Schenker Logistics

IBM

Schenker exports IBM technology to deliver benefits to logistics business

Bloor Research

Management Summary

There are many industries that supply services vital to almost every business in the course of a working week. However, it is true to say that one or two of these services receive very little attention despite the functions that are provided forming an integral component of daily life.

The global exchange of goods between suppliers and their customers is one such sector, within which Schenker is a nearly invisible giant. Indeed, Schenker is a leading international provider of integrated logistics services. The company holds a key position in the global exchange of goods using land transport, worldwide air and sea freight and in all the associated logistics services. Together the nearly 33,000 employees operating at 1,000 locations throughout the world have created a business with a turnover of 6.2 billion Euros (~$ 6 billion) per year.

Schenker, an integral member of the Stinnes AG group, is a global enterprise supplying vital services to tens of thousands of customers every day of the week.

This paper describes "e-Schenker, your e-business service page," and the innovative IT infrastructure middleware platform, EFS (e-fulfilment services), that supports this massive business and helps Schenker to deliver excellent services to its customers.

More information is available from Schenker at their Web site: www.schenker.com

SCHENKER LOGISTICS SOLUTION AT A GLANCE

CORE FUNCTIONALITY

Self-service employee, customer and partner e-business portal; design and build a sophisticated middleware platform to enable business process evolution and enhance effective utilisation of multiple systems; secure, cost effective platform for future expansion of service to users throughout the world.

SOFTWARE USED

- IBM WebSphere Application Server
- IBM WebSphere MQIntegrator
- IBM WebSphere MQ
- IBM DB2 Universal Database

SERVERS USED

- IBM eServer pSeries, IBM eServer zSeries, IBM AS/400
- UNIX Servers

BUSINESS BENEFITS

- EFS supports new customer-driven business services
- Flexible middleware enables fast business process evaluation
- Customer self-service capabilities improve customer satisfaction and reduce IT support costs

The Background

Schenker is a truly worldwide business with operations on every continent. The company is headquartered in Essen, Germany, and it is here that strategic business decisions are taken on a global level. Schenker, as an organisation, is an almost invisible giant with offices in every corner of the globe, nearly thirty-three thousand employees and a huge customer base. It is a logistics service operation with a turnover of more than six billion Euros. If you have ever wandered down to a loading dock in any organisation, there is a very good chance that Schenker has been involved in the delivery of many of the packages visible in the loading bays.

At its simplest level, the logistics business involves the collection, warehousing and onward shipping of packages, both large and small, between businesses and their customers. Packages may be required to move relatively short distances, between adjacent cities, move between neighbouring countries or across continents and oceans. Almost every form of transport can play a part in the movement of packages, including road and rail haulage, freight shipping and air transport services.

People functioning in a logistics business need to operate complex procedures and assemble intricate, detailed timetables using a huge range of technology and applications. In some scenarios there may be a requirement to link a number of services, perhaps including those provided by partner logistics companies, to provide a complete end-to-end shipment transit.

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>
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"Schenker provides complete solutions tailor-made for the requirements of industry today and tomorrow. We have international teams of specialists who integrate the Group's individual service modules to create complex added-value chains to ensure that our customers enjoy a reliable flow of materials and information and funds," said Karsten Keller, VP of the e-Business Unit at Schenker, illustrating some of the business thinking that ultimately resulted in the creation of the e-Schenker Portal.

Schenker has always prided itself on its ability to provide its customers with a 'one stop shop' service. Today, the company finds itself very deeply integrated within both the supply chains and the demand chains of its customers. For instance, an engine producer may use Schenker's services in its own supply chain when it brings in raw materials and components to its manufacturing plant. After the engines are built, Schenker may then form part of the customer's demand chain by shipping the engines to the manufacturer's customers.

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> — Karsten Keller

Keller added, "The central position that we hold in our customers' business processes and our one-face-to-the-customer approach demand that our IT systems actively support our business and facilitate customer contact. Together with help from IBM we have developed a new

middleware platform to allow communication between our external customers, our transportation partners and with Schenker's operational systems through a single interface."

The Project

The Business Background

The logistics business is all about connecting business and their customers. Any large player in this sector needs to offer a comprehensive suite of services to its customers and for those active on a worldwide basis it is self evident that the company must be able to offer those services between any two points on the globe.

In the past, the task of putting together any service required by the company's customers could potentially involve several members of Schenker's customer facing staff building a tailored package composed of many individual components.

For example, a manufacturer may wish to ship a large package from their location in Germany to a customer in the mid-West of the United States. In order to provide the manufacturer with a one-stop-shop service, Schenker staff might need to organise road haulage from the manufacturer's premises to a nearby rail head; rail freight to a major port, shipping across the Atlantic to the east coast of the US possibly followed by a combination of road, rail and air transport to the manufacturer's customer.

Each of these steps would need to be co-ordinated, possibly with warehousing and cross docking provided, at certain stages of the trip, to ensure that the shipment completed within the manufacturer's time limits. The building of a complex logistics service such as this could involve many Schenker staff, make use of several applications and potentially require Schenker to purchase services from other organisations to fulfil some sections of the trip.

It is clear that communication lies at the heart of Schenker's business. The company needs to be in constant contact with its customers and its own physical transport services. At the same time, it is evident that as a supplier of a one-stop-shop package Schenker must also be able to communicate, electronically, with a large number of partner companies and potentially even rival organisations in order to facilitate its business. Goods may need to be received at Schenker logistics warehouses and cross docking terminals from competitors whilst others may require shipping using facilities provided by a partner transportation agency.

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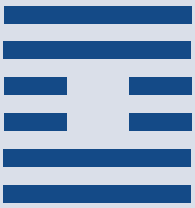
Business Decisions

At the end of the nineteen nineties, all logistics businesses were in the same position as most other businesses when it came to

assessing the potential impact that the phenomenal growth of the Internet could have on the way they operated. At this time Schenker began to investigate e-business in order to evaluate how the Web could help Schenker run its business to the benefit of its customers. In 1999 the company found that there were a few early examples of e-business endeavours—especially in Scandinavia and the US—but overall the concepts were not well established.

Following on from this initial assessment, in January of 2000 Schenker established a project to evaluate what effects e-business could have and would have on the logistics industry as a whole. The results were, at first sight, simple to grasp and centred upon a key fact of life: the logistics industry sits in the middle of the business of nearly every business. As an organisation, Schenker was well placed to confirm these findings. The company handles inbound shipments from manufacturers and outbound shipments to customers.

From this simple analysis of the logistics trade and the rapid evolution of the Internet, Schenker drew the following major conclusion: it was extremely likely that the Internet would have a major impact on the way that customer contact would be handled in the future. The mechanics of procurement contact and the exchange of information were going to change. Schenker makes bookings to buy services (space on planes, ships, railways etc.) in response to the needs of its customers. In the light of these findings the question arose, how will the Internet impact these processes and the interactions at their cores?



Bloor Perspective

With its appreciation that the logistics industry sits in the middle of the business processes of almost every enterprise, Schenker showed great insight by recognising that e-business was going to have a significant impact on the logistics business as a whole. Schenker went on to realise that customer contact and information sharing between partners would be the key enabler and architected its solution based on that finding.

❖Schenker e-Business Unit established

Following these initial investigations Schenker understood that the Internet would undoubtedly change the way that logistics operations would be run in the future and decided to act. Recognising that e-business would become a reality, the company established in July 2000 an e-Business Unit headed by Karsten Keller. It is worthwile noting here that Keller brought with him significant business development experience rather than having a traditional IT background.

The fledgling e-Business Unit quickly established itself and brought into the group specialists in every mode of transport that Schenker employed. Alongside these business experts were placed a number of IT professionals. This group collaborated closely with Schenker's Product Managers in Air, Sea, and Land in periodic 'e-steering meetings' where fundamental strategic directions and resolutions were discussed and decisions taken. Recognising that the company did not possess all of the necessary skills to architect and build some of the sophisticated systems that were being contemplated in the tight time span foreseen, Schenker looked around for some external assistance. The result of these investigations meant that alongside its own staff, Schenker brought in a small cluster of specialists, numbering between eight to ten, from IBM Global Services.

The unit operates by building on the experience of the team as a whole. The Schenker staff makes use of a method shown them by IBM to interact with end users in order to accurately define business processes. The Schenker e-Business Unit staff then translate these processes into requirements that the combined Schenker/IBM IT team use to build the desired solution. In order to ensure the smooth working of the Unit and to build team spirit quickly, the entire e-Business Unit was housed in one building.

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Why IBM?

Keller explained some of the reasoning underlying Schenker's choice of both IBM's software technology and its services.

"Schenker is a global organisation but we manage our IT support making use of local resources wherever possible. In order to work productively in this type of scenario it was clear that we needed to find a big, global partner. We had to look for a company capable of supporting IT operations on a worldwide scale but with real 'local' presence across the globe."

"When we looked at IBM as a potential partner we found that, across our organisation, we already had a few Web solutions running on IBM WebSphere platforms. At the same time it was also apparent that some of our business partners were making use of WebSphere technologies. Indeed, Schenker is part of the Stinnes AG group which is itself a large customer of IBM."

"Schenker has always prided itself on being a one-stop-shop for our customers. We understand the value that customers can experience from being able to use a single supplier. IBM's ability to provide us with a single supplier solution by offering WebSphere MQIntegrator, DB2 and Global Services neatly matches our own business model. Indeed, to a large degree MQIntegrator was the hub that made the integration in the e-Schenker middleware possible."

"We recognised that whilst it is impossible to gaze too far into the future, there is every likelihood that IBM will continue to be a leading supplier in its field. IBM will very likely be around tomorrow."

Keller concluded, "As a final consideration, we found that IBM was capable of meeting all of our detailed selection criteria. We knew that it could start quickly and would deliver at a high quality."

❖ The Birth of e-Schenker

The new unit started work by looking at the procedures associated with every form of logistics undertaking by the company. They discovered that whilst offline the company offered its customers a one-stop-shop service, the shop had to put many different faces in front of the customers. In effect, each service offered to a customer usually had its own sales person or information contact point. As a consequence the customers frequently had to interact with different members of staff at Schenker.

For example, in order to arrange a service to ship freight from a location in Sweden to a number of locations around Europe, the customer might need to interact with different e-services and specialists in Schenker. In order to arrange each individual service the customer might need to interact with different e-services and specialists in Schenker.

In the evolving world of e-business, it was clear that the company's customers wanted to be provided with more integrated logistics service offerings. And they wanted these services to be available from one logistics organisation, a company presenting only one face to them. From this starting point, it was established that Schenker needed to integrate closely with the systems of its customers and suppliers.

At the same time the unit began a Threats and Opportunities review, actively investigating new players seeking to enter the market place and evaluating new business models.

❖ Integration Is The Key

Concurrent with the analysis of future strategy, Schenker also undertook a review of its existing IT Infrastructure. Given the background of the company and its acquisitions over the years of new businesses it was not surprising to discover that the IT systems deployed had a heterogeneous background. Indeed, many of the individual solutions in place were extremely good and each component provided valuable support to the company's operations.

The company identified a need to unify user access to all of the disparate applications and systems. This would mean integrating both the presentation of applications and information to users and would also create a business need to allow the applications themselves to interact with each other in order to optimise information flows. It was clear that the integration of workflow, applications and users would be the key objective. In fact, it was also apparent that the new capabilities provided through such an integration project would rapidly need to be made available to Schenker's customers and its business partners and suppliers.

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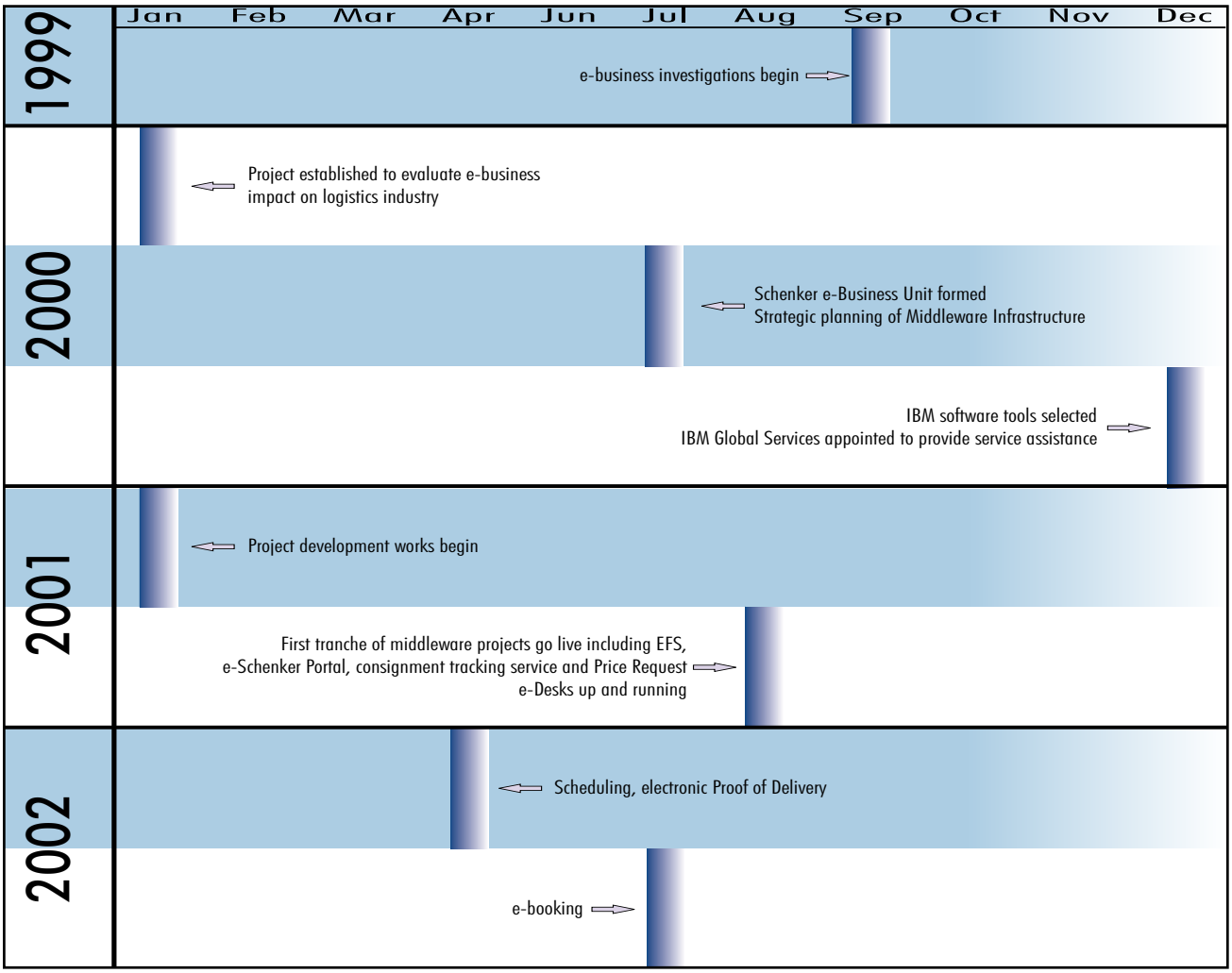
The e-Business Unit was now in position to ask the key questions: What platform did Schenker need to have in

Development Timeline



place in order to support future operations? Did the company need to build completely new systems to replace the existing platforms or could it make use of Enterprise Application Integration (EAI) tools or middleware?

It was clear that independent of the raging 'dot com' boom, Schenker needed to exploit the new capabilities that the Internet was bringing forth.

By the end of 2000, Schenker had an answer. In order to support the business as it moved forward Schenker would need to build modular e-fulfilment services using a clearly defined architecture model. The first requirement would be to Web-enable existing applications within the organisation and make them available to Schenker's staff.

The new model would have to utilise a plug and play approach in order to allow new services to be integrated into the overall solution as easily as possible and with minimal incremental costs. In this way it would be a simple task to connect new customers, new partners and new systems to

the infrastructure and newly developed applications. The net result was that that the e-Business Unit and Schenker's IT departments decided that Schenker needed to build a middleware infrastructure, capable of delivering these service requirements. Thus, Schenker started work on building a modular e-fulfilment service, later to be known as EFS.

Taking this a step further, the Unit decided that the ultimate answer would be a system that could permit users, customers and suppliers to build their own solutions by selecting from a range of e-services on offer through an online business portal. Thus was the e-Schenker Portal born. The project would be built professionally and it would be built from the bottom up.

The Solution

At the beginning of 2001, the Schenker e-Business Unit started work on a number of projects designed to build the flexible infrastructure that the business required in the face of advancing use of the Internet by its customers and suppliers.

The projects undertaken were all linked together in their dependence on the creation and continued development of the EFS middleware platform. Indeed, the projects described below can be seen to represent just the front end exploitation of capabilities made available by the IBM-based middleware infrastructure put in place within Schenker's IT infrastructure.

The EFS middleware platform effectively provides the plug and play capabilities required by Schenker in order to allow all of the integration projects to proceed. EFS is the glue that holds the different IT systems and applications together and supplies the means for them to interact. The EFS middleware architecture is built using IBM technologies such as WebSphere Application Server, WebSphere MQ and the WebSphere MQIntegrator. EFS is described in more detail in the next section.

❖Consignment Tracking

The first task undertaken was an integration project designed to furnish customers with a unique Schenker reference key or their own reference keys for each consignment undertaken. Prior to building this capability, customers would have to use various individual web services or to contact Schenker to ask them to track the location of a shipment. Schenker's staff might then need to interrogate a number of different applications to find the information before calling the customer. The new system allows a customer (or indeed partner or supplier of Schenker) to enter the shipment reference key into a Web-based system in order to obtain the logistical status of that consignment, irrespective of where, when or how the shipment was handed over to Schenker. Effectively the tool allows users to trace their consignment regardless of which Schenker division was handling the movement.

"This first project created a real, integrated application to provide seamless integration of backend systems coupled with the presentation of the information in a consistent, user friendly format. We built a tool with real intelligence using middleware to link, invisibly, our backend systems."

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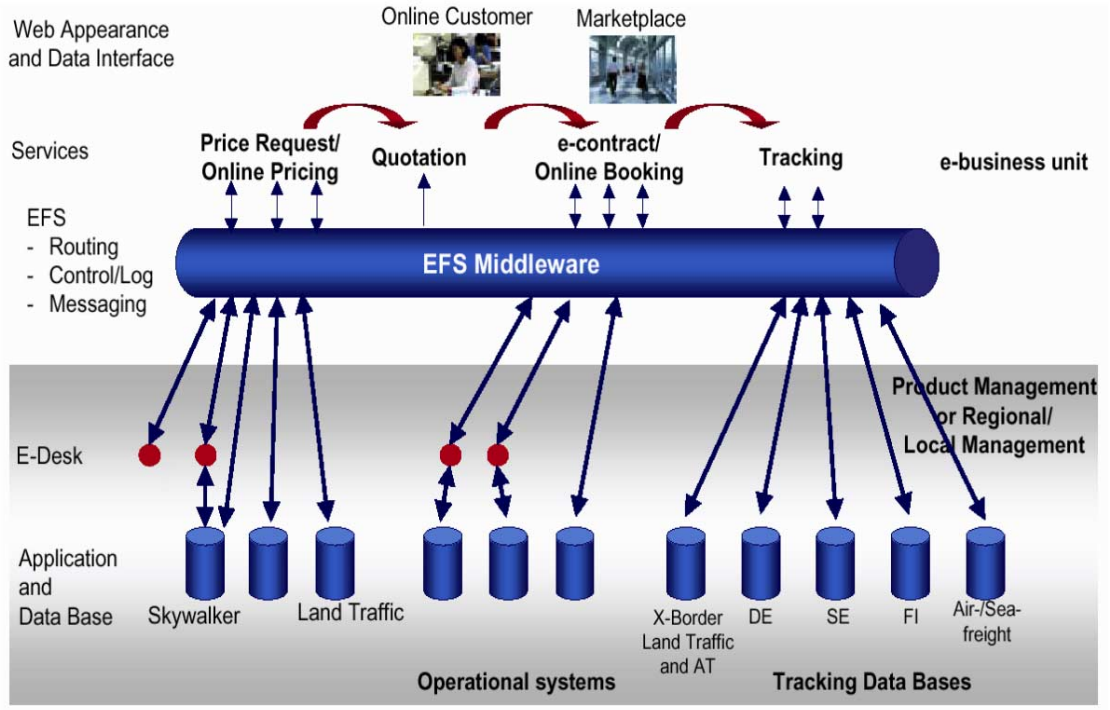
As Keller noted, "This first project created a real, integrated application to provide seamless integration of backend systems coupled with the presentation of the information in a consistent, user friendly format. We built a tool with real intelligence using middleware to link, invisibly, our backend systems."

❖e-Schenker Portal

The second project undertaken by the team was building the entire e-Schenker customer portal. e-Schenker is designed

THE EFS PROCESS MODEL



ultimately to give Schenker's customers and suppliers access to all of the services offered by the company. The first release of the e-Schenker Portal delivered to customers a range of links to news, application services and templates along with 'My e-Schenker' customisation capabilities.

❖Web Price Request

The e-Business Unit recognised that many of its customers used Schenker because of its ability to handle extremely complex logistics ventures. Whilst there is no such thing as a typical complex logistics service, it is not unusual for a service to require road, rail, sea or air shipping and possibly warehousing. Each of these services is associated with an individual tariff schema. Indeed, these may even differ from country to country and depend on the utilisation of the network. The tariffs associated with such complex assignments are often put together on an individual case-by-case basis. As a consequence the Unit created a 'Web Price Request Application' to enable customers to use the Internet to obtain quotes. Currently, this is an offline process, but investigations are underway to assess if a real-time, or even online, service can be provided.

❖e-Schenker Call Centres

As a final component in this first phase of e-business activity, Schenker created a number of call centres around the world

to support the expanding use of e-Schenker. The e-desks, as they are named, support all of the Internet applications and services along with other queries from customers. The EFS middleware routes price requests to the associated customer care e-desk. The e-desk support staff then quote the price and communicate it via the middleware to the customer. In instances where standard tariffs are being utilised it is possible for all information to be passed electronically to the customer directly, online, without e-desk involvement. The e-desk system employs the e-Schenker Portal.

It should be noted that it took fewer than eight months for all of these four related projects to be completed. Starting from the beginning of 2001 all of these capabilities were operational by August of that year. In the opinion of Bloor Research this represents a glowing tribute to all involved. The members of the Schenker e-Business Unit, IBM Global Services personnel and the WebSphere technologies created a middleware flexible platform and delivered tangible business benefits in considerably less than a year. This is a remarkable achievement and the potential to build further on the middleware platform is vast.

Technology Overview

This section provides a brief technical overview of the Schenker EFS middleware solution along with some details on the tools employed.

As can be seen from the accompanying Basic Architecture diagram, the EFS Middleware platform is built around IBM's WebSphere Application Server and WebSphere MQ products. These technologies are combined together to create a bridge to the many discrete backend systems operated by Schenker across the globe. The EFS front end and the WebSphere Application Server systems then present the data obtained from Schenker applications and services and make it available to external users and systems through the most appropriate channel, whether that is HTML, XML or any of the supported B2B application interfaces.

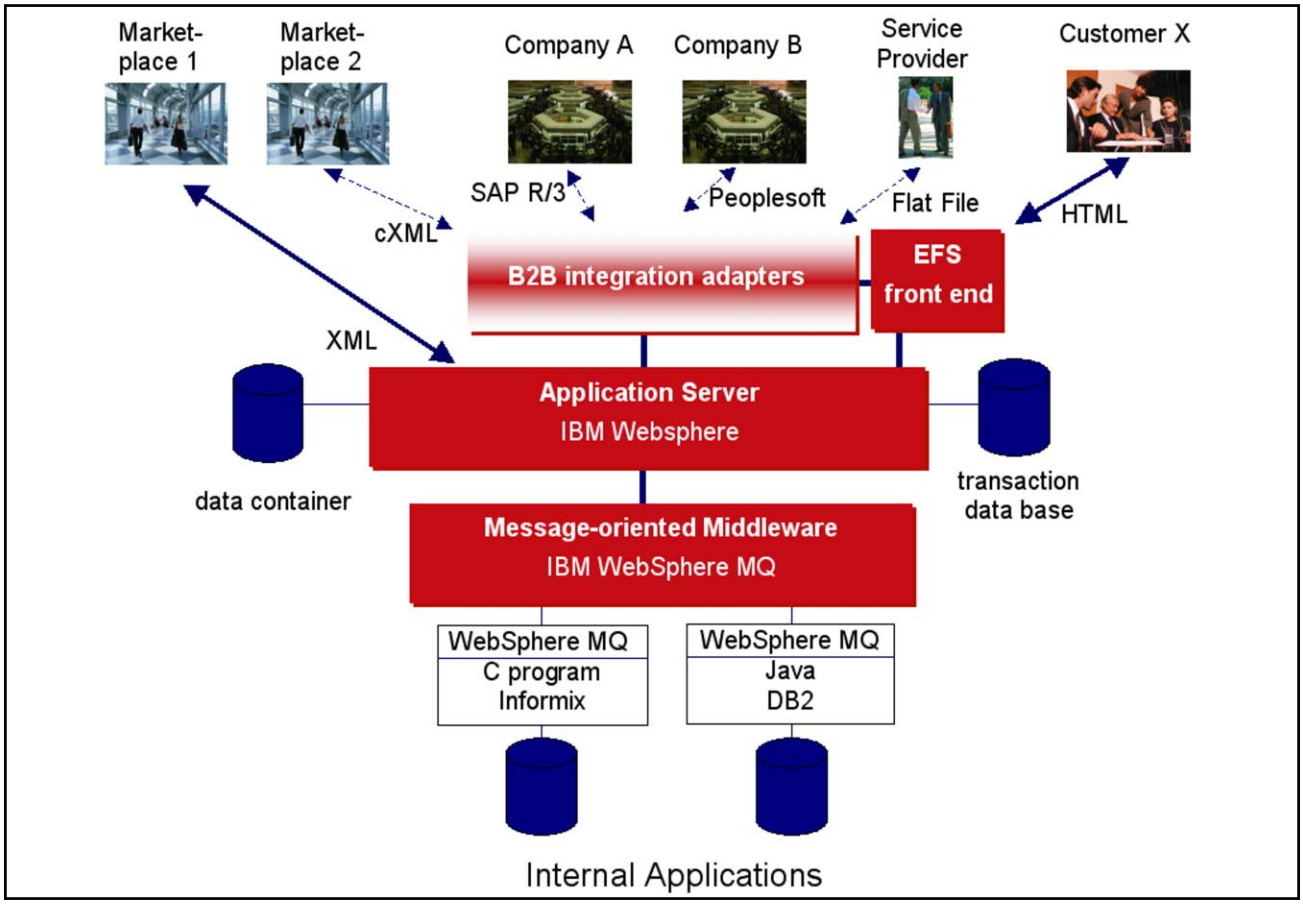
It is worth recognising that the IBM technologies are key to the whole operation of the EFS middleware and without their use, the creation and ongoing development of the EFS platform would have posed far greater challenges. The IBM WebSphere Application Server provides the capability to present many different forms of data, information and applications to a multitude of end-user browser systems. At the same time, the WebSphereMQ and MQIntegrator technologies make it possible for the many diverse internal applications to be accessed in a simple, manageable fashion.

It should also be recognised that the integration capabilities provided by EFS middleware are not limited to handling internal requirements. By exploiting the IBM tools and emerging standards such as XML, EFS middleware also provides integration capabilities with external organisations

Bloor Perspective

The business of logistics is complex and relies totally on organisations and people communicating with each other. Logistics services combine to form almost invisible glue that holds the world together. Schenker's innovative use of modern IT standards coupled with IBM's tools and expertise has put the company in a position to respond rapidly as the demands for ever more intricate logistics services emerge.

BASIC ARCHITECTURE FOR THE SCHENKER e-FULFILMENT SERVICE



and Schenker uses these capabilities to communicate electronically via the Web with several of its partners' and suppliers' systems.

❖Business Benefits

There are a number of business benefits delivered to both Schenker and its customers through the creation and daily use of the EFS middleware platform.

The implementation of EFS middleware at Schenker has meant the creation of a standard interface to its e-fulfilment services, eliminating the need for developing numerous new interfaces for Schenker's operational backend systems. Today, customers who want to interact with Schenker via the Web invisibly access the middleware and communicate with internal Schenker applications in a consistent, secure and reliable fashion. A uniform 'one-face-to-the-customer' solution is reached making the systems easier to use and more cost effective to maintain and run.

Whilst the above lists some of the benefits to Schenker's customer, the EFS middleware provides the foundation for the further e-services. Since the architecture supports modular proceedings, the connected middleware and

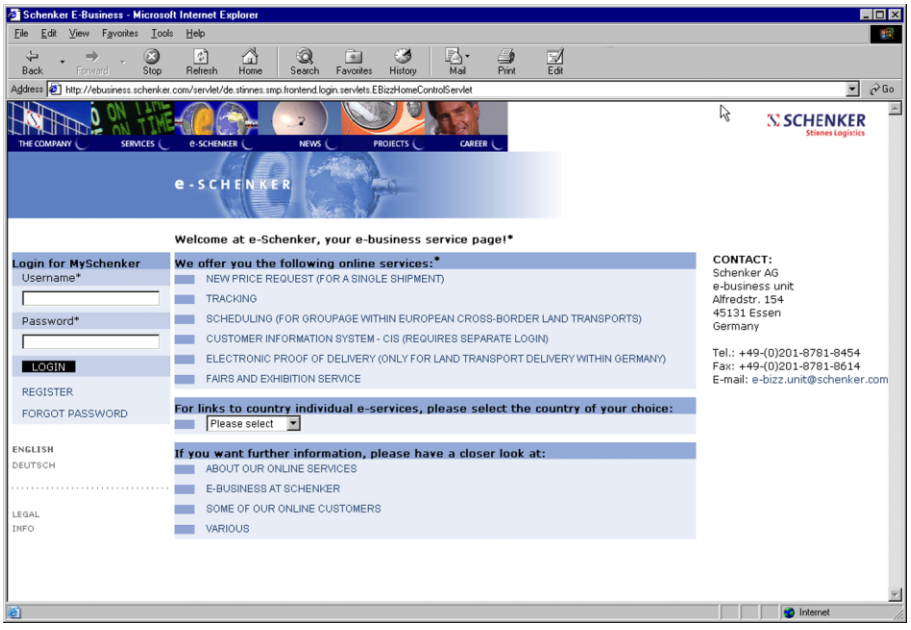
operational Schenker systems makes it possible for the company to optimise its internal business processes. Schenker's users now have to enter data into operational systems only once. Taken together, the EFS platform gives the opportunity for Schenker to get a consistent view of its business processes with the latest, accurate information always available.

Clearly as the number of backend systems connected to the EFS platform increases, Schenker's IT system will increasingly appear as one common infrastructure to both its customers and internal users.

The capabilities delivered through EFS and the e-Schenker Portal help the company to address the increasing demand placed on integrated logistics service suppliers to provide e-business fulfilment services to both its customers and its operational partners. Schenker sees such deep integration in customer's supply and demand chains and the one-face-to-the-customer approach as decisive factors in maintaining competitiveness, providing customer satisfaction and help in the ongoing battle to provide high quality services to meet customer needs.

Whilst the new system helps to reduce overall IT operational support costs and significantly speeds up customer fulfilment services, the EFS platform also provides some indirect business benefits. By giving customers more transparency of ongoing shipments and supporting the security of the whole logistics chain, potential transportation problems can be recognised at an early stage. By making accurate data available in a simple, easy to reach fashion, the system can often help to reduce difficulties, enabling alternative solutions to be developed in cooperation with customers.

e-SCHENKER LOGIN SCREEN



Lessons Learned

Over the course of the existence of the e-Business Unit, Schenker has picked up some useful experience in how to build and rapidly deploy solutions capable of delivering tangible business benefits, within budgeted constraints.

Chief amongst these has been the effectiveness of keeping the e-Business Unit development team together as a whole, housed in one building. On top of this the working relationships developed between the members of the Unit, Schenker business workers, IT staff and IBM Global Services personnel, has blossomed. Team members were carefully selected and the productiveness of the Unit has profited over the course of the last eighteen months.

The low turnover of staff has allowed Schenker to feed in new staff members as appropriate, keeping the team very close to its original size. This has given the Unit an effective route to transfer knowledge throughout the team and company, a process that is certain to benefit the company in the future.

Alongside the effectiveness of the e-Business Unit in rapidly building solutions based on the EFS middleware platform, Schenker recognised that in order for the new tools to be used, it was vital to keep staff informed of developments and to provide effective training.

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> — Karsten Keller

Keller explained, "You have to keep people involved. Talk to staff at internal meetings, write newsletters, and use the Intranet. Show people the systems being developed. You need to do all of these things before the new service reaches launch point. Most of the new services that we have been making available are really just Internet-accessible versions of the applications that have been in use before. We found that the most effective way was to initially sit down with core users for some ten minutes when the new EFS service was launched. Thereafter, they understood the ideas and applications and quickly took to using it. Sometimes we may have to go back to spend another ten minutes with some users, but it is an effective way to get real users making use of the new service. In locations where we did not spend time with the key staff, the pickup has not been as good, even though EFS just requires the user to operate a simple browser."

Given the worldwide distribution of the company, Schenker has, on some occasions, had to exert some effort to convince the many local operations of the benefits that the new middleware platform provides. Once again active communication with those concerned was revealed to be vital.

Perhaps the single most important issue uncovered by Schenker stems from the very nature of the Integrated Logistics business itself. As the company that sits in the

middle of both the supply and fulfilment chains, Schenker can only develop its integrated IT services in step with its customers, suppliers and partners. Keller summed it up in one simple sentence; "Everything we do must be focussed on the customer." For example, Schenker already makes use of XML messages within its middleware platform but has found that many of its customers are currently unable to use XML within their own IT infrastructures. In these situations, the flexibility of the IBM WebSphere MQ product really comes into its own with its ability to interact through a very wide variety of channels and communications mechanisms.

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Keller finished off with a few words on IBM's involvement. "We have many very good applications operating within our group of companies. Why should we change them if we don't have to? IBM through its technology and its services has supported us to exploit our capabilities to the full. Schenker uses many outside suppliers. At the moment in the IBM Global Services people we have a good team leader and a nearly perfect team." He went on, "There is very little that we could improve with the way IBM worked with us; we continuously check this. IBM has been focussed and supportive and the technology works. We, in turn, help IBM to further their knowledge about the logistics industry and its various operational systems."

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Keller's final words on the working relationship with IBM were thus, "Sure price is always an issue. Buying from IBM is expensive, but IBM Delivers!"

The Future

The building and deployment of the EFS middleware infrastructure coupled with the e-Schenker Portal has provided the company with an ideal base from which to expand its Internet services. Indeed, it is readily apparent that the platform will undergo almost continuous development.

Keller pointed out that the architecture of the middleware platform has been designed to allow local application development to take place where required. As long as the developments fit the architectural constraints and can deliver business benefit, there is no need for central development and control. An example is the provision of an e-proof of delivery service that has been incorporated in April 2002.

However, it is clear that among the areas that will be incorporated in the near future include further detailed tracking information and possibly a single login option in the MySchenker Portal.

Over time the company will develop the infrastructure to strongly utilise the e-Schenker messaging/middleware platform using IBM WebSphere MQIntegrator to connect even more backend systems. However, this development will reflect the evolving demands of the business units themselves rather than being a centrally driven project.

Finally, Schenker will extend the middleware to allow integration with the company's supply side using the capabilities of the WebSphere MQ toolset. In this way it will be possible to replace the current EDI systems linking Schenker to its carriers and hauliers. This step relies on the partner organisations being ready to accept these new technological linkages, but as the suppliers go online, Schenker will be ready to roll out.

Conclusions

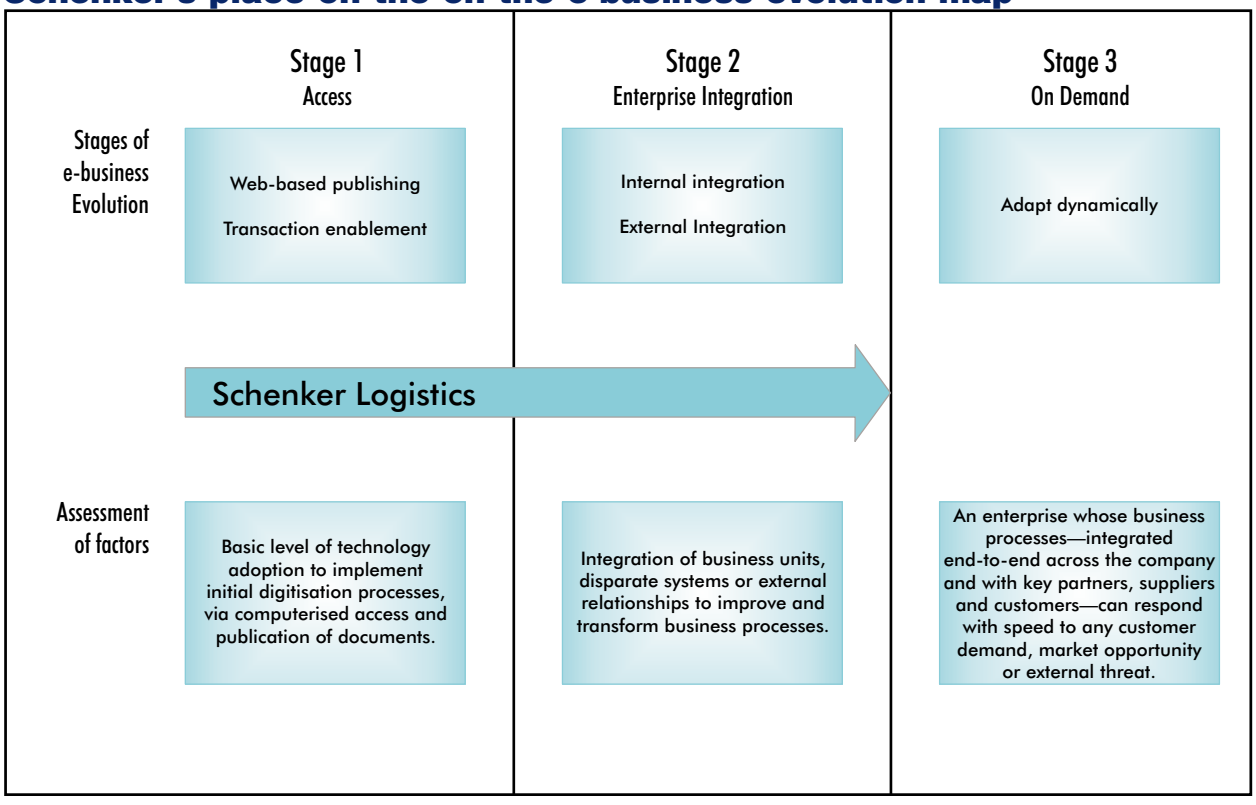
Bloor Perspective

In any complex business environment, customer and employee self-service offers a route to provide service cost effectively. Schenker has used IBM's products to build its middleware platform and e-Schenker Portal to deliver secure, easy to use self-service to its customers, partners and employees.

In EFS, Schenker and IBM have combined to create an excellent piece of middleware infrastructure that is delivering significant business benefits to the company. The flexibility inherent in the design and the adoption of a customer self-service strategy highlights how IT can supply customers, partners and employees with the tools that allow them to operate effectively in a rapidly changing commercial environment. The design of the system and the capabilities supplied by the underlying tools ensure that the service levels enjoyed are more than satisfactory whilst the cost of delivering such services are minimised.

Schenker has exploited its extensive experience in the logistics industry to design a solution that meets its operational requirements today and that has the potential to be expanded and enhanced as its e-business evolves. It is a compliment to IBM's tools and services personnel that they are able to deliver the functionality required at a high quality in a package that allows so much flexibility to be provided without imposing an unmanageable burden on the operations and development staff.

Schenker's place on the on the e-business evolution map



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