The automated interoperability of different partner's information systems is no longer science fiction. A service-oriented architecture enables companies to execute their internal and external business processes without human intervention.

Electronic Commerce

By Boris Čerin

In the beginning, only individual business functions were provided with computers, and therefore efficiency of administration work could not be increased. Further development of information and telecommunication technologies enabled automated execution of those functions into connected internal business processes. The next step was connecting processes within organizations and between partners. Nowadays the connection of internal and external business processes is one of the most challenging objectives for companies, banks, insurance companies, government agencies and customs administrations. At the same time they implement paperless business environments which result in rapid growth of electronic document and data interchange. The features and approaches of service-oriented technologies ensure fast implementation of electronic commerce benefits for everyday working activities.

QUARK: Has your company specialized in the development of centralized information systems?
ZORKO: Yes, it all started at the beginning of the nineties, when Slovenia gained its independence. At that time many changes in the approaches to development of information technologies occurred. We strongly believed in the benefits of centralized and connected information systems despite mainstream technology being directed towards distributed and heterogeneous environments. Once again, connecting and consolidating systems became popular. Service-oriented architecture revives those effective traditions for business computing support. Our development of customized systems, for example, includes development of information systems for Customs Administration. For that reason we have put a lot of our effort into change management to be efficient enough when implementing legislative data, documentation and processes.
QUARK: Why e-commerce?
ZORKO: For organizations which collaborate with numerous partners and process many documents on a daily basis, electronic commerce is the only solution. We can compare the influence of e-commerce on business

performance with the introduction of the internal combustion engine or electric engine. Systems for automated document exchange enable process execution without human participation. The savings in working hours are enormous. Thus employees can
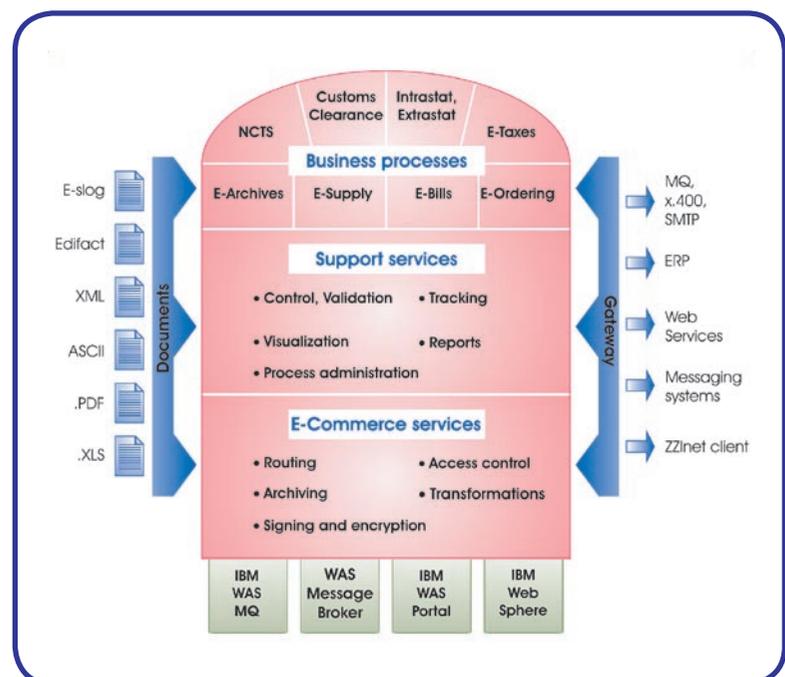
perform their tasks effectively and on time, and in addition be incorporated into other activities which generate added value.
The Slovenian Customs Administration implemented an electronic data interchange in 1996. In the next four years, by the year 2000, they achieved a 98 percent record of customs declarations entered electronically. That resulted in elimination of manual work, minimization of mistakes made during document data entry and gaining speed in customs processes. The whole custom process was automated, including application forms, paying custom fees and releasing goods.
QUARK: Why do you think that companies should execute e-commerce with government agencies using service providers?
ZORKO: We are convinced that outsourced providers offer the best solutions for electronic commerce with government agencies. Furthermore, solution providers ensure quality customer support and adjustment to legislation. They provide government agencies with inexpensive systems for e-commerce and high-quality services for end users. As experts in system integration and e-commerce, we made a commitment to offer the best solutions at an attractive price. Moreover, our customers don't have to invest in expensive expansion of their IT infrastructure. They manage information exchange within electronic business processes over client software which is free of charge! Our customers ex-

Partners can use ZZInet services with different protocols and document formats in a unified and reliable way.

change electronic documents with any partner for a fee of 10 tolars, or 4 euro cents, per document.

The expansion of e-commerce in Slovenia has been strengthened by the quality work of our customer support team. In the last two years we gained over 100 new customers who have been using our electronic document exchange regardless of their legacy IT solutions and systems. Another benefit is represented by using the most advanced infrastructure for the lowest price, which is only possible because the provider's investments are dispersed. Exchange services, document cycling through a business process, transformations and services for monitoring and managing must be reliable, while appropriate data and privacy protection must be provided – including archiving. We decided to invest in technology because we wanted to achieve a short time to market and ensure high quality. The technology platform of our e-commerce solutions is the Service Oriented Architecture (SOA). We have been using IBM software solutions which provide us with solid technology pillars and possibilities for immediate response to our customers and market demands.

In the same manner, companies essentially shorten the time it takes to make use of e-commerce services by employing outsourced services and can then devote attention to improvements of core business and performance quality.

Foreign trading services, such as simplified customs procedures include electronically entered declarations, acceptance confirmation on the Customs Administration side, notification for release of goods or inspection, payment liabilities and issuing accounting data.

The entire procedure, from entering declaration to releasing goods, is automated without goods being retained. Our solutions support other business processes such as European NTCS transit procedures, e-procurement and e-supplying in merchandising, Intrastat reporting, exchange of electronic invoices, maintaining registries, electronic tax reporting and so on.

It is essential for processes to act automatically, so the application begins and ends the procedure on its own without human intervention. Therefore the reliability of such systems is crucial, including distribution of instant messages to pre-set addresses in case of malfunctions.

QUARK: Is it necessary to unify the standards which organize documents, procedures and means of transport to achieve simple application and system integration?

ZORKO: Modern approaches to development of information solutions are founded on demands for simple adaptation and integration of business processes. The answer is service-oriented infrastructure (SOA), which emphasizes design of independent components and functions integrated

with standard services rather than composing program code into heavy applications. IT infrastructure vendors have recognized the need for reconciliation of integration methods and the opportunity to define those methods upon broadly accepted standards. The approaches or styles of presentation, usage of services and means of transport have been standardized, rather than technologies or applications. It is necessary to have sophisticated technologies and the promise of continual adaptation to changing market conditions, if you want to successfully manage a system which embraces integration and distribution of data and claims. The transition of IBM's system of managing messages and processes has essentially improved and mitigated our work.

QUARK: Who were the first adopters of your services?

Igor Zorko, Director.

ZORKO: Since 1996 when the Customs Administration started to use electronic commerce and after that in the year 2000, when it introduced independent electronic submission of simplified customs procedures. The majority of importers, exporters and logistics companies use these services. They ensure comprehensive electronic commerce between the Customs Administration and manufacturers, merchants and logistics companies. The Slovene Customs Administration has always been open to new technological initiatives. In this way we contributed to shortening the queues in front of customs offices, or at the state border.

We released ZZInet services and other proprietary software products for foreign trade regulatory affairs in the year 2000. Some domestic companies, with numerous different procedures that incorporate a lot of documents, quickly took advantage of these electronic services. For example, companies such as Gorenje, Lek, Iskraemeco, Lama Dekani, LIV Postojna, Radenska, Tehnounion, and ACRONI Jesenice. Today, over 400 companies with an aggregate of more than 6 million documents per year use ZZInet services. Companies are aware of the high costs of setting up a system for electronic exchange with many partners. It is also irrational to compare prices with outsourced services. They would also need to establish customer support services and integrate the parties involved in e-commerce. Can you imagine every large Slovene company as a mobile phone operator? On the other hand, demands for integration of internal applications and systems into services, which are levelled with business requirements, are growing rapidly.

All organizations lean towards establishing new ways of information exchange and document transformation. Banks have been linking up and connecting with their customers and government agencies. Their e-commerce includes payment operations, ordering financial services and other procedures such as monitoring customer credits between banks, trading between banks and reporting to the Bank of Slovenia, Tax Administration and other agencies. We all wish for such procedures to be fulfilled immediately; this is only possible with seamless integration between the parties involved. Insurance companies also exchange information and data in a similar way. The most important consideration is for the system to ensure independence of

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the different connected systems, but which still acts as one.

QUARK: Can you highlight such an example?

ZORKO: It's quite simple. It could be the company which has bought, let me say, an information system, application for financial management or perhaps a manufacturing subsystem. Such a system has very limited possibilities for integrating with partners or even for collaboration within internal processes. Difficulties cannot usually be avoided even if partners eliminate manual procedures such as ordering or accounting. For that reason, the company has to ensure appropriate means of communication, document types and structures, and availability of all necessary data. The *de facto* standards for electronic exchange in most developed countries are EDIfact documents transmitted over an X.400 transport connection. Slovenian companies have adopted E-slog XML messaging as the national standard, which is a more simple and understandable format than EDIfact, and web services using SOAP as the transport.

One concrete example is the Elektromaterial company. One of their biggest customers, Bahag of Germany, informed them about the need to move to electronic commerce in order to reduce its operating costs. Bahag demanded the same from its suppliers and started to charge for paper-based trading. As service providers for the

exchange and transformation of information, ZZI has been capturing data from Elektromaterial's information system into E-slog XML files, conversion from E-slog format into EDIfact format and transmission of those standard documents into Bahag's communication network. Even if it sounds simple,
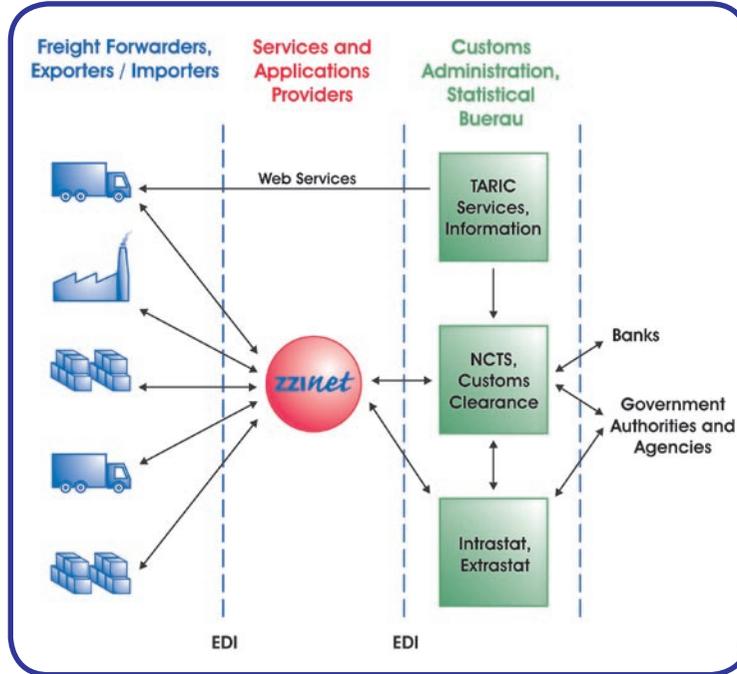

Ensuring end-to-end support for foreign trading while connecting different systems (connections B2B and B2G).

rearrangement was very complicated because documents and communication at the partner's side were based on completely different standards. Nevertheless, we provided our customer with a quality solution in just one month, so they implemented their partner's demands in the timeframe required.

QUARK: It all works automatically, without human intervention?

ZORKO: Of course. We can execute transcription and transmission in both directions regardless of the original document standards, which could be different. SOA services enable companies to organize their data and information system in the most convenient manner, without requiring them to accommodate partners' requests. They do have to provide us with the data which their partners demand, but it is not necessary that the data be in standard form.

But the best thing is that the initial costs for our customers are zero. If companies have at least some standardized documents, the cost of document conversion is ours. We only charge for conversion if the documents are completely for internal use and developed without any available standards, so we need to design some software add-ons to receive their data. Fortunately, we have the most sophisticated development tools and highly qualified experts, so we can ensure conversion in only one or two days. We charge for service usage according to the number of performed exchanges.

It sounds easy, but it's not. We must define the whole business process, from entering the document into our network and then leaving, and ensure tracking of this document across the entire system. The services, tracking and all performed tasks become part of the customer's information system, and this is the way that we create automation.

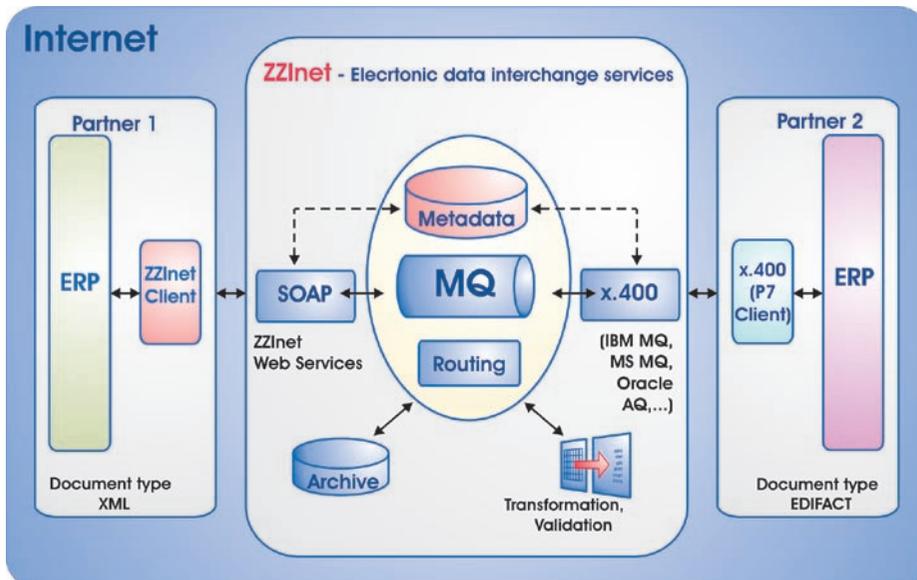**QUARK:** Finally, what is your vision of e-commerce?

ZORKO: I believe that e-commerce means better business process performance and total quality of business execution with lower operating costs. That is why we have broadened our e-business services this autumn with a new archiving service, eHramba.si. The service is based on the IBM Content Manager and is designed for automated, permanent storage of electronic documents directly from business processes. We can integrate the service with backoffice systems, business applications and services. As eHramba.si is available as a service, it relieves customers of the burden of high initial investments and regulatory risks. Users are relieved of additional tasks and costs concerning ownership and management of infrastructure. eHramba.si, together with the rest of our services and solutions, represents the most convenient and cost effective way to complete e-business – totally paperless.

An example of automated transformation within the ZZInet service.