IBM

LVM utilises IBM solution to ensure safe, secure Insurance services

LVM Insurance

Bloor Research

Management Summary

As a large supplier of insurance services LVM relies upon its IT infrastructure to provide accurate, up to the minute access to its services to the more than 2000 partner agencies who sell its policies to customers located throughout Germany.

LVM supplies a wide range of insurance products to German consumers. Indeed, the company is one of the major providers of motor vehicle coverage. The whole area of insurance involves the handling of extremely sensitive personal information, data that must be both accurate and up to date. These considerations impose an absolute requirement that considerations concerning security and data protection are of paramount importance in the construction of IT customer support systems.

In order to meet these rigorous demands, LVM decided that the most effective solution to provide its employees and its partner agencies with access to sensitive customer systems would involve the use of thin client technologies. Such a design would ensure that the resultant system would be secure and maintainable at the lowest cost over its projected multi-year lifespan. In order to achieve its aims, LVM sought the assistance of IBM in a project to design and build a sophisticated thin client architecture capable of providing service to its geographically spread customer base.

LVM INSURANCE SOLUTION AT A GLANCE

CORE FUNCTIONALITY

Secure access to central applications through a Linux enabled Thin Client, smart card protected device. Integration with backend applications using Java and XML. Secure web enabling of legacy applications. Low TCO, easily managed architecture with expected lifetime spanning decades.

SOFTWARE USED

IBM WebSphere Application Server
IBM DB2 Universal Database
IBM VisualAge for Java (now known as WebSphere Studio Application Developer)
Citrix MetaFrame 1.8
Linux, Java

SERVICES USED

IBM Global Services

HARDWARE USED

IBM eServer zSeries, IBM RS/6000 (now known as eServer pSeries)
IBM Thinkpad - Thin Client with embedded Linux and smartcard

BUSINESS BENEFITS

Security and integrity of personal data ensured. Compliance with legislative requirements.
Highly available, easily maintained system supports large, mobile, geographically spread population of users and partners providing maximum sales support.
Use of open systems (Linux, Java, etc.) ensures, in conjunction with the thin client approach, low TCO and platform longevity.

Bloor Research

Background To LVM

In every society, insurance is becoming more important in almost every aspect of life. Landwirtschaftlicher Versicherungsverein Münster a.G., better known as LVM, is one of the largest insurance companies in Germany with premium income in excess of 2 billion Euros ($ 2.05b) every year. The company offers services in a number of insurance sectors, including offering policies supplying motor vehicle coverage, health insurance and life insurance. LVM started life as a mutual organisation offering services to the agricultural community before transitioning to a fully commercial company serving all sectors of society. Through cooperation with US-based Federated Investors, LVM is able to supply the German market with a number of financial asset management products in addition to its own extensive range of offerings.

LVM employs a single route to market and sells its policies only through a chain of independently owned agencies spread throughout Germany. LVM does not possess a direct sales group of its own and therefore relies totally on the agencies to bring its products to market. The company's products are not available through any of the alternative sales channels commonly utilised by other insurance houses, such as banks or independent brokers.

The company employs approximately 2,300 staff based at the head offices in Münster. There are no branch offices to support, only the offices of the partner agencies. Of the staff numbers, the majority are occupied with the administration of policies and supporting the partner agencies. The IT support group consists of approximately 350 people, with around 170 developers and 180 staff manning the operations, administration and end-user support functions.

Currently, LVM has over 2,000 agencies selling its products and each agency sells only products supplied by LVM. The agencies typically employ between one and twenty staff in each bureau and at the time of writing there are over 7,000 people actively marketing LVM's policies. In total there are now over 2.8 million customers.

A simple calculation shows that LVM needs to provide access to its core IT applications and services for somewhere between eight to ten thousand workstations and all support activity is supplied centrally from Münster. For a company that relies almost completely upon having accurate, up to date access to information and policy details it is clear that users must be able to connect to the central IT systems without any interruption.

Whilst the company is well known for its pragmatic approach to business, it has a well-deserved reputation as a market influencer and has produced a series of good ideas. In its corporate activities LVM is always looking for the

Bloor Research

occasion to exploit 'early bird' opportunities and is willing to use technology in order to gain significant business benefit whilst minimising risk.

❖ Business Issues

As a leading provider of insurance services LVM supplies a range of products to its customers. Being an organisation whose business is financial services, it is clear that LVM makes extensive use of applications running on sophisticated computer systems to support all areas of its business.

For example, typical use of computer systems includes applications that provide quotations for the premiums associated with the various policies supplied by the company. The complex rules associated with every policy type means that only sophisticated applications can perform the calculations required to derive the premiums payable.

Beyond the generation of policy quotations, LVM also makes use of applications dealing with the purchase of insurance coverage, claims management, settlements, routine maintenance of customer records and accounts along with systems supporting enquiries to LVM's customer call centre. Such calls can cover any aspect of the relationship between the customer and LVM.

All of LVM's products are only sold via its partner agencies, also known as bureaux. In order to manage this process, LVM supplies its community of more than 2,000 partner organisations with access to very good supporting applications.

The applications that support any insurance business clearly handle very sensitive data and it is essential that the IT infrastructure that supports these applications be resilient, highly available and secure; the privacy requirements associated with acquisition of personal information are undergoing almost continuous reinforcement.

Indeed, concerns over privacy necessitate that in addition to the traditional security mechanism of 'User ID and Password' employed to manage access to applications and data, companies active in the insurance space are having to make use of additional security technologies, including smart cards and encryption. Equally, all customer data needs to be secured to ensure that only accurate and up to date information is utilised. It is also essential to ensure that no personal data is left unprotected or available to anyone without a need to access the information. Security is, perhaps, the most important factor in today's insurance market. Legislators and customers need to be confident that all information is well protected.

> All of LVM's products are only sold via its partner agencies, also known as bureaux. In order to manage this process, LVM supplies its community of more than 2,000 partner organisations with access to very good supporting applications.

Bloor Research

Business Fundamentals

❖ The Business Applications

LVM has a very simple business objective, to be the 'Insurer providing optimal service to customers and its business partners'. In order to support its daily business operations effectively, LVM has developed a suite of business applications. These applications provide its partner agencies with the information they require to sell LVM's products. These applications also handle the administration of customer policies as well as the generation of proposals etc. This suite of business software, known as the LVM Agency System, or LAS, has been developed over the last 20 years.

As with many operations that have evolved over time, LAS and its supporting IT infrastructure are now beginning to show signs of age. The base hardware server platforms on which LAS runs is now around fifteen years old and, as are common to systems of such age, the hardware itself is no longer manufactured. As a consequence, LVM has now been forced to cannibalise old kit in order to supply any replacement hardware needed to keep the servers operational.

It is also apparent that over the last few years the environment in which business takes place has been changing at a rapid pace. This is especially the case in the financial sector where consumers are demanding new products and where legislation is imposing ever-tighter constraints on the protection of information and the resilience of systems. Security and availability of accurate data is now a matter of fundamental importance to every business.

As a consequence of these developments, LVM decided in 1998 that it was time to investigate the production of a new system capable of supporting its growing business needs. Beyond the pure functionality required by the new application, the company also demanded that the new system offer exceptional levels of reliability and availability whilst at the same time ensuring that it be flexible with a low total cost of ownership over its extended anticipated lifetime.

❖ Infrastructure Design

In 1998, when LVM first contemplated the creation of a new agency support system, the company had an established mainframe-centric IT infrastructure in place. Indeed, the company operated a computing architecture that exploited the capabilities of mainframe-type servers located in the Münster office and had made some use of Network Computing stations. In fact, each of the 2,200 agencies utilised a common set of supported applications supplied through a common IT Infrastructure, as did LVM's own staff in Münster.

Bloor Research

Figure 1: OVERVIEW OF THE LAS II SYSTEM
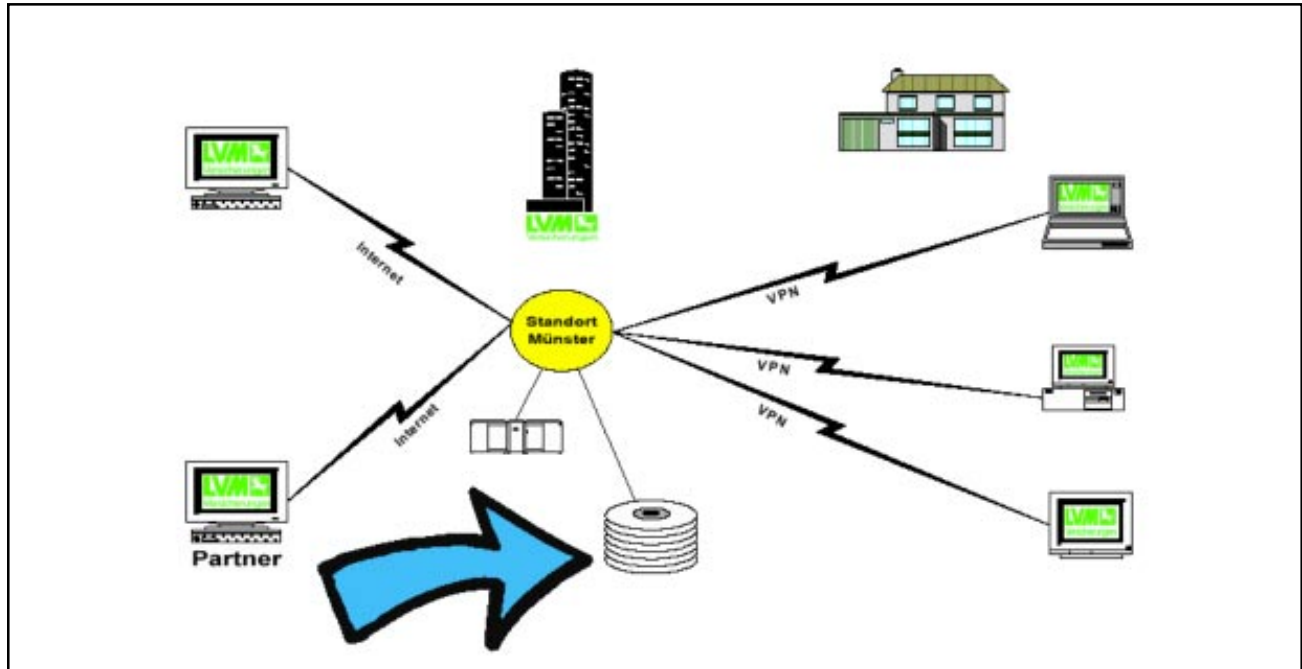
With the wide-spread nature of the user base and the dependence that LVM has on its agencies to reach the customer base, it quickly became apparent that the new system, LAS II, could not be effectively and efficiently managed in a client/server architecture. The requirement that the system be centrally managed from Münster with a wide geographical distribution of users, the majority of whom would not be staff employed by LVM, further reinforced the appeal of an architecture employing 'thin client' or 'Server Centric' computing.

A final architectural consideration influenced the thought processes for how LAS II could be built and this intimately concerned the availability and accuracy of the information used by LVM and its partner agencies. In Europe as a whole, and in Germany in particular, there are very stringent legal requirements governing the storage and use of any information relating to individuals. Organisations must ensure that data is only available to duly authorised individuals. Taken together, these considerations mean that any system needs to ensure that information is held securely whilst the needs of the business demands that any personal information utilised in the sales and administration process be up to date. In essence this boils down to a need that the data used and updated by any individual be absolutely accurate and up to date. There is no room for any form of central/local data mismatch.

Working from these initial criteria it was quickly established that the proposed new system could and should be built utilising modern thin client technologies. Such an architecture makes it possible to create an environment that is reliable and resilient and that ensures support costs can be kept under tight control whilst providing excellent

service to users and customers. Data integrity can be guaranteed as there is no need to replicate data between the central systems and devices utilised by sales people.

Equally important, the use of a thin client solution can ensure that the local access device that is used need store no customer information. Consequently, the loss of an access device would not mean a loss of data or provide the potential for customer information to be available to any unauthorised individual finding the device.

The thin client solution also provides an ideal platform capable of dealing with common issues faced in the financial business sector, including the acquisition and retention of customers along with the management of growth and change. The thin client approach provides the scope to easily add new functions and support features along with the ability to integrate Internet access to appropriate systems. It is a far simpler task to integrate centralised systems than distributed client server systems.
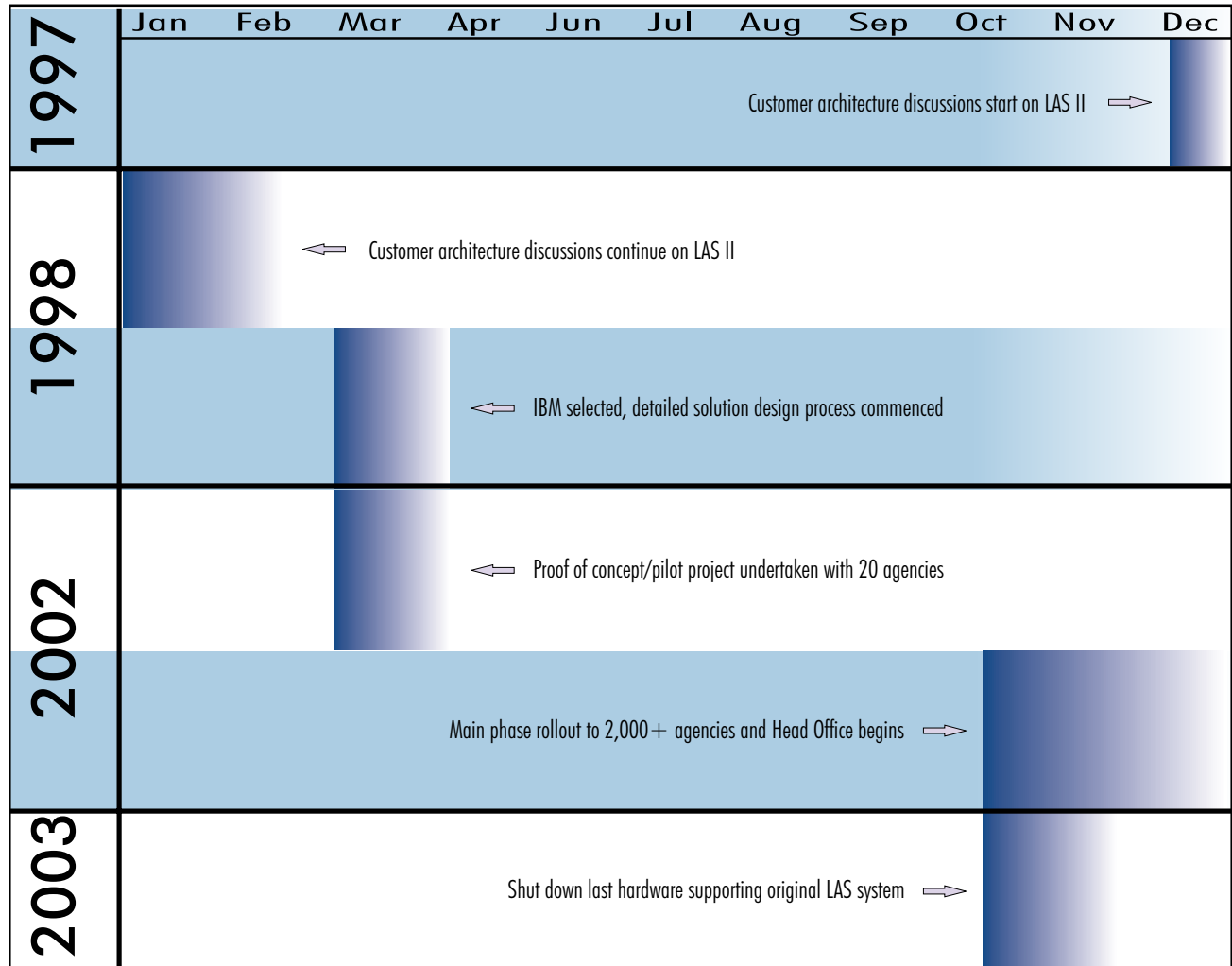
❖Technology Choice

LVM made a number of strategic decisions in its selection of technologies that would comprise integral components of the new LAS II system. Each selection was made in order to guarantee that LAS II would supply LVM with real business benefits, meeting all security and operational requirements whilst ensuring that the new system could be managed cost effectively and be maintained for many years.

Amongst the selections made was the decision to exploit Java technologies as much as possible. LVM saw that Java was rapidly becoming a *de facto* standard in modern IT systems. For similar reasons the company wanted to take advantage of XML in the presentation of data to user devices. Indeed, the instigation of LAS II provided an excellent opportunity to incorporate these new standards in LVM's systems. Consequently the team assigned to re-engineer LVM's systems would need to be proficient in the use of both Java and XML.

At the same time, LVM selected Linux to form the core operating system for the thin client devices employed by its partner agents. Linux offered the ability to build a customisable lightweight client to support the front end at an extremely attractive price. The acceptance of Linux in such mission-critical applications highlights the increasingly important role that the open source operating system is now playing in business life.

It is the opinion of Bloor Research that the early recognition of the importance that standards such as Java and XML could play in the successful design and development of LAS II was vital in providing LVM with robust, reliable scaleable business support systems.

> The thin client solution also provides an ideal platform capable of dealing with common issues faced in the financial business sector, including the acquisition and retention of customers along with the management of growth and change. The thin client approach provides the scope to easily add new functions and support features along with the ability to integrate Internet access to appropriate systems. It is a far simpler task to integrate centralised systems than distributed client server systems.

Bloor Research

Figure 2: Implementation Timeline

	Jan	Feb	Mar	Apr	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997									Customer architecture discussions start on LAS II ⇒		
1998		⇐ Customer architecture discussions continue on LAS II									
				⇐ IBM selected, detailed solution design process commenced							
2002				⇐ Proof of concept/pilot project undertaken with 20 agencies							
	Main phase rollout to 2,000 + agencies and Head Office begins ⇒										
2003				Shut down last hardware supporting original LAS system ⇒							

❖ Why IBM?

Johannes Schlattmann, Chief Architect for Application Development at LVM, explained some of the background to the LAS II project and the role of IBM. "We carried out a lot of work internally throughout the period 1996 to 1998 when it became apparent that we needed to update our systems and IT infrastructure in order to ensure that the company was incorporating technologies that would provide a sound foundation for business growth and for the tracking of customer and agent data. We realised that our infrastructure needed an infusion of new technologies if we were to be prepared for future changes in communications and the Internet."

Schlattmann went on to explain that LVM was a long-term customer making use of a range of IBM products and services.

> "We carried out a lot of work internally throughout the period 1996 to 1998 when it became apparent that we needed to update our systems and IT infrastructure. We realised that our infrastructure needed an infusion of new technologies if we were to be prepared for future changes in communications and the Internet."
>
> — Johannes Schlattmann, LVM Chief Architect for Application Development

Bloor Research

Schlattmann explained, "When we started to hone our final set of requirements for a partner to help us build LAS II, we identified some key qualities that the supplier simply had to meet. We wanted one partner capable of working across the whole of the project lifecycle, from the initial design of the system, through the build, operate and maintain phases. We needed to identify one partner capable of providing coverage for every part of the operation."

"LVM thinks in long time frames. We anticipated that LAS II might be operational for around twenty years, from 2002 and be in use possibly until 2020. We needed to be sure that our partner would be around to support us for the next two decades at least. Effectively we needed to be in a position to trust our partner to be there for us."

"We have worked with IBM for many years and they have earned our trust over that time. We know that IBM has competent people experienced in working on innovative projects coupled with excellent project management skills. Whilst no one can foresee the future in all its details, we are as confident as we can be that if anyone will be around for the next two or three decades, IBM will be."

Schlattmann then added, "It is very helpful that IBM has experience of working with LVM and understands the way we work and the importance to the company of our systems." IBM has both the technology and the service skills required to implement complex technology projects.

It clearly does IBM no harm at all that it has wide experience of working with some of the technologies that LVM identified as being of interest, especially in the thin client arena and the rapidly developing world of Java. Indeed, LVM recognised that IBM VisualAge for Java (now known as WebSphere Studio Application Developer) would provide robust capabilities to assist in the efficient production of functional and secure Java applications. At the same time, WebSphere Application Server was assessed to be a leading offering in the application server space, an area that would play a central role in LVM's plans.

Equally, as the first of the major IT vendors to recognise the growing influence of the open source software movement and to provide a comprehensive range of support services for the Linux platform, the capability of IBM to support the entire LVM solution is almost without equal.

As a consequence of these deliberations, LVM discussed its IT expansion goals with IBM in 1998. Thereafter the two companies began to collaborate in the development of an e-business solution that would incorporate Java technology, thin clients, and Internet technologies into a new foundation for LVM's future IT systems.

Bloor Research

The Project

At the commencement of the project to build LAS II, LVM decided that the majority of the applications that were operational at the time were still capable of delivering value to the company. When it came to specifying the details of the supporting infrastructure, the company took a number of strategic decisions that would influence the final design.

LVM set out a requirement that the new architecture and infrastructure support a new service-oriented concept for dealing with LVM's agents and customers. To keep up with market demands and to provide their customers with exceptional service, LVM chose to develop an updated set of applications based on Java technology, EJB components and XML technologies to enable customers and agents to perform critical e-business applications either from their office environment or laptops.

Working with IBM VisualAge for Java and WebSphere Application Server, LVM has developed an application to accurately collect business intelligence, manage all business transactions and enable LVM to provide its customers with targeted insurance offerings, consequently satisfying the needs of the current customer base and providing the potential to reach new customers.

LAS II is the first in a series of applications to be developed. All of these applications have been developed using the Java programming language, EJB components and XML. The motivation for using EJB components comes from the desire for rapid, component-based development and efficient, platform-independent infrastructure.

As is now typical for an insurance agent system, as in many industries, the laptop has become the most important tool enhancing user productivity and guaranteeing optimal customer service. LVM saw the need to reduce the cost of installation and maintenance of thousands of laptop systems to an absolute minimum whilst ensuring that the privacy of all customer data could be guaranteed. It became clear that only an architecture exploiting thin client technologies could match all of these requirements.

With Java and XML, LVM believes it has found the right technologies to create an architecture that will be the foundation of application development for the next decade or more. XML is utilised for communication between thin clients and servers. The company has now made Java the programming language of choice for all future development. However, it is expected that the existing host applications will be operational for many years to come.

Bloor Perspective

As a leading provider of insurance services, LVM has recognised that it must provide IT services that are capable of supporting its business over many years. LAS II exploits IBM's tools to provide the company with a flexible infrastructure capable of growing to provide effective service over decades of daily use.

Bloor Research

Figure 3: Technical Architecture of the LAS II System
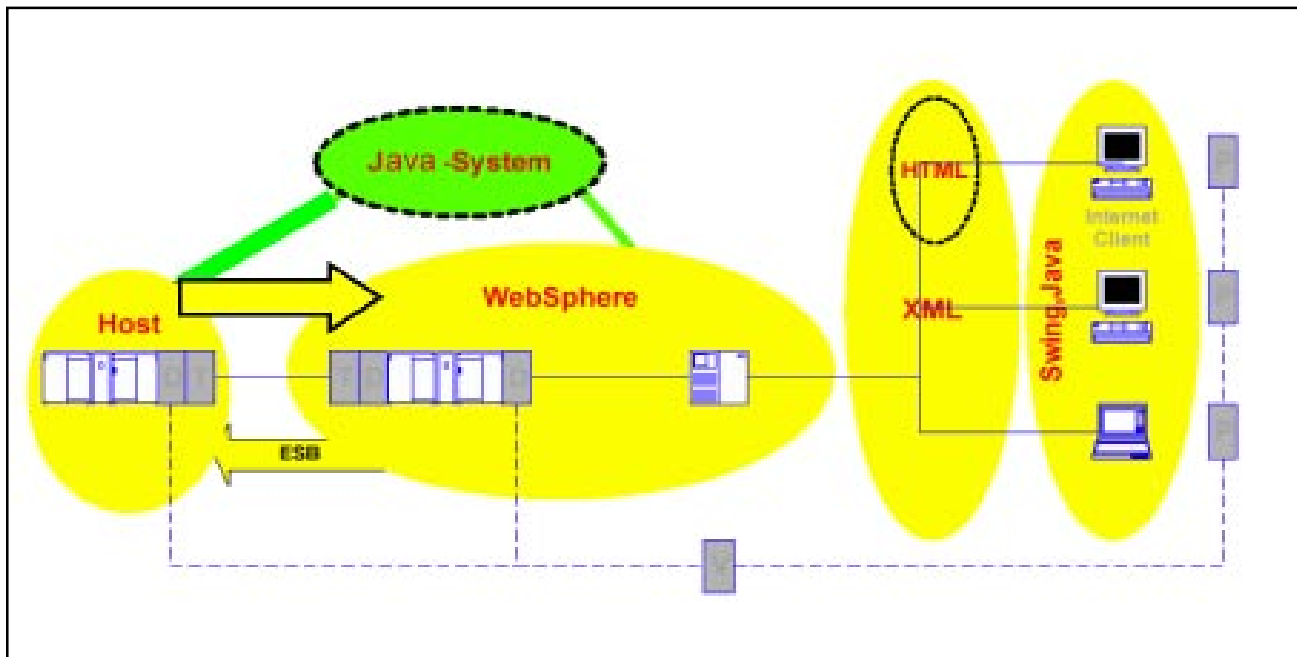
"IBM is not just a technology vendor, but a strategic partner", said Schlattmann. "By utilising their development expertise we were able to obtain outstanding achievements, providing our agents and customer base with the highest level of service they deserve."

LAS II Details

The diagram above illustrates the core LAS II solution components. As was recognised at the start of the project, the existing mainframe systems were capable of providing much of the transaction functionality that would be needed in the new system. The existing systems were stable and effective leaving the project team with a straightforward objective of making this backend functionality available to all users of LAS II, wherever they are located and however they might be connected.

A simple description of the integral components in the LAS II system is given below. The backend legacy applications and the core database are hosted on IBM eServer zSeries (mainframe) systems running z/OS and IBM DB2 Universal Database. IBM WebSphere Application Server is then hosted on IBM RS/6000 systems operating on AIX. The user access thin client devices consist of customised IBM ThinkPad portable computers and other stationary thin clients loaded with embedded Linux software as the operating system. When operating in LAS II mode, the portable computer's hard drive acts as a cache with preloaded operating system because of performance issues with mobile communications. The stationary thin clients load the operating system over the network at 2 Mb/s.

The WebSphere application retrieves information from and runs transactions on the backend mainframe systems and DB2. WebSphere Application Server then handles the presentation of the information to the end user's device, whatever the physical format of the device. It is worth noting that the application server to thin client connectivity is based on XML rather than an object broker. The flat string XML format is well suited to this type of solution as it means that there are no adapter functionality issues to be managed.

As a security measure, portable PCs supplied to LVM agents who are mobile contain a local hard disk drive that can only be accessed when LAS II is offline. This hard disk may host non-LAS II tools such as office productivity software. Portable computers supplied to LVM's agency partners can only operate the LAS II system. All of the business functionality required by partners is built into LAS II. All computers are also supplied with a smartcard reader connected through the PCMCIA slot to provide additional security at the LAS II authentication prompt.

As agents may work either in their own offices or at the location of their customers, LAS II has been designed to operate utilising either the standard 2Mb (VPN over ATM) link connecting the bureau offices with LVM in Münster or via Bluetooth-enabled GPRS links and hand held cell phones. This architecture ensures that accurate, up to date information and applications are used in all customer contact situations.

The core 2 Mb network that has been installed between Münster and the agency offices handles all voice and data communications between LVM and its partners. It is even possible for the agency offices to automatically route telephone calls to LVM in situations when the office is unstaffed without the customer being aware of the re-routing. In the future it may be extended to include video capabilities.

Overall, the LAS II system allows users to access all of LVM's business information from wherever they are located. The information includes the provision of premium quotes, Contacts, Mailing Lists and so on as well as the acceptance of customer orders for service and customer claims systems, etc. All customer transactions are available through LAS II. At every stage of the process, all customer data is fully secured and protected.

❖ Business Benefits

LVM has launched an internal project to change its processes to ensure that the customer is squarely at the centre of everything that the company does. The CEO and CIO have committed themselves to making customer service management LVM's pivotal philosophy. The company feels that this emphasis has underwritten the development

of LAS II. LVM believes that its efforts to provide its customers with the best service possible will be appreciated and result in new business.

Schlattmann explains, "We sell to our customers through the agencies with whom we work. Consequently we rely on having relationships with agencies who are keen to sell our products and who find it easy to work with us. Having a secure, flexible, easy to use and easy to support system like LAS II encourages our agents to make full use of the technology. In this way each agent can sell more effectively and we find it a simpler task to recruit new agencies into the LVM family."

It is apparent that the business benefits through lower operational costs associated with supporting the LAS II system and the effect that using LAS II could have is attracting new agents and hence new customers to LVM.

In times when the protection of data and issues of privacy are increasingly the subject of legislation, the value that such thin client systems deliver cannot be underestimated. For example, as the thin client device stores no customer information locally for LAS II, if the device is stolen, there is no possibility for the data to be lost or accessed by unauthorised people. At the same time, to restore the user's access to LAS II, a new ThinkPad can be shipped to the user and is then ready to go. Switch on, logon and start running LAS II.

Finally, the use of thin client systems has also allowed LVM to expand the potential for home working within the company. Users can employ the ThinkPad clients to connect to LAS II – without any loss of productivity – from their own homes. This additional flexibility can deliver major benefits to organisations at a time when social pressures place additional burdens on individuals.

It is the opinion of Bloor Research that the LAS II system is an excellent example illustrating how thin client technologies can be integrated with existing legacy applications to build a tool that supplies excellent service to its users whilst ensuring that the cost of ownership over its extended lifetime is as low as can be achieved. The system fulfils the requirements of the business in a manner that is maintainable and secure.

Bloor Research

Lessons Learned

LVM has picked up a few pointers during the course of the LAS II project as Schlattmann explained. "It is absolutely essential that any new system be built around a good architectural model, but this alone is not enough to ensure success. It is vital that steps are taken to bridge the gap between the architecture and the system so that the management framework and the applications themselves be brought into the framework. At the same time you have to work very hard to ensure that everyone working on the development of the system understands the big picture. For instance, software developers need to recognise how the architectural constraints affect application usage so that any new applications built do not destroy the architecture. This is essential when working in thin client environments, as the constraints imposed may not be familiar to many developers."

He went further and stated that it was important to LVM that its employees are able to develop along with the system. The company maintains no split between the existing system and LAS II in order to ensure that all staff feel involved and can see that they have a role in future developments. Schlattmann commented that it can be very good to maintain the interest of staff and give them opportunities to exploit their growing knowledge of the company to enhance systems by moving them around internally.

> "We have made extensive use of IBM's great depth of knowledge and experience of building systems to help make LAS II a success."
>
> —   Johannes Schlattmann

Schlattmann went on, "We believe that there is an absolute need to structure the architecture with object management and process management in mind. It is important that the presentation of objects is considered thoroughly. Entity objects, application objects and process objects form the cornerstones leaving the connection between presentation and the application as the only linkage to be made. We have made extensive use of IBM's great depth of knowledge and experience of building systems to help make LAS II a success."

> "IBM understands the major challenges that LAS II posed, namely in building secure thin client systems and integrating modern Java-based technologies with our backend applications."
>
> —   Johannes Schlattmann

"The ability of the IBM technologies coupled with the project management skills of its services people helped us to build LAS II. IBM offers global support and we are confident that IBM will be around to support us over the lifetime of the system. IBM can bring in resources with skills in any area where we need additional support and they have complemented our efforts. Finally, IBM understands the major challenges that LAS II posed, namely in building secure thin client systems and integrating modern Java-based technologies with our backend applications. Our existing applications offered us the functionality that we needed as a business. Why should we change? IBM helped us exploit our capabilities to the full."
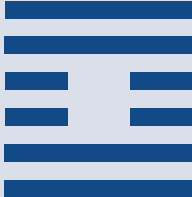
Bloor Research

The Future

Schlattmann emphasised that the future of LVM is tied to the concept that every new development must be focussed on customers. To a degree this move to put customer service as the fundamental driver has entailed a cultural shift within the company. It is essential that customers see additional benefits from any development, whatever it might be.

As for LAS II, the company will look to build additional functionality into the product as the main roll-out proceeds. Indeed, LVM has many activities lined up in the near term along these lines. It is also clear that the company expects to integrate further systems into LAS II. In time the company fully expects to enhance the processes by which it manages its entire infrastructure.

LVM's extensive use of open standards such as J2EE and XML fits extremely well with IBM's WebSphere suite of tools. Indeed, the implementation of the entire infrastructure puts LVM in a position to exploit further the continuing developments in the worlds of business and IT, especially in the area of Web Services as they evolve.

LVM's extensive use of open standards such as J2EE and XML fits extremely well with IBM's WebSphere suite of tools. Indeed, the implementation of the entire infrastructure puts LVM in a position to exploit further the continuing developments in the worlds of business and IT, especially in the area of Web Services as they evolve.

Bloor Research

Summary

It is clear that LVM and IBM have combined to create a system that supplies access to critical business systems to both LVM's employees and its partners in a fashion that truly supports the business. At the same time, the LAS II system has been designed to ensure that customer information is secured and is only available to users with a need to access the information. The use of thin client technologies ensures that the total cost of ownership of LAS II over its extended lifetime will be minimised whilst flexible access is guaranteed. The utilisation of technologies such as Java, XML and Linux will provide a robust platform capable of further development over the next ten years or more.

LAS II is, in the opinion of Bloor Research, an excellent example of technology supporting the business. LVM has made good use of IBM's tools and services and the partnership exploits the business experience of LVM combined with IBM's ability to translate operational requirements into functional IT solutions.
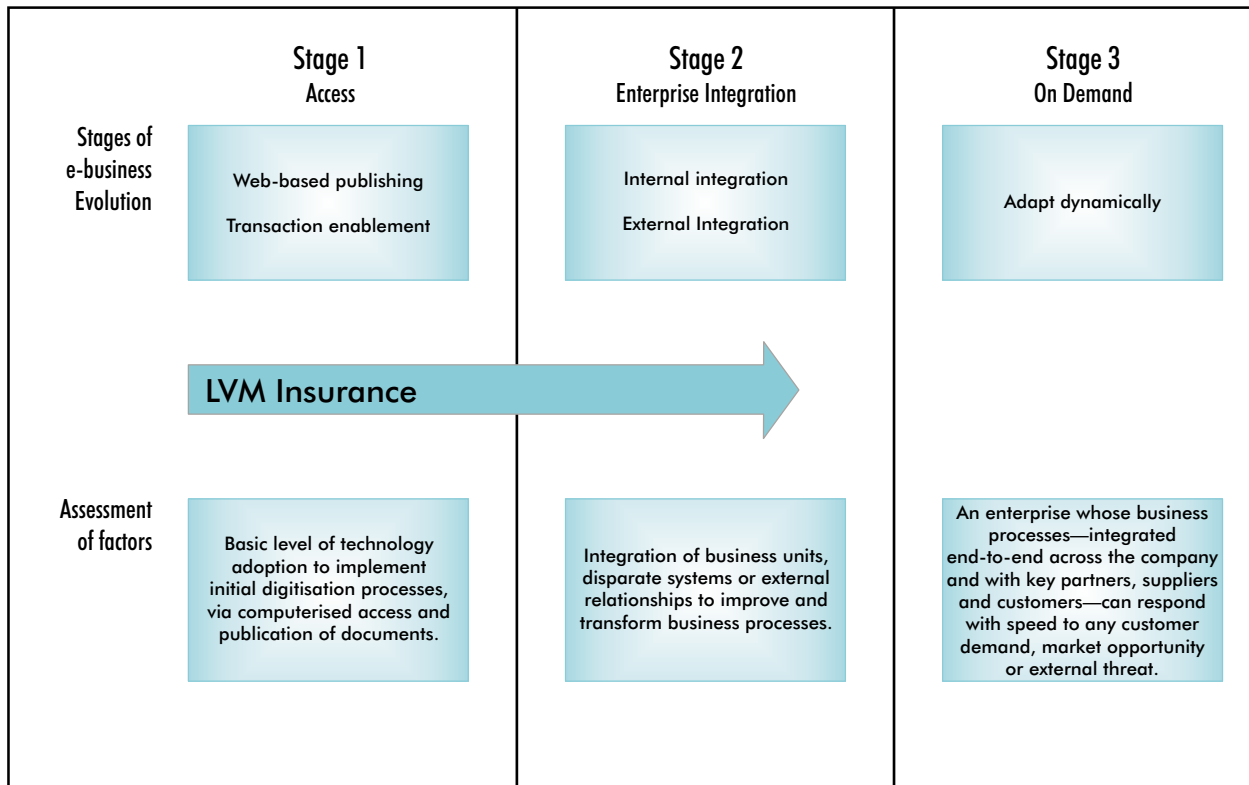
Bloor Perspective

LAS II is, in the opinion of Bloor Research, an excellent example of technology supporting the business. LVM has made good use of IBM's tools and services and the partnership exploits the business experience of LVM combined with IBM's ability to translate operational requirements into functional IT solutions.

Figure 4: LVM's place on the on the e-business evolution map

	Stage 1 Access	Stage 2 Enterprise Integration	Stage 3 On Demand
Stages of e-business Evolution	Web-based publishing Transaction enablement	Internal integration External Integration	Adapt dynamically
	LVM Insurance →		
Assessment of factors	Basic level of technology adoption to implement initial digitisation processes, via computerised access and publication of documents.	Integration of business units, disparate systems or external relationships to improve and transform business processes.	An enterprise whose business processes—integrated end-to-end across the company and with key partners, suppliers and customers—can respond with speed to any customer demand, market opportunity or external threat.

Bloor Research

G325-1945-00