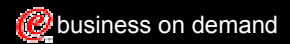




Kommunale Datenverarbeitungszentrale (KDVZ): Helping to Make Government More Responsive in Germany

A business case study sponsored by IBM



Becoming on demand

With Web-savvy citizens calling for more convenience and efficiency in the way government services are delivered, the rise of e-Government in Germany seems inevitable. But to get there, agencies and ministries need to bridge a widening chasm of disparate systems and processes. KDVZ, a provider of IT services to government bodies, has created an open, standards-based infrastructure that enables agencies to be more responsive to citizens' needs. By creating a highly leveragable integration framework using open technology, KDVZ has enabled its government customers to integrate—improving the efficiency of current processes and creating the pathways for the next generation of automated, on demand processes.

Why IBM

“Our role is to make governments more responsive to taxpayers by helping them bring their systems together to act as one. As a company at the forefront of on demand business, IBM gave us the security of knowing we were taking the right path.”

TABLE OF CONTENTS

THE KDVZ SOLUTION at a Glance	1
SITUATION ANALYSIS	2
Background	2
Business Drivers: Integration...Without the Pain	2
MOVING TOWARD ON DEMAND	4
Business Process Adaptations	4
Key Decisions	5
SOLUTION PROFILE AND IMPLEMENTATION STRATEGY	5
Exhibit 1: Basic Architecture: KDVZ's Solution	6
BUSINESS RESULTS	7
Exhibit 3: Business Results for the KDVZ Solution	8
CASE EPILOGUE	8

THE KDVZ SOLUTION at a Glance

<p>BUSINESS DRIVERS</p>	<p>Challenge</p> <p>on demand Business Rationale</p>	<p>As the demand for customer service has grown in the private sector, so has the demand for more convenient and efficiently delivered services in the public sector. Citing this—and the need to squeeze more services from tax revenues—the German Federal Government issued a mandate calling for the broad rollout of e-government, from Federal ministries to the local agencies (e.g., licensing, registration, etc.). At the local level, effective e-government requires agencies to connect behind the scenes to keep processes from becoming an incoherent patchwork of different access points and experiences. However, the lack of coordination that prevailed between agencies gave rise to a highly fragmented set of systems and processes. This in turn made “classic” integration costly, time-consuming and impractical—and made it all but impossible for these agencies to create a truly responsive e-government infrastructure.</p> <p>Effective e-government requires broad-based deployment—supported by process-level and data integration across government agencies. To create this and to conform to the Federal mandate, agencies needed a high-level integration infrastructure that would respond to their need to share resources with each other on the fly. This infrastructure would need to leverage each unit’s existing base of applications without having to modify them. This required the creation of a series of inter-agency connections that would enable a whole new level of responsiveness in providing services to its citizens.</p>
<p>BECOMING ON DEMAND</p>	<p>Business Process Adaptations</p> <p>on demand Operating Environment</p>	<p>Kommunale Datenverarbeitungszentrale (KDVZ), a provider of IT services to government agencies in Germany, teamed with IBM to create an open standards-based e-government integration framework that enables these agencies to dynamically connect with each other in order to streamline government processes for citizens and businesses. By facilitating the dynamic exchange of resources across government agencies, the framework sets the stage for more efficient and convenient service delivery, while avoiding the need for additional IT resources. Thus, the framework makes agencies more responsive to each other’s needs. Furthermore, agencies can deliver services to citizens and business faster and at higher levels of quality.</p> <p>Designed and developed by IBM, KDVZ’s solution runs on IBM WebSphere Application Server for Linux. Other key elements include an IBM eServer zSeries mainframe (that runs the applications of KDVZ’s government customers) and IBM DB2 Universal Database (which stores all data on the mainframe).</p>
<p>ON DEMAND BENEFITS</p>		<ul style="list-style-type: none"> • The solution enables agencies to integrate with each other at a tiny fraction of the cost of traditional point-to-point integration, freeing up resources to build new e-government applications. • The solution enables agencies to avoid the costs associated with supporting multiple interfaces, avoiding the need for additional IT resources. • The solution offers one early adopter the potential to save more than \$1 million in printing, mailing and data entry cost reductions. • The ability to run the solution on the zSeries increases its resiliency by taking advantage of the zSeries’s 99.999% availability.

SITUATION ANALYSIS

Background

Over the past half decade, a number of forces have combined to change what German citizens have come to expect from their government. One is the increasing importance that consumers (and citizens) place on customer service. Related to, and in some ways driving this is the second force—the rise of the Web, which has sensitized citizens to the benefits of readily available, realtime information. The final force is the galvanizing belief among citizens that the government needs to deliver services more efficiently to get the most from their taxes. Taken together, they signaled a rising tide of sentiment that the government needs to be both more efficient and more responsive to its citizens.

To make Germany's e-government vision a reality requires various government entities to integrate with one another seamlessly in the backend, creating a virtual "matrix" of government resources.

Acknowledging this sentiment, German Chancellor Gerhard Schroeder unveiled a far-reaching initiative to speed the adoption of e-government across all levels of German government. Known as BundOnline 2005, the program was designed to make it easier for German citizens to access government services and information resources by making them available over the Internet. The "behind-the-scenes" goal of the project was to modernize the way German government entities—from the Federal government all the way down to local agencies—did business. As envisioned by Chancellor Schroeder, these entities would leverage e-business technology to reinvigorate or reengineer their key processes. The resulting improvements in process efficiency would, in essence, enable government entities to do more with less, a benefit that resonates with German taxpayers. In the big picture, the BundOnline 2005 program was seen as a way to bring German government in synch with an increasingly customer-focused, service-oriented culture—one whose rise parallels the growth of Web usage among its citizens.

That's the vision. To make Germany's e-government vision a reality requires more than simply placing a Web interface in front of an existing service, one agency at a time. Instead, in almost all cases, it requires various government entities to integrate with one another seamlessly in the backend, creating a virtual "matrix" of government resources. By integrating widely with one another, these entities are better positioned to deliver services that reflect the true spirit of e-government—namely the ability to provide citizens with a single interface to a reservoir of resources. Creating a mesh of integrated government agencies also makes it easier for agencies to interact at the process level, thus enabling them to speed up the sharing of information and to streamline existing practices.

Business Drivers: Integration...Without the Pain

But creating this integration has been the single most significant challenge to the realization of the BundOnline 2005 vision. The root of the problem can be traced to the high degree of autonomy that Germany's government entities have followed in setting policies and processes. Over time, this lack of coordination between government agencies not surprisingly led each to develop its own nonstandard data processing infrastructure. As these agencies have begun looking for ways to integrate with each other, major disparities in hardware, software and data structures have proven to be a major impediment. While

point-to-point integration has been an option, government agencies have for the most part been reluctant to take this approach, citing the cost of establishing and supporting it. Indeed, with each unit supporting a number of unique interfaces, the overall complexity of cross-unit integration—and the cost required to support it—rises exponentially. So in sum, German government entities were stalled in their efforts to create the kind of integration necessary for e-government to take root and thrive. They needed a cost-effective and easy-to-implement solution that could transcend the boundaries of proprietary systems that kept them apart. Enter KDVZ.

Established in 1973, KDVZ (Kommunale Datenverarbeitungszentrale) is a full-service provider of IT services for approximately 50 counties and local governments in the state of Nordrhein-Westfalen, representing three million citizens. Established, owned and funded by a group of local administrative agencies, KDVZ acts as a kind of all-around outsourcing partner for its government customers, handling everything from Web pages to the hosting of mission critical applications. Given its strategic role—a virtual “hub” for a community of agencies—KDVZ was well positioned to help bridge the chasm that separated various agencies, thus laying the groundwork for broader e-government adoption among its members.

KDVZ saw the opportunity to use Web Services to create an open, standards-based environment within which agencies could integrate with each other.

After assessing the situation, KDVZ concluded that for its customers to implement e-government successfully, they needed a flexible means of connecting with each other. In practice, agencies need specific data from other agencies to fulfill their mission. Thus, the agencies “owning” data need to be responsive to the requirements of “seeking” agencies by making it as easy as possible access to that data. Like a castle lowering its drawbridge, owning agencies need to actively neutralize the barrier—namely, non-standard systems and formats—that keeps other agents from accessing their data. KDVZ saw an opportunity to play a groundbreaking role by creating an open, standards-based environment within which agencies could integrate with each other.

KDVZ began framing a plan that was—like its core business model—built on the idea of multiple customers leveraging a centralized integration framework. To be viable, the solution needed to minimize customer pain by:

- circumventing the upfront effort and cost typically associated with complex integration efforts;
- keeping support requirements to a minimum, thus enabling each agency's IT staff to focus on developing new e-government services; and
- minimizing changes to existing applications and processes, thus enabling them to preserve their investments and keep costs as low as possible.

All in all, KDVZ saw that by removing the barrier to widespread integration across agencies, they could become more responsive to each other's needs as well as to the needs of their constituencies (citizens and businesses). In the bigger picture, easier integration would assist KDVZ's agencies in meeting the milestones for e-government deployment defined by the BundOnline 2005 initiative. KDVZ realized that to make this happen, it needed a truly open, standards-based integration infrastructure to enable a new level of responsiveness by providing a dynamic foundation for agencies to interact with each other.

MOVING TOWARD ON DEMAND

Business Process Adaptations

Working with IBM Global Services Application Management Services (AMS), KDVZ created an open standards-based e-government integration framework that enables these agencies to seamlessly and dynamically connect with each other in order to streamline government processes for citizens and businesses. By facilitating the dynamic exchange of resources across government agencies, the framework sets the stage for more efficient and convenient service delivery, while avoiding the need for additional IT resources. Thus, the framework makes agencies more responsive to each other's needs. Equally important, agencies can deliver services to citizens and business faster and at higher levels of quality. By creating a meshed network between agencies based on open standards, the solution allows agencies to integrate with each other in realtime without incurring the costs associated with point-to-point integration.

Under the traditional point-to-point integration framework, agencies needed to create a unique connection for each interface. Thus, the more agencies "seeking" data from an "owner" agency, the more connections had to be created—taxing scarce IT resources. Under the new integration infrastructure, "owning" agencies automatically convert data to a standardized format, making it readily available to any "seeking" agency wanting to access it. Agencies choosing to adopt this framework become far more responsive to the needs of other agencies. So by creating it, KDVZ laid the groundwork for agencies to break the "integration stalemate" that has kept agencies from sharing with each other on a wide scale. This in turn opened the doors for agencies to be more responsive by fostering the kind of citizen-friendly process improvements that embody the essence of e-government. A good example of just such an improvement is Business Registration, one of the first applications to employ the integration infrastructure.

Turning Business Registration into a Web Service shows how the elimination of systemic obstacles like IT fragmentation can lead to a blossoming of e-government initiatives.

First, some background. German citizens starting a business need to register with a local business registration office (run by a local community). Because several other government bodies required access to this information, KDVZ (on behalf of the business registration office) needed to print an average of 40,000 forms per month and distribute them by mail. Once received, these forms are then manually entered in the offices' respective data processing systems, enabling them to tabulate and cross-check their existing data with new registration data. Because records are kept at the local level, such cross-checking is critical to ensuring that a person starting a business in one city isn't collecting unemployment insurance in another. By enabling the Business Registration service to be delivered over the integration infrastructure, any agencies requiring registration information can now easily integrate with the agency issuing the information. The most basic process change enabled by this is the move from physical printing, mailing and data entry to a seamless online transfer of data. On top of this foundation, agencies can further modify the process by increasing the frequency with which the information can be delivered from monthly (current) all the way up to realtime delivery. Moving the distribution process online also opens up major opportunities to effect changes in offline administrative processes, including the development of more reliable screening and analytical processes.

The integration infrastructure enables the solution to be pushed still further down the on demand path by moving from a generic “broadcast” approach to data distribution to an automated, “event-driven” approach. While some institutional and legal issues still need to be worked out, the receipt of new business applications could automatically trigger data distribution to a predefined group of agencies. The fact that developers can spend their time building these automated applications instead of building and supporting interfaces will likely encourage this activity in the future. While just one example, turning Business Registration into a Web Service shows how the elimination of systemic obstacles like IT fragmentation can lead to a blossoming of e-business (i.e., e-government) initiatives. Moreover, the ease and speed with which government activities can be adapted for Web Services favors its use given the aggressive timeframe for deployment (by 2005) targeted by the BundOnline 2005 initiative.

Key Decisions

KDVZ decided that the best way to jumpstart the new e-government system within the community of government bodies it served was to build a solution that would manifest its benefits while making customers more comfortable with the emerging technology. As a provider of technology solutions for its members, KDVZ also saw the need to act in their interest by gaining a greater understanding of Web Services, which it saw as a technological wave of the future. To make its Web Services vision a reality, KDVZ needed a partner that could provide both the expertise to design and deploy the solution, as well as the tools and technology. KDVZ contacted IBM Global Services AMS to exchange ideas about going forward.

An IBM customer since its founding, KDVZ had a long and successful history using IBM hardware and software, including an IBM eServer zSeries at the heart of its infrastructure. So when it came time to plot the future direction of its infrastructure—says Frank Schwanbeck, KDVZ’s Department Manager for Internet—IBM’s involvement was viewed as crucial. “We needed someone who was not only deeply knowledgeable of our systems, but also a thought leader in the emerging area of Web Services,” says Schwanbeck. “Both we and our customers needed the security of knowing we were going down the right path—and IBM gave us that security.” In keeping with the broader goal of open standards support embodied by the Web Services project, KDVZ opted to develop the solution for the Linux platform. Other critical software and tools selected by KDVZ include IBM WebSphere Application Server (to provide Web based access to the services) and IBM WebSphere Studio Application Developer (to generate Web Services out of existing applications). While the German parliament’s 2002 decision to specify WebSphere on Linux as the future direction of server operating systems for e-government platforms was the dominant factor behind its choice, Schwanbeck also sees WebSphere’s strong support for Linux as a major benefit.

SOLUTION PROFILE AND IMPLEMENTATION STRATEGY

The IBM Global Services AMS team completed the deployment of the solution after approximately three months of design, development and testing. The first phase of the deployment was the business planning stage, under which KDVZ and

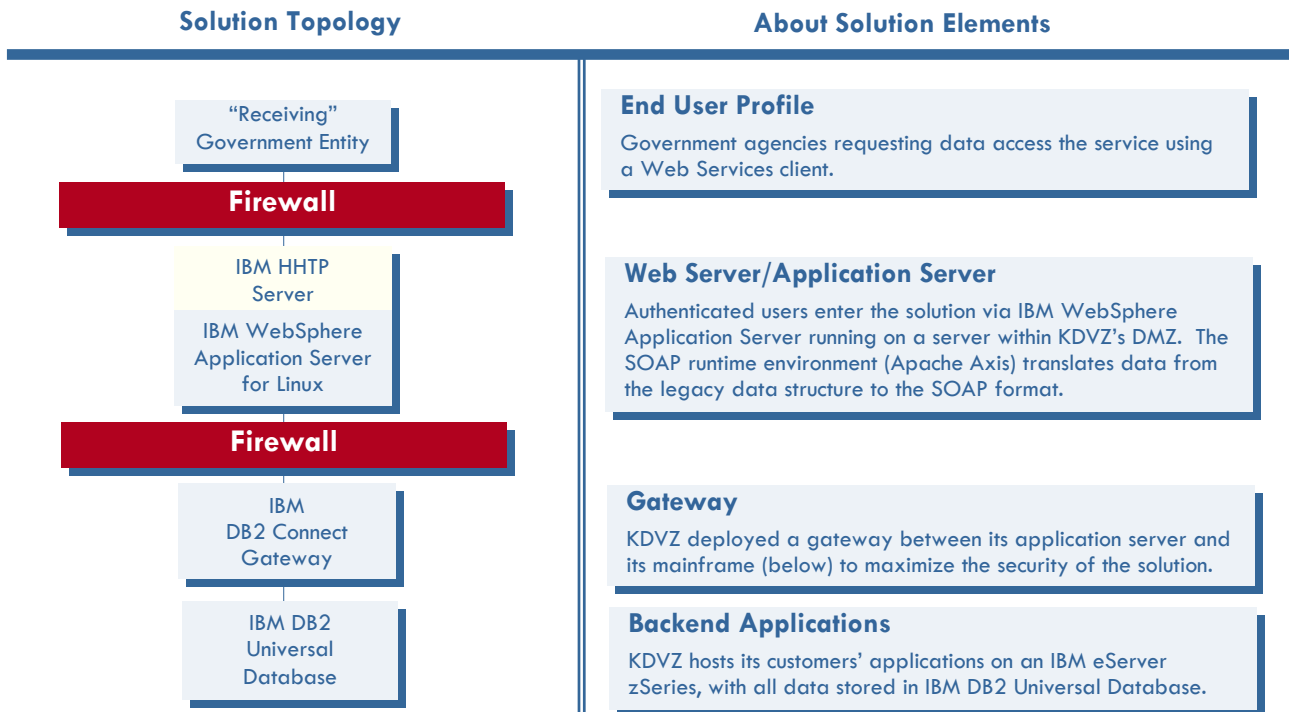
Key Components
Software
<ul style="list-style-type: none"> IBM WebSphere Application Server for Linux WebSphere Studio Application Developer IBM DB2 Universal Database IBM DB2 Connect SUSE Linux V8.2
Servers
<ul style="list-style-type: none"> IBM eServer zSeries
Services
<ul style="list-style-type: none"> IBM Global Services Application Management Services

IBM AMS mapped out which government entities would be involved in the initial solution. After this, the team identified which specific backend applications and databases would be exposed as Web Services. Once these upfront planning tasks were completed, the team focused on designing and building the actual Web Services environment. The bulk of this work involved:

- Deploying a services layer within the WebSphere Application Server environment, which generates descriptive files in WSDL (Web Services Description Language) that inform the recipient organization of the capabilities of the Web Services it has requested. Publishing these capabilities is key for “requestors” to access these Web Services.
- Deploying a SOAP (Simple Object Access Protocol) runtime environment, which translates data from the legacy data structure to the SOAP format, which is based on XML. This runtime environment (which uses Apache Axis) allows the direct communication between the client and the server.

On the client (requestor) side, IT staff also establish a SOAP runtime environment. Using the information contained within the WSDL file for the specific Web Service, the requesting agency uses a generator (i.e., a wizard) to create its own services layer, which the agency then connects to its backend application.

EXHIBIT 1: BASIC ARCHITECTURE: KDVZ’S SOLUTION



Source: KDVZ and IDC

In the current solution, a government entity seeking to access a Web Service follows a link from their site to the Business Registration site. Upon authentication, users enter the solution via WebSphere Application Server running on a server within KDVZ's DMZ. Within the WebSphere Application Server environment, the request is translated into SOAP format and sent on to a server running IBM DB2 Connect Gateway behind another firewall. [KDVZ chose this approach to maximize security by prohibiting direct user access to the IBM DB2 database (running on its zSeries mainframe) that houses all its customer data.] The request is then sent to the DB2 database. Once processed, the response is sent back to the requesting party over the same path in a format that can be readily integrated with the recipient's backend applications.

BUSINESS RESULTS

Reflective of the KDVZ's initial goal, the e-government integration project's biggest payoff is the catalyst effect it will have on stimulating the diffusion of e-government initiatives within its customer base. In this way, KDVZ is helping government entities be more responsive—both to the mandate established by the BundOnline 2005 program and to citizens' need for a more convenient, efficient and cost-effective way to access government services. That's the big picture. Within the government agencies that adopt Web services, a more granular and extensive set of benefits will result. On the IT front, these agencies can now integrate with each other at a tiny fraction of the cost of traditional point-to-point integration, enabling them to channel development resources to the building of applications that can take advantage of widespread "G2G" integration. What's more, by adopting a truly open integration framework like Web Services, government agencies avoid the significant costs associated with supporting multiple interfaces—a benefit that grows exponentially as the number of interconnected agencies grow. Dr. Wolfgang Dostal, an IBM architect who led the project, estimates that for every two interfaces a government unit maintains with other agencies, it requires an additional full-time employee to support them. "The Business Registration office would need to support about 20 interfaces if they integrated in the traditional way," says Dostal. "For agencies trying to deliver services more cost-effectively, this potential added cost deeply undercuts the value of integration. Integration based on Web Services completely avoids this added cost."

While KDVZ's new integration infrastructure positions government agencies favorably for the rapid and highly cost-effective deployment of e-government in the future, it also provides immediate operational benefits. For the Business Registration service alone, potential savings from moving to an online distribution model exceed a million dollars a year when the cost of printing, mailing and data entry costs are taken into account. This is not to mention the savings from the improved accuracy and more up-to-date information that the solution's seamless integration makes possible. By enabling government agencies to achieve solid, measurable cost savings with little integration pain, the integration infrastructure will create incentives for other agencies to adopt e-government services, thus stimulating broad-based adoption in Germany. In the end, this will result in more convenience for citizens and businesses, and a better return on the taxes they pay to support these services.

EXHIBIT 3: BUSINESS RESULTS FOR THE KDVZ SOLUTION

Business-Level Benefits	Enabling Process Changes	Linkage to Solution
Cost Avoidance	Government agencies can now integrate with each other at a tiny fraction of the cost of traditional point-to-point integration, enabling them to channel development resources to the building of applications.	Establishing a Web Services infrastructure enables government agencies to easily expose their core applications to other agencies.
Cost Avoidance	For a government unit to support 20 interfaces (an example) with other agencies would require an estimated 10 full-time employees. KDVZ's Web Services solution obviates the need for additional support staff.	Web Services enables government agencies to avoid the significant costs associated with supporting multiple interfaces—a benefit that grows exponentially as the number of interconnected agencies grow.
Cost Reduction	The Business Registration solution offers the potential to save more than \$1 million in printing, mailing and data entry cost reductions.	The Business Registration solution enables the seamless online transfer of data to other government agencies.
Cost Reduction	The solution improves the accuracy of Business Registration records, thereby improving screening capabilities.	Online transfer of data eliminates the need for receiving agencies to manually enter data..
Technology Benefits	Underlying Product or Attribute	Benefit in Action
Increased Resiliency	IBM eServer zSeries/Support for Linux	The ability to run the Web Services environment on the zSeries increases its resiliency by taking advantage of the zSeries's 99.999% availability.

Source: KDVZ and IDC

CASE EPILOGUE

In the near future, KDVZ plans to expand the solution to include more Web Services offerings and more government agencies. As the scope of the solution grows, resiliency and scalability will become increasingly important to keep up with higher performance demands. To achieve this, KDVZ could invest in additional infrastructure—but the added upfront and support costs associated with this approach run contrary to the aims of e-government and to the interests of its customers. Instead, KDVZ plans to move the Web Services solution to its flagship zSeries, running WebSphere Application Server for Linux on a separate partition. As KDVZ's Schwanbeck sees it, migrating the solution to the mainframe establishes a solid, resilient foundation for future Web Services offerings. "Moving to the mainframe gives us the opportunity to leverage the most reliable and scalable element of our infrastructure," says Schwanbeck. "We expect it to

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— Dr. Michael Neubauer,
CEO, KDVZ

save a lot of money, and it's all made possible by IBM's support for Linux on the zSeries.” Down the road, KDVZ plans to consolidate nearly all of its server-based applications—which now run on a variety of vendor platforms—onto Linux on the zSeries, making server consolidation a key part of its strategy.

Looking back on the Web Service project, KDVZ CEO Dr. Michael Neubauer sees it as major step forward both for KDVZ and for its customers: “It was important for us to demonstrate what can be achieved with leading edge technology being applied creatively in the e-government environment. By helping us pioneer these new technologies, IBM has enabled us to achieve excellent results.”

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