The discussion has focused upon third wave IT outsourcing which is characterised by an industry-centric approach where ASPs will play a major role. Our taxonomy suggests the ASP business model is more complex than one which simply monitors the transition where software applications are offered as a product to being offered as a service via a subscription, *pay-as-you-go* model. Initial research into this topic has found that competition will become intense as ASPs position themselves to offer enterprise, horizontal or vertical applications. They will need to differentiate their application and service portfolios in addition to offering a sustainable value proposition to customers. Whilst the ASP model has many attractions for SMEs, it is inevitable that the landscape of the software and computing services industry will significantly change in a web-enable applications environment. A key question will therefore be: Will the old business models of first and second wave IT outsourcing be relevant for third wave outsourcing?

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