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APPLICATION SERVICE PROVISION: RISK ASSESSMENT AND MITIGATION[1]

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Executive Summary

Many business managers understand the value of renting applications over the Internet, such as lower total cost of ownership, fewer in-house IT staff, more rapid delivery of applications, scalable solutions, and superior cash flow. But there are also risks, such as power shifting asymmetrically to the supplier, suppliers overselling their capabilities, suppliers encountering subcontracting problems, and customer concerns about Internet security and reliability. In conducting ten case studies and surveying 270 companies, we developed a risk-assessment and risk-mitigation framework and learned four lessons about the Application Service Provision (ASP) space. One, ASP sourcing has many of the same risks as traditional IT outsourcing, but the pattern of likely risks differs. Most risks are greater with ASP, but some are the same or less. Two, business managers can learn how to assess ASP risks based on lessons from both traditional IT outsourcing and early ASP adopters. Three, mimicking ASP risk-mitigation strategies will not guarantee success, but many risk mitigation tools are available for most business environments. And four, ASP outsourcing, like all IT outsourcing, requires significant in-house oversight.

The Emergence of the ASP Marketplace

Over the past few years, an exciting new IT sourcing model has emerged: Business managers can now *rent* business applications over the Internet. Initially called "application service provision," "ASP," or, more informally, "apps on tap," this sourcing model promises to deliver best-of-breed, scalable, and flexible business applications to customer desktops. The low monthly fee is based on number of users or number of transactions at the customer site.

Customers can rent nearly all popular Independent Software Vendor (ISV) products from ASPs, including enterprise resource planning packages from SAP, Oracle, Peoplesoft, Great Plains, and JD Edwards; customer relationship management packages from Siebel and Convergys; personal productivity and communications packages from Microsoft, Netscape, and Lotus; and all types of e-commerce and e-business software from CommerceOne, E.Piphany, Requisite Technology, and many others.

The revenues generated in this space – depending on which research report you read – were between $1 billion and $3 billion in 2001. Research firms such as Gartner Group's Dataquest, InfoTech Trends, Phillips Group, International Data Corporation, and Data-Monitor predict the market will grow significantly over the next few years. Estimates of the 2006 total market range from $7 billion to $25 billion. Although no one knows for sure how large the ASP market will become, all research firms predict significant growth because the underlying value promises are so compelling:

[1] This article was reviewed and accepted by all the senior editors, including the editor-in-chief. Articles published in future issues will be accepted by just a single senior editor, based on reviews by members of the Editorial Board.

- No upfront hardware or software costs (the supplier hosts the applications for you)
- Less expensive in-house IT expertise because the supplier is fully staffed
- Scalable solutions that grow or shrink with the customer's requirements
- Superior cash flow because the customer makes only monthly payments on actual use rather than lump-sum software licensing payments, and
- Rapid implementation in days or weeks rather than months or years.

Corio, an ASP provider, reports that ASP customers average a 70 percent reduction in Total Cost of Ownership (TCO) in year one, and a 30-50 percent reduction in TCO over five years. ASP suppliers can allegedly deliver this value via their one-to-many business model.

Given these benefits, who wouldn't want to rent business applications from an ASP? The answer: Those who believe the risks are too great. Application service provision is still, in the main, an immature option primarily offered by unstable dot.com start-ups. Business managers also worry about the reliability and security of the Internet. They believe their business requirements are too idiosyncratic to be well handled by canned, one-to-many solutions, and they do not trust outsiders to supply their mission-critical systems.

So how can business managers evaluate this new sourcing option, take advantage of its promised value, and mitigate its risks? Over the past year, we sought answers to these questions by studying the ASP space, carrying out ten in-depth case studies and conducting a customer survey of 274 current and potential ASP customers.

We found that the ASP space, as initially defined, is vastly more fragmented, complex, and risky than many customers realize. In this paper, we explain the complexity of IT sourcing options and provide business managers with a risk-analysis and risk-mitigation framework.

We learned four lessons:

1. ASP sourcing and its variations have many of the same risks as traditional IT outsourcing, but the pattern of likely risks differs. Most risks are greater, but some risks are the same or less.

2. Business managers can learn how to *assess ASP risks* based on lessons from both traditional IT outsourcing and early ASP adopters.

3. While mimicking ASP risk-mitigation strategies will not guarantee success, there are many *risk mitigation tools* available for most business environments.

4. ASP outsourcing, like all IT outsourcing, requires significant in-house oversight.

Four General IT Sourcing Models

Many practitioners ask how application service provision differs from other IT sourcing options. At a high level, there are four general sourcing options:

- ***Insourcing*** – Using internal resources under internal management

- ***Buy-in*** – Bringing in external resources to run under in-house control

- ***Traditional outsourcing*** – Supplier taking ownership of customer resources and managing those resources on behalf of a customer

- ***ASP*** – Renting supplier-owned resources to customers and delivering over the Internet.

Sourcing models may also be distinguished by the typical location of supplier staff, the type of contract used to govern the relationship, and market differences, as defined by typical customers and suppliers (see Table 1).

Table 1: Four General Sourcing Models

Sourcing Model	Resource Ownership (Infra-structure and People)	Resource Management	Customer-to-Supplier Relationship	Typical Location of Supplier Staff	Typical Customer/ Supplier Contract	Primary Customer Base	Primary Supplier Base
Insourcing	Customer	Customer	N/A	N/A	N/A	All sizes	N/A
Buy-in	Supplier	Customer	One-to-one	Supplier staff on customer site	Time and materials	All sizes	Independent contractors; contracting and consulting firms
Traditional Outsourcing	Supplier	Supplier	One-to-one or One-to-some	Mixed (some supplier staff on customer site, some staff centralized at supplier site)	Highly customized contract defining costs and service levels for each customer	Large customers preferred by suppliers to cover considerable transaction costs	Market is dominated by large suppliers such as Accenture, CSC, EDS, IBM, SAIC
Application Service Provision	Supplier	Varies	One-to-many	Supplier staff not on customer site	Generic ASP contract specifying rental costs and very minimal service guarantees	Start-ups and small-to-medium enterprises	Market comprises an estimated 1200 ASPs, predominantly start-up ventures

Beyond ASP: The Netsourcing Space

The sourcing options in Table 1 are actually simplified archetypes. In reality, business models quickly blend and fragment. Traditional suppliers, such as EDS and SAP, now offer ASP solutions to complement their other offerings. Some start-up ASPs, such as Exult, are winning large-sized customers like BP Amoco. Even the characteristic one-to-many business model of the initial ASP concept is blending with one-to-one customization, at least for some aspects of ASP products and services.

ASP suppliers have discovered that few customers merely want access to stand-alone ISV software. Most customers want customized services, training, end-to-end delivery of entire business processes, and the ability to integrate their home-grown applications with ISV software.

Suppliers have reacted with new variations on the ASP model, so the spectrum now includes storage service providers, managed service providers, full service providers, business service providers, content service providers, and vertical service providers. However, these terms have no standard definitions.

To capture the variety of service offerings, instead of calling this space "ASP," we give it the broader nomenclature "netsourcing" – where the distinguishing characteristic is that IT infrastructure, products, and services are delivered over a network. To better understand this netsourcing space, we view it as a stack of service types (see Table 2).

Most customer-supplier relationships in this space are very complicated. A netsourcing supplier may have primary accountability to a customer, but hardware, monitoring, billing, help desk, and support services may actually be subcontracted to others. This subcontracting, of course, presents more risks to customers, who may not even be aware of the subcontracting. It also poses more risks to netsourcing suppliers, who remain accountable for products and services outside their direct control. To help business managers assess and mitigate risks of complex netsourcing arrangements, we provide a risk analysis and mitigation framework, illustrated through a case study of Abz Insurance.

Table 2: The Netsourcing Service Stack

Netsourcing Service	Example
Business Process Delivery Services	Exult processes human resources functions for BP Amoco in a $600-million, five-year deal
Customized Application Access and Support Services	EDS houses and supports customers' home-grown applications
Standard Application Access Services	Easylink rents Microsoft Exchange, Novell GroupWise, and other email and groupware packages to customers, including the U.S. Army and Mazda.
Application Operating Infrastructure Services (Middleware layer for accessing applications from remote locations)	Charon Systems transforms customers' home-grown applications to be network-ready using middleware products, such as MS Terminal Server or Citrix MetaFrame
Hosting Infrastructure Services	Exodus provides data center facilities, leases servers, and manages server performance.
Network Services	Intellinet handles network monitoring for Marconi Medical Systems' 71 routers, 200 servers, and 1800 mobile users.
Network Connectivity Services	Internet service providers (AOL) and telecom companies (Bell) offer an array of connectivity options matched to customers' bandwidth and data throughput rates.

Risk Analysis and Mitigation Framework

In the context of IT outsourcing, customers take risks when they put their faith in suppliers who oversell their capabilities, negotiate incomplete contracts, or do not properly manage their outsourcing relationships. The negative outcomes from these risks include excess costs, poor service, loss of competitiveness, loss of revenues, and loss of customers.[2]

Table 3 provides a comprehensive list of IT outsourcing risks and compares these risks between traditional IT outsourcing and netsourcing. As Table 3 illustrates, the risks in netsourcing are the same as in traditional outsourcing, but the probabilities for occurrence differ.[3]

Of the 15 risks listed in Table 3, nine are greater in the netsourcing context. We will focus on these higher risks in our case study. But we also note that five of the risks are actually lower for netsourcing than for traditional outsourcing: treating IT as an undifferentiated commodity, power asymmetries favoring the supplier, inflexible contracting, customer's inability to

[2] The following papers discuss IT outsourcing risks in more detail: Ang, S., and Toh, S.K. "Failure In Software Outsourcing: A Case Analysis," in Willcocks, L.P. and Lacity, M. (eds.), *Strategic Sourcing Of Information Systems,* Wiley, Chichester, 1998; Earl, M. J. "The Risks of Outsourcing IT," *Sloan Management Review* (37:3), 1996, pp. 26-32; Kern, T., Willcocks, L.P., and Van Heck, E. "The Winner's Curse In IT Outsourcing: Strategies For Avoiding Relational Trauma, " *California Management Review* (44:2), 2002, pp. 47-69; Lacity, M.C. and Willcocks L.P. *Global Information Technology Outsourcing: Search for Business Advantage*, Wiley, Chichester, 2001; McLellan, K., Marcolin, B.L., and Beamish, P.W. "Financial and Strategic Motivation behind IS Outsourcing," *Journal of Information Technology* (10:4), 1995, pp. 299-321; Willcocks, L.P, Lacity, M.C., and Kern, T. "Risk In IT Outsourcing Strategy Revisited: Longitudinal Case Research," *Journal of Strategic Information Systems* (8:2), 1999, pp. 285-314.

[3] Our risks and ratings are derived from our 86 case studies and two surveys on traditional IT outsourcing and ten case studies and one international survey on netsourcing. For example, one of the greatest risks identified in our netsourcing survey was the likelihood that the netsourcing supplier would go out of business. But for traditional outsourcing, particularly in our case studies, the suppliers – such as Accenture, CSC, EDS, and IBM – were stable and long-lived. Their customers were not concerned that they would go out of business. They were much more concerned with trying to negotiate flexible contracts, having a supplier gain too much power, or IT becoming commoditizing to the point that the customer loses any possible strategic advantage.

manage the relationship, and transition failure. These risks are high when a customer cannot readily switch suppliers because the assets, capabilities, and services are highly customized to that customer. These risks remain among the greatest in traditional IT outsourcing because the outsourcing services are tailored to each customer. In contrast, switching suppliers in net-sourcing is usually much easier because customers are typically purchasing standard products and services offered by many suppliers.

Table 3 also includes risk mitigation strategies proven to be useful by a large number of our case study and survey respondents. However, business managers will find that best practices cannot be mimicked effectively in every situation. Instead, each company must decide for itself appropriate risk mitigation tactics. The case study of Abz Insurance illustrates this point beautifully. Abz Insurance encountered most of the risks listed in Table 3, but some of the best practice risk-mitigation strategies were not feasible. This case encompasses traditional IT outsourcing and ASP sourcing, providing examples of the different levels of risks for each. It also illustrates an ASP deal that encountered significant problems, and shows how power symmetries helped resolve those problems.

Illustrative Case Study: Abz Insurance[4]

Several Dutch insurance companies started Abz Insurance in 1984 to reduce the cost of automobile claims processing through standardization and centralization. Abz was to serve as the single point of contact for all participants involved in automobile insurance claims, including insurance companies, repair shops, and claimants. Abz's operational director describes the company's history:

> *The company basically started 16 years ago as an initiative in the area of car claims handling. The insurance industry saw that working together to get the process organized and supported by IT was much better handled by all insurers together. So Abz was the result, and today that means that every damaged car that is covered by an insurance company in Holland is handled over our IT systems. We provide applications to calculate the damage, to process the damage, to record the damage with photos, etc. So everybody involved in processing the damage is connected to our system – insurance companies, body repair shops, expertise companies, spare parts companies, etc.* – Corné Paalvast, Operational Director, Abz Insurance

A Seasoned Outsourcing Customer

From its inception, Abz depended heavily on external information technology providers, including Getronics, CMG, and Pink Roccade. These suppliers developed and operated Abz's IT infrastructure during the 1980s and early 1990s. Abz's use of multiple suppliers was intentional; it wanted to mitigate the risk of ***supplier favorable power asymmetries*** (Risk 3 in Table 3) by dividing the contracts among several parties.

Initially, the underlying argument for outsourcing was that IT was a commodity, not core to Abz's business. Thus, the IT outsourcing contracts focused on daily operations and operational efficiency. While this initial stance was valid early on, by the mid 1990s Abz Insurance experienced the consequences of ***treating IT as an undifferentiated commodity*** (Risk 4 in Table 3):[5] Abz became unable to exploit IT for competitive advantage. At that time, its growing customer base and key shareholders (the large European insurance companies) demanded greater exploitation of IT to enhance existing services and to define new services.

For example, Abz's customers wanted its systems to permit end customers to apply for car insurance, receive accurate rate quotes based on the customer's history and credit rating, and receive car insurance in real-time over the Internet. Thus, Abz was expected to provide more than standardized claims processing; it was expected to also host and manage individual insurer applications and data. This demand was certainly beyond the scope of Abz's in-house IT capabilities at the time. Even more troubling, the demand was beyond the capabilities of Abz's IT suppliers. Abz became increasingly frustrated with its service firms because they were not keeping Abz abreast of innovations or responding to customer demands for full-service Internet applications and support.

[4] Case data sources: Face-to-face interviews with Michiel Steltman (Cofounder and CTO of Siennax), Pieter Bonkelaar (Account Manager at Siennax dedicated to Abz), and Corné Paalvast (Operational Director at Abz); Siennax case study by Jeroen Kreijger; Abz website and websites of partners; internal reports; press releases; and Siennax White Papers. Interviews were tape recorded and transcribed. Some direct quotes in the paper are translations from Dutch to English.

[5] See Lacity, M., Willcocks, L., and Feeny, D., "The Value of Selective IT Sourcing," *Sloan Management Review* (37:3), Spring 1996, pp. 13-25 for how to source IT as a portfolio.

Table 3: Risk Assessment and Mitigation Framework for Traditional IT

Risk	Traditional Outsourcing	Netsourcing	Risk Mitigation Strategies
1. Unrealistic customer expectations	Medium	High	Align stakeholder expectations through detailed contract negotiations; disseminate contract highlights to entire user community.
2. Customer's lack of maturity and experience with IT outsourcing	Low/Medium	High	Source incrementally – start small to gain experience with capabilities required to successfully outsource.
3. Supplier favorable power asymmetries	High/Medium	Low	Source to multiple suppliers; sign short-term, detailed contracts. (This risk is greatest for highly customized services because it is more difficult to switch suppliers.)
4. Treating IT as an undifferentiated commodity thereby forgoing strategic IT exploitation	High	Medium	Treat and manage IT as an integrated portfolio, with careful consideration of current and future business, economic, and technical factors.
5. Inflexible contracting	High	Low	Negotiate short-term contracts that include mechanisms for change; use performance-based contracting where possible.
6. Oversold supplier capability	Medium/Low	High	Select suppliers with proven track records; demand customer references that illustrate turnaround cases.
7. Supplier going out of business	Low	High	Select supplier with sound financial position, stable customers, and stable strategic partners; understand if and how supplier earns a profit; require notification of premature termination of contract; require transfer clause to facilitate moving the activity back to the customer or to another supplier.
8. Supplier exploitation of customer expertise	Low	Low	Include non-compete clause in contract.
9. Incomplete contracting	Medium/Low	Very High	Detail contracts by including costs, service levels, and penalties for non-performance.
10. Customer's inability to manage the supplier relationship(s)	High	Low/Medium	Ensure contract monitoring, coordination, and user-supplier liaison capabilities.
11. Transition failure	High	Medium	Mitigate risk through transition planning and testing, incremental or parallel implementation.
12. Supplier subcontracting problems	Medium/Low	High	Require full disclosure and customer approval of all subcontractors.
13. Security breach	Medium/Low	High	Encrypt data; retain access control in-house; consider virtual private networks for highly sensitive data.
14. Application unavailability	Low	High	Negotiate service level guarantees with penalties for non-performance for supplier- caused failures. (Suppliers cannot be held accountable for Internet failures.)
15. Slow response time	Low/Medium	High	Negotiate service level guarantees for response time variables within the supplier's control; restrict applications to thin-client versions for Internet delivery.

Abz Insurance's experience has been replicated many times over in traditional IT outsourcing.[6] ***Inflexible contracts*** (Risk 5 in Table 3) typically fail to respond to more strategic initiatives. Supplier account managers are required to deliver on the contracts and may set prices for and accept additional, well-defined requests, but these managers are rarely empowered to completely restructure deals. Abz executives perceived that the only viable way to achieve Abz's goals was to

[6] See Lacity, M. and Willcocks, L. *Global Information Technology Outsourcing : In Search of Business Advantage*, Wiley, Chichester, 2001, for many examples of inflexible contracting leading to failure to exploit strategic IT initiatives.

seek a new partner, rather than renegotiate with existing suppliers, as the operational director explained:

> *We had had an outsourcing arrangement with Getronics at that point for about six years. They provided us with most of our IT services for marketing and selling our services to the insurance industry. Their services covered our complete intranet and extranet environment, which included our transaction services. Yet, for our current and long-term development, we were looking for an IT partner rather than a commodity-type service supplier like Getronics. We sought an IT partner that could help us define new products, services, and generally would be more proactive in its interactions with our customers ... we were looking for a partner who could tell us what was available and help us identify new opportunities.* – Corné Paalvast, Operational Director, Abz Insurance

Looking for a New IT Partner

As a result, in November 1999, when the contract with Getronics was nearing its end, Abz began exploring the market for a new IT partner. Abz envisaged a solution that would give it flexibility, a means to stay abreast of innovations, and access to new and ongoing application developments. But could this all be achieved without significant capital investment in IT? At the time, the ASP business model was being widely discussed and covered by the media. Abz found the model to be a good fit with its requirements. In February 2000, Abz decided on an ASP-driven solution. In the words of the decision maker:

> *Back then, we did not know much about ASPs. Yet we were convinced that this was a way to help us innovate and develop new services faster than we could think of at the time. The in-depth discussions and negotiations with Graddelt and Siennax* [two ASPs] *confirmed this assumption. Yet when we scanned the market, everybody seemed to be claiming they were an ASP – even our existing service provider, Getronics. But most of them did not provide the kind of service we sought, the scalability, and the necessary 'Internet hotel' – the environment where we could run our own business applications, and the infrastructure to plug in our own business applications*. – Corné Paalvast, Operational Director, Abz Insurance

Abz Insurance wanted to offer its insurance customers one-stop insurance business services, enabled by both standard and customized applications that would be hosted and technically managed by an ASP. Abz hoped a full suite of services would increase its customers' loyalty as well as generate new revenues.

Evaluating the Risks of Using an ASP

Abz was well aware of the risks of ***suppliers overselling their capabilities*** (Risk 6 in Table 3). So it evaluated suppliers based on their track record of providing a portfolio of applications and services:

> *Proven results, that was one of the selection criteria.* – Corné Paalvast, Operational Director, Abz Insurance

Another factor that played a role in Abz's evaluation was the threat of ***power asymmetries developing in favor of the supplier*** (Risk 3 in Table 3). While Abz had mitigated this risk in the past by sourcing to multiple suppliers, the level of integration and coordination among the new application services required sole sourcing. Abz's new risk mitigation strategy was to select a small-sized, start-up supplier that had few customers and was not as well known in the industry, believing that a start-up IT supplier would pay close attention to Abz's needs and would lead to a balanced relationship that would be slightly in Abz's favor. Underlying this strategy was Abz's experience that had shown that partnerships with small suppliers led to faster response times, improved communications, and decreased hierarchical interface levels.[7]

A third factor in Abz's selection criteria was the threat of the ***supplier stealing intellectual capital and entering the market as a competitor*** (Risk 8 in Table 3). Abz was particularly concerned about one supplier that could easily copy its services and activities and then offer them in the same market, either directly or indirectly through partnerships. Usually, customers mitigate this risk with non-compete clauses, but Abz Insurance mitigated this risk by restricting its search to ASP start-ups, like Graddelt (now called marviQ) and Siennax. Both of their resource bases were relatively small so they were less likely to enter their own market to steal customers.

[7] In selecting a start-up supplier, one risk Abz did not consider was the possibility of the ***supplier going out of business*** (Risk 7 in Table 3). Due to the increased risk of supplier failure, the authors generally do not see selection of a start-up supplier as a best practice for mitigating power asymmetry risks.

The final driving selection criteria was whether the supplier could be trusted:

> *But most important, the ASP market being an immature market, you need to have trust in people and individual relationships. That was one of the most important triggers for choosing Siennax.* -- Corné Paalvast, Operational Director, Abz Insurance

Mitigating the Risks of Signing with Siennax, an ASP

In March 2000, Abz and Siennax signed an agreement of intent. Due to its accumulated experience in IT outsourcing (reducing Risks 1 and 2 in Table 3 for Abz), Abz was aware of the risk of signing an ***incomplete contract*** (Risk 9 in Table 3). The parties thus took nearly six months to conduct due diligence and negotiate a detailed contract that included service levels and penalties for non-performance for well-defined Siennax services. The contract detailed escalation procedures, responsible managers, uptime guarantees, reaction times, reaction procedures, and change request procedures. (This level of detail was unusual among our netsourcing case studies – most ASP customers have been signing suppliers' off-the-shelf, three-page contracts.)

But for some parts of the contract, Siennax could not commit to details. For example, Siennax did not have any hands-on experience with integrating a customer's legacy systems with its own service solution. This part of the deal required a more ***flexible contract*** (Risk 5 in Table 3), so the integration merely defined the intent of the expected services and Abz's wish list. (In our prior study of such mixed contracts, in Lacity and Willcocks (2001), 55 percent of the deals were successful, but 36 percent experienced significant problems with the "to be defined" portions of the contracts a few years into the relationship.)

In addition to attending to the contract, Abz also planned structures and procedures to ensure it could ***effectively manage the relationship*** (Risk 10 in Table 3).[8] A steering group of both Abz and Siennax executives was formed to monitor costs and service performance, resolve escalated problems, and identify new business opportunities. An operational team was also formed to manage operations and services. Together, the steering group and operational team were to define and fully detail the exact service levels after transition.

Abz Insurance was worried about the risk of ***transition failure*** from Getronics to Siennax (Risk 11 in Table 3). To mitigate this risk, both parties invested time upfront identifying a project team responsible for transitioning the services. The project team decided to incrementally transition the legacy services from Getronics to the Siennax platform. The migration began with relatively easy parts, such as the html front-end applications, and was then expanded in steps to cover the entire Abz extranet. Abz wanted an incremental approach because it gave the leeway to retreat, should problems become serious. Although complex in nature, the transition was rolled out as planned:

> *We started to discuss the transition of their extranet from their servers to our own environment. This transition was something that had never been done before. So it was something new to both organizations. To my advantage I had, and we formed… a very good working project team. This cooperation really helped in migrating the services smoothly. Yet there was one exception, which was the implementation of the Verisign certification. On that we faced a number of problems.* – Pieter Bokelaar, Abz Account Manager, Siennax

The inherent problem was that Abz also acts as a Trusted Third Party agent to its customers, providing them with crucial digital signature and passport functionality. Abz delivered this service jointly with Getronics, but needed to find a new supplier who could work with Siennax. Abz initially took the lead in selecting a subcontractor for Siennax, fearing that Siennax did not have the specific business knowledge to successfully subcontract this service on its own. By taking the lead in searching for a Verisign Certification service, Abz hoped to reduce the risk of ***subcontracting problems*** (Risk 13 in Table 3). Having done a survey of the market, Abz identified a supplier with which it had previously done other business, Pink Roccade. From Abz's perspective, Siennax only needed to subcontract with Pink Roccade and integrate its service into Abz's existing service package.

However, Siennax did not want to partner with Pink Roccade, viewing it as a competitor. Instead, Siennax wanted to subcontract with a start-up company called BlueX. It successfully persuaded Abz it should control its own subcontractors. Unfortunately, this decision

[8] See Feeny, D. and Willcocks, L., "Core IS Capabilities For Exploiting Information Technology," *Sloan Management Review* (39:3), 1998, pp. 9-21 for details on retaining core IT capabilities to manage outsourcing.

turned out to have adverse consequences for Abz's business:

> *We wanted Verisign, which in Holland is resold primarily through Roccade. They [Siennax] however could not really live with Roccade because of their own competition worries. So Siennax decided to go into business with somebody else -- which I hadn't heard of before -- called BlueX. They said they could arrange the Verisign service before the first of October, but it took them till the 22nd of December to do so. That delay put us, as a Trusted Third Party, out of business for seven weeks. During this time I don't think we lost any customers, but we have had to pay back money for services not available, and we have had to say "Sorry" for a lot of things. But the image loss was probably the worst thing about it.* – Corné Paalvast, Operational Director, Abz Insurance

The implementation delay was largely due to Blue X's inexperience with implementing Digital Signature services in an ASP model. Clearly the choice of Blue X was a risky one because of this ***supplier's unproven track record*** (Risk 6 in Table 3). But what is more interesting is how Abz responded to the migration failure. Although fully empowered by a sound contract, Abz did not require Siennax to pay the significant cash penalty specified in the contract. Abz feared that the cash penalty would ***severely hinder the supplier's finances*** (Risk 7 in Table 3) and distract it from solving the problem:

> *Financially, we have made agreements in the contract. There is a penalty in the contract, which covers damage. But I said to the ASP, "Keep the money and help me reestablish my image because that is much more important."* – Corné Paalvast, Operational Director, Abz Insurance

Instead of using the contractual service levels to extract a penalty, Abz used them to give constructive operational feedback. In addition to receiving reports of technical failures and problems, Abz wanted to know about perceived performance by internal end-users and Abz's customers. Abz thus measured Siennax's performance based on how problems were addressed, whether charges were submitted for minor issues, whether logs of problems were kept, and whether Siennax could have planned for and prevented the problems. After reestablishing operational performance and customer confidence, Abz and Siennax amicably decided on an equitable payment that partly reimbursed Abz for the seven-week revenue loss.

The Abz-Siennax Relationship Today

Although there were complexities in the start-up phase, and some difficult discussions concerning losses due to the delay of services, the relationship matured by January 2002. With Siennax's help, Abz successfully integrated key insurance intermediary functions for administering policies, underwriting, calculating damages, processing claims, and generally simplifying interactions between insurance companies, insurance representatives, and/or brokers. Abz now serves over 6,000 customers, processes 416 gigabytes of data, and handles 25 million emails a year as part of its sales and claims processing services to the insurance industry. Its facilities serve Assurantie Data Network (ADN), Atriserv, Audatex, Eurotax, OSA, and Audalet, serving customers in over 16 European countries (see Table 4).

In light of Abz's very positive experience to date with Siennax's services, Abz's general manager notes:

> *By working with Siennax, we can use the universal character of the Internet for delivering even better services that have become mission-critical to our customers and upon which they have begun to depend. With this deal, our customers have gained significant service improvements. They can now access their information from anywhere and at anytime, so long as they have access to the Internet.* – Gerrit Schipper, General Manager, Abz Insurance

Table 4: Abz Insurance Revenues, Profits, Employees, Customers			
	1998	**1999 (Year of Decision)**	**2000**
Annual Revenues	60 million NLG ($24 million USD)[9]	66 million NLG ($27 million USD)	71 million NLG ($29 million USD)
Annual Profits	38 million NLG $15 million USD	44 million NLG ($18 million USD)	48 million NLG ($19 million USD)
Number of Employees	135	151	180
Number of Users/Customers/ Subscribers of Abz's services	5500	5800	6000

The operational director assesses the deal as follows:

> *Over the last one and a half years of working with Siennax, we have found that they are increasingly involved in the integration of existing services with our new IT infrastructure and hosting platform, and regularly assist in the development of new, customer-specific services. Through the resulting relationship, we have been able to gain the maximum level of services from the hosting model and thus are ensuring a high return on investment.* – Corné Paalvast, Operational Director, Abz Insurance

The Risks of Netsourcing

The purpose of this paper has been to identify, assess, and mitigate risks in the emerging netsourcing market. Table 3 makes clear that the risks of netsourcing are the same as for traditional outsourcing, but the probabilities of occurrence for many of the risks are higher in netsourcing. In particular, we identified nine risks that are greater with netsourcing than in traditional IT outsourcing:

Greater netsourcing risks due to start-up suppliers in an immature market:

- Supplier overselling capability (Risk 6)
- Supplier going out of business (Risk 7)
- Supplier subcontracting problems (Risk 12)

Greater netsourcing risks due to novice customers:

- Customer signing incomplete contract (Risk 9)
- Unrealistic customer expectations (Risk 1)
- Customer's lack of maturity and experience with outsourcing (Risk 2)

Greater netsourcing risks due to technical limitations of Internet delivery:

- Security breach (Risk 13)
- Application unavailability (Risk 14)
- Slow response time (Risk 15)

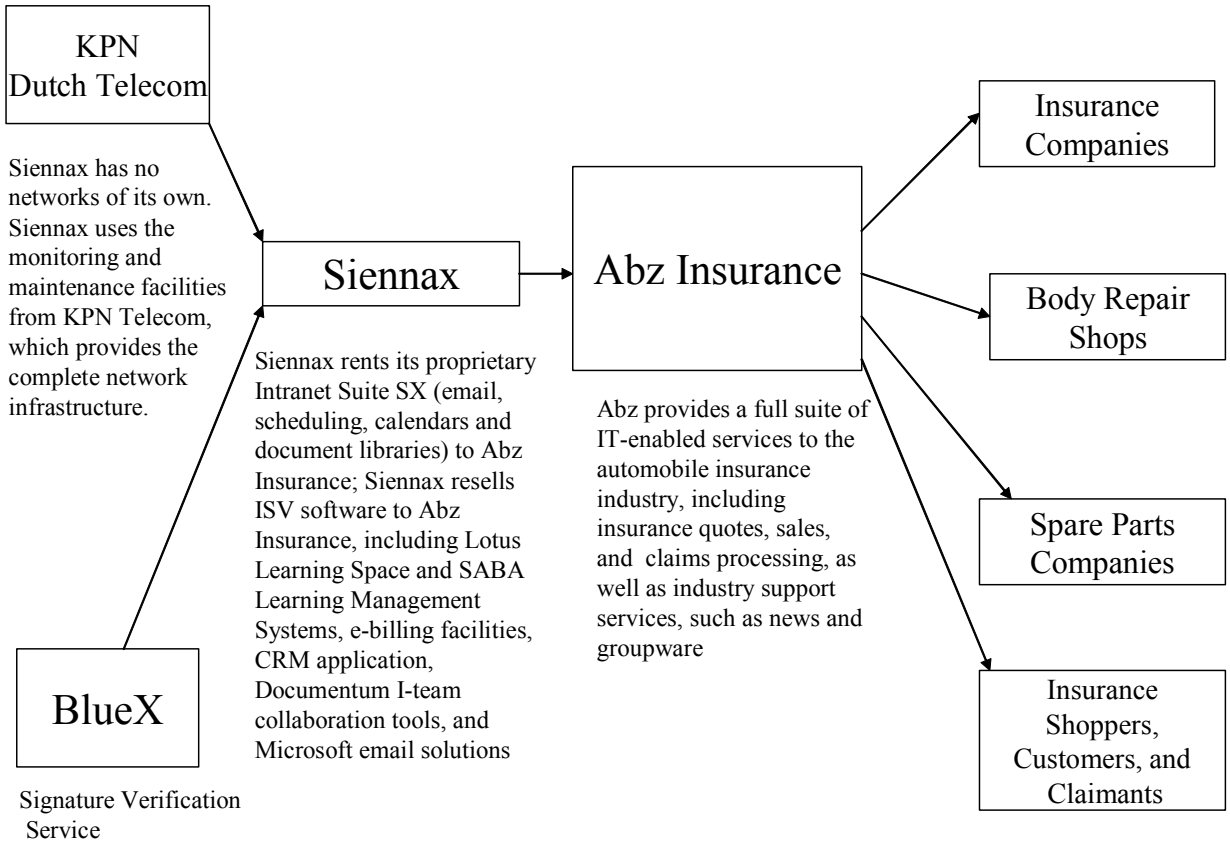
Risks Due to Immature Suppliers

From the list above, the first three risks are typically higher with netsourcing than with traditional IT outsourcing because netsourcing suppliers are mostly start-up ventures. Many have negative earnings and require time to become profitable; they have invested millions in infrastructure and only collect revenues from monthly subscription fees. According to the Cahner's In-Stat Group, ASPs spent $1 billion on infrastructure technology in 2000. In particular, the In-Stat Group found that U.S.-based ASPs spent, on average, 34 percent on hardware (such as servers and networks), 19 percent on telecommunications, 19 percent on personnel, and 13 percent on software.[10] This investment will take years to recover, not months. As such, many netsourcing suppliers have unproven track records, negative cash flows, and uncertain futures.

[9] Figures initially reported in Dutch Guilders (NLG), converted to US Dollars using 1 NLG=.404681 USD

[10] Hagendorf, J. "ASP Pulse: Spending Spree," www.crn.com, April 17, 2000.

Figure 1: Abz Insurance Suppliers and Customers



By mid-2001 the initial explosion in interest in the netsourcing model had faltered as evidenced by the demise of many start-ups. Indeed, the Gartner Group predicted 60 percent of ASPs would close their doors by the end of 2001. Examples of ASPs that have closed shop include Agillion, BlueStar, JDe.sourcing, Hotoffice, iTango, eBaseOne, Excite@Home, Red Gorilla, Pandesic, Utility.com, VitaGo, and XS-Media. (The Pandesic failure was particularly disappointing since this company had received so much press because it was funded by Intel and SAP, and had already served over 100 customers.) This high rate of supplier failure, of course, is typical in an immature market, and precisely why risks need to be analyzed carefully.[11]

In the Abz Insurance case, for example, the supplier (Siennax) and subcontractors (BlueX and KPN Dutch Telecom) presented Abz with a high level of risk because none was earning a profit (See Figure 1). Siennax was losing about US$500,000 a year. But Abz was confident that Siennax was headed in the right direction, even though the company had been in business only since 1998.

Siennax has continued to grow at a rapid pace since the 1999 Abz sourcing decision. It has acquired numerous new customers, increased its end user base to approximately 15,000 by late 2000, and doubled again to 30,000 users by late 2001. Despite the general downturn in technology markets in 2001-2002, Siennax has remained on target for a positive cash flow in 2003. But the risk of business failure does remain.

[11] Kotler, P. *Marketing Management,* Prentice-Hall, Englewood Cliffs, NJ, 1997.

Siennax has no networks of its own; it subcontracts to network providers, the largest being KPN Dutch Telecom, which provides the complete network infrastructure. Siennax uses KPN's network monitoring and maintenance facilities. KPN highlighted its growth in its third quarter 2001 press release:

> *KPN increased revenues by 13.4 percent in the third quarter of 2001 compared with the same period last year, excluding exceptional items, from EUR 2,750 billion to EUR 3,119 billion.*

Despite its growth, though, KPN reported after-tax losses on normal operations of EUR 1,077,195,937 for third quarter 2001.

Like many ASP customers we interviewed, Abz Insurance focused on the primary contractor and raised few questions about subcontractors, such as KPN, or the underlying infrastructure. Of course, Abz did attend to the BlueX contract, but this attention was primarily firefighting rather than *a priori* risk assessment and mitigation.

Risks Due to Immature Customers

While traditional outsourcing customers have learned from experience how to mitigate their risks of poor contracting and unrealistic expectations, these risks are now being revisited by a new set of inexperienced customers, such as start-up companies and small- to medium-sized enterprises (SMEs), the early adopters of netsourcing. These inexperienced customers take risks with netsourcing that we witnessed customers taking back in the late 1980s with traditional IT outsourcing. For one, they sign flimsy, three-page contracts. Such risks should diminish as netsourcing customers gain experience and learn to adopt mitigation strategies – either those proven effective in traditional outsourcing or new strategies for the ASP context.

Abz Insurance, on the other hand, was a seasoned outsourcing customer. It understood the amount of in-house management attention and expertise required to select, negotiate, transition, and manage suppliers. Abz also had the maturity to include contract clauses that anticipated problematic events. When one occurred, such as the seven-week delay in BlueX gaining Verisign certification, Abz knew to proactively manage a solution rather than assign blame.

But what about potential netsourcing customers who have no prior outsourcing experience? One risk mitigation strategy is incremental sourcing. Customers can start small to gain experience and to develop capabilities to effectively manage suppliers. Customers can also start netsourcing with more commodity-type applications, rather than with more complicated packages, like ERP. Indeed, the results of our international ASP customer survey[12] found that the most frequently ASP-sourced and most frequently sought ASP applications were email and communication (43 percent) and desktop and personal productivity products (31 percent). Testing the waters with such well-known applications reduces risks and enables customers to quickly climb the ASP learning curve.

Risks due to Immature Technologies

The final trio of high netsourcing risks is associated with delivering products and services over the Internet: security breaches, application downtime, and slow response time. Indeed, our international survey found that the most frequently encountered ASP problems were slow application response time (40.6 percent of respondents) and application unavailability (25 percent of respondents). Suppliers simply cannot control applications and data point-to-point over the Internet. While savvy netsourcing customers can negotiate detailed service level guarantees for security, uptime, and response time, suppliers sign these agreements knowing they cannot control these items. They simply "hope for the best," as one respondent reported.

One surprise from our survey was that current ASP customers reported no incidences of hackers, and only 3.1 percent experienced data security problems. However, security was rated the number one perceived problem by potential ASP customers. Thus, there is a discrepancy in perceived security risks between actual and potential ASP customers. But just because security breaches have not been observed by current ASP customers does not mean the risk is low. Internet delivery poses a much higher security risk than private networks. All ASP customers should thus consider risk mitigation strategies, such as virtual private networks, encryption, and customer-managed access control.

At Abz, senior executives discussed technology risks in terms of broader service issues, not such risks as sporadic application downtime (the typical interpretation of application unavailability) or long delays between hitting a key and the system responding (the typical interpretation of slow response time). One key

[12] See Kern, T., Lacity, M.C., and Willcocks L.P. *Netsourcing: Renting Business Applications and Services Over a Network,* Prentice Hall, New York, 2002 for full survey results.

Table 5: The Abz Insurance Case Mapped to the Netsourcing Service Stack

Netsourcing Service	Abz Insurance Case Study
Business Process Delivery Services	Abz Insurance provides the end-to-end business insurance processes, from searching for auto insurance to claims resolution.
Customized Application Access and Support Services	Abz Insurance rents Siennax's proprietary Intranet Suite SX (email, scheduling, calendars and document libraries), and in turn offers these to Abz customers.
Standard Application Access Services	Abz Insurance rents independent software vendor applications from Siennax (who serves as a reseller), including Lotus' Learning Space and SABA's Learning Management Systems, e-billing facilities, a CRM application, Documentum's I-Team collaboration tools, and Microsoft's email solutions.
Application Operating Infrastructure Services (Middleware layer for accessing applications from remote locations)	Siennax uses JAVA, Microsoft's .Net (i.e. Terminal Server), Lotus Domino, and open source code to connect Abz customers to Abz.
Hosting Infrastructure Services	Siennax operates Sun Solaris, Compaq NT, and Linux hardware in the secure data centers or cybercenters of KPN Dutch Telecom. Oracle and SQL Server are used as standard database services, complete with on-line storage services, back-up routines, security, and directory services.
Network Services	Siennax uses monitoring and maintenance facilities of KPN Dutch Telecom, who provides Abz's complete network services.
Network Connectivity Services	Siennax has no networks of its own, but cooperates with network providers such as KPN and KPN Quest.

Abz application did become unavailable for seven weeks because it was not ASP-ready. This unavailability demonstrates an extreme consequence of technical immaturity of ASP delivery. Application unavailability can cause significant loss of good will, although Abz did not lose customers because its customers had few alternatives in the market. Abz focused on Siennax's service-response time – that is, how long it took the ASP to respond to service requests. Abz believes Siennax has actually improved response time:

> *Our time-to-market with new services has considerably dropped to a number of weeks, compared to months/years.* -- Corné Paalvast, Operational Director, Abz Insurance

Abz mitigated security risks primarily by using different networks for different types of applications. Applications requiring customer subscriptions (such as underwriting) run on virtual private networks. But because VPNs must define their end points, they are not suitable for mobile users or retail customers. Applications, such as searching for auto insurance, CRM, and email, run on the Internet, and sensitive data is encrypted. As of January 2002, no instances of hackers or major security breaches had been cited by Abz.

In Conclusion, Netsourcing is Not Yet Plug-and Play

One of our main findings in the ASP space is that netsourcing is vastly more fragmented, complex, and risky than most business managers realize. We have proposed the netsourcing service stack as a good way to understand the complexity of supplier/customer relationships in this space.

In Table 5, we map the complexity of players in the Abz Insurance case to the service stack. From the per-

spective of Abz customers – that is, insurance companies, body repair shops, spare parts companies, and claimants – Abz is the primary point of contact for their insurance applications and services. It is very unlikely that these customers are even aware that many of the underlying Abz services are subcontracted to Siennax, and from Siennax to KPN Dutch Telecom and BlueX.

We also found that netsourcing deals are not generic; the competitive context of each one, the capabilities of the parties involved, and the types of technologies used make the risks specific, not generic, to each deal. For this reason it is dangerous to proclaim definitive best practices. This said, business managers can use the lessons encapsulated in Table 3 to guide them through their own individual risk analysis.

Finally, netsourcing risks require would-be customers to be much more active in defining the deal and then managing the relationship than the "apps on tap" slogans would have customers to believe. Netsourcing is currently not a plug-and-play solution. It requires significant customer oversight from the scoping stage to the active daily management of the supplier and its performance.

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