



DB2. Data Management Software

How DB2 for z/OS Contributes to a Smarter Planet

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IBM DB2 for z/OS

Around the world, individuals, local and national government agencies, organizations, and companies of all shapes and sizes face challenges that were never even imagined as recently as a decade ago. The world needs to get smarter in order to face those challenges head on and to succeed. Fortunately, IBM is committed to delivering technology solutions that will lead to this Smarter Planet™. One of the key products that contribute to IBM's Smarter Planet initiative is DB2® for z/OS®, which is sometimes referred to in this paper as "DB2." Regardless of whether you already use DB2 or are thinking about moving to it in the future, you are invited to read about how a wide variety of clients use this key mainframe relational database management system to achieve their own smarter-business goals.

IBM and the Smarter Planet

If you are over the age of six, at some point in your life, you have probably received unsolicited advice from parents, mentors, teachers, or managers to "work smarter, not harder." Perhaps as a parent, mentor, teacher, or manager, you have even offered this advice to others. This well-intentioned advice usually comes in response to some challenge, stress, or frustration. Perhaps you had too much work to do in too little time. Perhaps you struggled to be organized enough to make progress with your work. Perhaps anxiety over potentially poor grades or loss of a job exacerbated the situation.

As an individual, working smarter usually means learning how to set priorities, how to organize yourself and your work, how to delegate work to others when feasible, how to manage your time more effectively, and how to think "outside of the box" to solve problems creatively.

But how does an entire company, government agency, or large organization—often made up of hundreds or even thousands of individuals who live and work all around the globe—collectively work smarter?

One way for a large organization to work smarter is to take advantage of available technology solutions that augment the organization's ability to creatively solve existing problems and challenges. These same technology solutions can help organizations avoid future problems and realize new opportunities that can result in significant competitive advantages. Many IBM products provide these technology solutions, and IBM® DB2 for z/OS is a great example.

If you wonder how DB2 can bring business value to your organization, or how DB2 can make your piece of the planet smarter, you will get some great ideas by reading this paper. You will discover how several organizations, including Univar USA, have successfully used DB2 to achieve the goals of a Smarter Planet.

So let's look at what IBM's Smarter Planet initiative is all about and how DB2 is a key contributor to the four themes:

- *New intelligence*
- *Dynamic infrastructure*
- *Green and beyond*
- *Smart work*

A Smarter Planet: New intelligence

When organizations are bombarded with way too much data to deal with, they often see that data as “too much of a good thing.” Facing incredible growth in the volume of data, decision makers need new intelligence in order to make sense of data and efficiently make critical business decisions.

If you are a decision maker in your organization, think about the data that informs your decisions. How much time do you spend looking for the meaningful data that you need? How much time do you spend analyzing the data that you collect and determining whether it is even useful? How much time do you waste relying on data that is inaccurate? If you’re like most people, the answer is “too much!”

The bigger question, though, is how often do you realize—after the fact—that you made a bad decision because the data that you relied on was inaccurate, incomplete, or misleading in some way? If you wish that you had quicker access to only the most reliable data so that you could make the best possible decisions, the new intelligence theme of IBM’s Smarter Planet initiative is just what you need.

IBM believes that its technology, in general, and DB2 for z/OS, in particular, can deliver new intelligence to you and other decision makers in your organization. With DB2 for z/OS:

- *You can collect, store, analyze, and manage large volumes of information more efficiently and with greater accuracy than ever before.*
- *You gain insight into large volumes of data so that you can successfully predict outcomes and make the right business decisions.*
- *You can exploit not only your data, but also the data of others in your value chain.*
- *You optimize your business results.*

Here are some examples of how different organizations have successfully used DB2 to achieve the goal of new intelligence:

- **Healthcare**

Facing new demands based on government reforms of all healthcare providers in the country, an Asian network of hospitals knew that it needed to make major changes in its business. In addition to the government requirements, the hospital network recognized that its IT infrastructure was inefficient and plagued with redundancies. The hospitals in this network did not use a common format for medical records and could therefore not share data. As a result, a patient who had already undergone medical tests in one hospital in the network might visit another network facility later and need to repeat the tests. The result was increased costs, irritated patients, wasted time, and delayed treatment of medical conditions.

To comply with government requirements and to remedy its intrinsic problems, the hospital network has deployed an intelligent, open-standards based medical records system. This system is built on DB2 9 for z/OS, the foundation for a common repository of medical information of various types and formats. Medical records can be “tagged” to refer to individual patients. Advanced semantics technology from IBM enables the system to recognize and analyze the scientific meaning of specific terms that are found in patient records. Those terms are then processed, regardless of format, terminology, or language, into one standardized document. The result is simplified data tracking and rapid data access. This new system:

- *Enables multiple healthcare providers and facilities to efficiently share accurate patient data. Now, patients can visit local out-patient clinics rather than going to the larger hospitals, and the healthcare providers have access to all of their medical records.*
- *Supports over 10,000 patients daily and 4 million patients annually.*
- *Increases data sharing within individual hospitals and across multiple medical facilities in the network.*

Healthcare providers throughout this network of hospitals can now treat patients with far more “new intelligence” than ever before. Not only has this DB2 solution helped the hospital network comply with new government requirements, it has also substantially improved the quality of medical care that its patients receive.

- **Government**

A European government agency is using DB2 9 on IBM System z9[®] Business Class servers for its government database system. This agency is responsible for handling the security and protection of the country's economic interests, and for preventing or uncovering crimes of espionage and terrorism. Although the agency had used IBM hardware and software for some time, some of its systems ran on non-IBM software. In an effort to standardize on a single technology provider, the agency decided to migrate its non-IBM systems to run on IBM software. DB2 9 is the foundation for the solution, which takes advantage of the powerful data sharing capabilities that are available in the z/OS environment. In addition, the agency is reaping the benefit of improved capabilities and performance of its database system by relying on several DB2 Tools, such as IBM DB2 Administration Tool for z/OS and Tivoli[®] OMEGAMON[®] XE for DB2 Performance Monitor for z/OS. As a result of the migration to the IBM solution, this agency has strengthened its IT infrastructure so that it can collect and manage more data more efficiently and take more effective actions based on that data. This agency has achieved the goal of new intelligence in its efforts to protect the nation's economic interests by consolidating its data repositories on DB2.

A Smarter Planet: Dynamic infrastructure

Organizations that are most likely to succeed in today's environment are those that can expand (or contract) as the business needs demand, without any unnecessary waste of resources. An infrastructure that is dynamic is best suited for dealing with the dynamic environment that challenges companies, governments, and other organizations today.

You may wonder how to build a dynamic infrastructure, or how to transform your current infrastructure to make it more dynamic. Unfortunately, the answer is different for different organizations. However, most organizations that strive for a more dynamic technical infrastructure tend to seek:

- *Improved service, which means not only the high availability and high quality of existing services, but also the ability to meet and exceed customer expectations for dynamic access to new services*
- *Significant productivity gains through virtualization, optimization, and support for mixed workloads*
- *A reduction in storage needs through sharing, compression, and elimination of redundancies*
- *The ability to manage existing risks that are associated with security, resiliency, and compliance challenges*
- *The ability to anticipate, prepare for, and minimize new risks that come with a more connected and collaborative world*

DB2 supports the goal of a dynamic infrastructure in many ways. DB2 excels in its support of virtualization, which is basically the process of running multiple, complex workloads in a single system. DB2 also contributes to the goal of a dynamic infrastructure by its support of mixed workloads. A system with a mixed workload has multiple software products running on a single machine and operating system, thereby sharing data and computing resources. Let's assume, for example, that two companies each have multiple major IT systems to support their respective businesses:

- *Company A has IT systems that are independent of each other, running on multiple servers, on different operating systems and hardware platforms, in different locations. Company A incurs capital, energy, and personnel costs that are associated with the multiple IT systems. Company A also needs programs and programmers to deal with synchronizing and sharing data among the systems. The multiple servers are often idle, so computing and energy resources are wasted. And when demands on one server rise unexpectedly, the server cannot always satisfy the demands.*

- *Company B consolidates its IT systems in one location. Multiple databases and application programs can co-exist in one or a small number of z/OS operating systems. The capital, energy, and personnel costs that Company B incurs are significantly lower than Company A's because of the efficiencies of consolidation. In addition, these centralized systems can run DB2, CICS®, IMS™, WebSphere® Application Server, and other z/OS-based products in a single instance of a z/OS operating system. Company B has a far more dynamic infrastructure than Company A because Company B:*
 - *Utilizes the computing power of its hardware and software far more efficiently. Fewer resources are idle during nonpeak periods of demand.*
 - *Can increase computing power as needed in order to accommodate increased data growth. This is in contrast to Company A, which needs to go through a protracted procurement cycle to increase processing power.*
 - *Shares data across applications by using Parallel Sysplex® technology and DB2 data sharing capabilities in a z/OS environment. This is in contrast to Company A, which maintains redundant data and needs to manually synchronize and copy that data across systems.*
 - *Can use z/OS workload management capabilities to set and change priorities of different elements of the overall workload. For example, on a particular day each month, a CICS-IMS application is critical to the business; it can be given the highest priority so that its processing completes as quickly as possible. On other days, this application is assigned a lower priority so that other high-priority work completes more quickly.*

Here are some examples of how different organizations have used DB2 to successfully build a more dynamic infrastructure:

- **Banking**

A large Canadian bank is using the powerful data sharing functionality in the DB2 and IMS database management systems (DBMSs), taking advantage of both Parallel Sysplex and the z/OS workload manager, both of which are available only in an IBM z/OS environment. The bank recognizes that outages, planned or unplanned, are bad for its business. The sysplex acts as the back-end service provider for high volumes of account data, handling over 1000 transactions per second. Because the DB2 and IMS data belongs to the entire enterprise, not to one business unit or application, the bank frequently needs data from both DB2 and IMS to do a single operation, such as opening a new customer account. By building on the core z/OS technology and by relying on the key IBM z/OS DBMSs, the bank cites fewer missed business opportunities and increased customer satisfaction. With the help of this z/OS-based solution, this bank's focus on high availability has evolved to become a focus on continuous availability, which has enabled the bank to take advantage of new business opportunities and to make effective business decisions more dynamically.

- **Healthcare**

A medical health services organization at a U.S. public university has successfully used DB2 9 with pureXML[®] capabilities, WebSphere MQ for z/OS, and WebSphere Application Server for z/OS software. Together these solutions support the organization's patient-oriented electronic medical record system.

- *Prior to implementing this IBM solution, this organization struggled with long delays due to frequent changes to the hundreds of medical forms that it used. Medical care providers were forced to endure delays in accessing medical records of their patients, thereby resulting in delayed treatment of patients.*
- *After implementing this IBM solution, the organization reduced the time to add or change forms from a matter of weeks to a matter of hours. The number of database tables for administrators to manage declined by 84 percent, and the number of database staff needed to add schemas and data into the system decreased by 70 percent. Most importantly, medical care providers were able to access patient information in less than three seconds, thereby speeding the time for patients to be treated.*

- **Government**

A government agency of a middle-eastern country is responsible for collection, administration, investment and distribution of the country's pension fund. This agency's data was in different systems, and the applications, which had several million lines of code, were decades old. This environment was not conducive to creating the ad hoc reports that were requested by government officials, and the agency had difficulty adapting its IT system to meet new government requirements. The agency decided to move its programs and data to a DB2 9 subsystem. The relational technology provides the agency with a much more flexible data organization that is able to respond effectively to new legislation and changes in government requirements. The migration project has also helped the agency cleanse its decades-old data, which should help significantly in meeting future business needs effectively. The agency is now able to respond promptly to ad hoc requests from the government using query language and data warehouse technologies.

A Smarter Planet: Green and beyond

We've all heard the message in one way or another: The Earth's resources are limited. Collectively, we cannot continue to use those resources as we have in the past. Therefore, individuals, families, governments, companies, and other organizations need to decide how to change their behaviors so that resources are used more efficiently.

Today, organizations from all sectors, both public and private, realize that they need to do whatever they can reasonably do to reduce their negative impact to the environment. For organizations with tight budgets, the benefit of improving efficiencies generally means a reduction in cost and, consequently, an increase in profit. In some cases, a large boost in efficiencies, compared to other organizations, can result in a huge competitive advantage.

In the z/OS environment, DB2 clients can achieve or exceed their “green and beyond” goals. By taking advantage of virtualization, clients can run multiple workloads on a single z/OS system rather than deploying the more costly distributed solution, which leaves a greater carbon footprint and has higher associated energy costs. By taking advantage of mixed workloads in a single z/OS environment, DB2 clients are able to control and minimize energy costs by sharing resources rather than duplicating them for multiple distributed systems. In a z/OS environment, DB2 offers great potential to help its clients reduce energy costs by facilitating the following benefits:

- *Optimization of many business operations and reduction of storage needs through data sharing, data compression, network sharing, and elimination of redundancies*
- *Consolidation of inefficient distributed systems on a smaller number of System z[®] mainframes, which not only reduces power and cooling-related energy costs but also helps organizations achieve dramatically lower operation costs*
- *Superior performance (per kilowatt hour) of DB2 in a z/OS environment*

Here are a few examples of organizations that have achieved “green and beyond” goals by using DB2:

- **Agriculture**

A U.S. agricultural organization consolidated all of its applications from multiple stand-alone servers onto a single System z9 mainframe, which resulted in the following benefits:

- *A one-time savings of more than U.S. \$150,000, compared to the cost of adding more servers and licenses*
- *Data access improvements of 15 percent, due to the consolidation*
- *Decreased ongoing operational costs for hardware, software, and energy*
- *Simplified audits for regulation compliance*
- *Simplified disaster recovery*

- **Banking**

A large Korean bank reduced its energy costs, while also increasing operational efficiency and improving DB2 data server performance. This bank runs more than 20 IBM System z10™ Enterprise Class servers, with DB2 and a suite of IBM DB2 tools that help run the bank's business. The new foundation of green servers has bolstered this bank's business competitiveness with the following specific benefits:

- *Nonstop 24x7 server operation*
- *Reduction in total cost of ownership*
- *Smarter information technology environment, which drives cost effectiveness and energy efficiency*
- *Greater business continuity, based on a seamless disaster recovery solution*
- *Improved support for the bank's global operations*

A Smarter Planet: Smart work

Think back a few decades. We had no cell phones, pagers, or laptop computers. Fax machines, answering machines, video cameras, and VCRs were new and leading edge. Things have certainly changed, and they continue to change. With the incredibly fast changes in technology come incredibly difficult challenges to organizations that are trying to keep pace. Organizations need to find smarter ways to work so that they can be as dynamic as the challenges they face.

Solutions that can help with the smart work theme can:

- *Increase the speed of effective decision making*
- *Decrease the length of time to bring business-critical applications into production*
- *Decrease the cost of doing business*

In the z/OS environment, DB2 clients achieve the goals of smarter work by taking advantage of virtualization and mixed workloads, both of which provide significant reductions in capital and personnel costs, when compared with distributed solutions.

One example of an industry that can benefit greatly from smarter work is the healthcare industry. Healthcare systems that serve the world's population often fail to link diagnoses, drug delivery, healthcare providers, insurers, and patients. The result is increased costs, long delays, and even errors in treatment. The relational model of DB2 is well suited to the complex data in a healthcare system. In the z/OS environment, DB2 clients reap the benefits of data sharing, workload management, and support for mixed workloads, all of which help healthcare organizations provide high levels of service without spending money on unused resources. Use of referential integrity and triggers can ensure data integrity, which is critical for healthcare systems. In addition, the robust security features of DB2 protect the confidentiality of patient records, while giving easy access to healthcare providers who need that data. You can easily see that DB2 can be a major part of the solution to many of the problems that healthcare systems face today.

Here are some examples of how DB2 helps customers make their work smarter:

- **IT services**

A European IT provider that services multiple banks with hundreds of branches, more than 100,000 distributed devices, and millions of customer accounts has redesigned its infrastructure to improve operational efficiency. By using DB2 9 pureXML and IBM WebSphere Business Integration Adapter for DB2 Databases software, this company has modernized its core banking application, improving security, data integrity, availability, reliability, flexibility, and robustness. The company now experiences higher stability and faster utility performance with DB2 9, and the IBM solution has helped the company optimize the overall business performance.

- **Manufacturing**

After suffering from error-prone, paper-based processes, a Japanese manufacturing company has streamlined its business processes, accelerated document preparation, and substantially increased efficiency by using DB2 and WebSphere Application Server. The DB2 data server enables the company to effectively store, manage, and browse the many documents that it creates and relies on to run its manufacturing business. WebSphere Application Server provides a stable and available application environment. In addition, IBM Tivoli Storage Manager software helps the company retain critical documents by providing periodic automatic backups of the DB2 data.



CASE STUDY: UNIVAR USA AND A SMARTER PLANET

Executive overview

Univar USA faced a turning-point decision when faced with increased growth and a computing environment that could not meet growing information technology demands. With the help of an integrated IBM System z solution, Univar USA achieved its goal of building a smarter computing environment.

Background

As the largest North American wholesale distributor of chemicals, Univar USA is a wholly owned subsidiary of the global chemical giant Univar N.V. The company buys, sells, and distributes hundreds of chemicals, serving almost 200,000 U.S. and Canadian customers. These customers include manufacturers and distributors of a diverse set of products, such as chemicals, pharmaceuticals, foods, pulp and paper, oil and gas, inks, and adhesives.

As a distributor of chemicals throughout North America, Univar USA provides procurement, storage, and transport services from its base of 160 warehouse locations across the U.S. and Canada. With annual revenues of U.S. \$3.2 billion, Univar USA employs more than 5,000 U.S. and Canadian workers.

The challenge

Several years ago, Univar USA faced a major challenge. The company was growing dramatically, both organically and as a result of the acquisition of ChemCentral, the fourth largest chemical distributor in North America. Additional workload from Univar Canada compounded this challenge. Univar USA realized that its IBM eServer™ zSeries® 890 mainframe would not have sufficient memory or storage capacity to meet the company's growing workload demands in the future.

Univar USA had been running its business applications on IBM mainframes for decades. Since 1989, it relied on the Arthur Anderson UVX/Distribution Control System, which had been highly customized to fit the business needs of Univar USA. Univar USA was also running multiple Java™ and Linux® applications. Therefore the company wanted a platform that could host all of these applications and offer sufficient capacity to support future business growth.



After initially considering a switch to a non-IBM enterprise resource planning (ERP) solution, the Univar USA management team eventually realized that it could extend its existing environment for a fraction of the cost.

What Univar USA needed

Univar USA needed a smarter computing environment. Ideally, that environment would support the existing software configuration and be able to scale to meet future requirements. Addressing the issue of planning for future scalability, Greg Mueller, z/OS Systems Programmer for Univar USA, says, “One of the problems we’ve had over the last decade is that we were looking for a new box every 15 to 18 months. We wanted something that would stay with us for a while. The IBM System z9 Enterprise Class fit this requirement.”

This smarter computing environment that Univar USA needed would foster new intelligence throughout the enterprise, facilitating quicker and better decision making. It would provide a dynamic infrastructure that could grow (and contract) as business needs dictated. And finally, it would maximize energy efficiency and reduce other operating costs.

How IBM technology helped Univar USA achieve its goals

In response to Univar USA’s challenges, IBM provided an integrated solution consisting of:

- *IBM DB2 9 for z/OS*
- *IBM System z9 EC mainframe with Integrated Facility for Linux (IFL)*
- *zIIP and zAAP Specialty Engines*
- *SUSE Linux 9*
- *40 virtual machines for use by development and production systems*
- *CICS Transaction Server for z/OS 2.3 – 3.1*
- *IBM WebSphere MQ 6.0*
- *IBM z/VM® 5.2*



Univar USA now runs 14 DB2 9 subsystems on three LPARs. IBM DB2 9 for z/OS technology provided many benefits, including:

- A smooth migration to DB2 9 (*with all 14 subsystems migrating in a span of only five months*). As a result, Univar USA could take advantage of the many functional enhancements in Version 9 more quickly, thereby reducing the total cost of ownership.
- Many DB2 9 improvements to the company's application development environment, including:
 - Use of partition-by-growth table spaces. *Like many organizations, Univar USA relies on some packaged software that runs on DB2 in a z/OS environment. Univar USA, like other users of packaged software, typically does not know enough from the start about the data requirements of that package. That lack of knowledge complicates the storage requirements for table spaces. Frequently, consumers of packaged software are forced to "guess;" they usually guess too small (causing availability and out-of-space problems). Or, they guess too large (causing wasted space). With partition-by-growth table spaces, Univar USA reaped great benefits, especially for its packaged software. Table spaces can now grow dynamically over time, maintaining availability and minimizing out-of-space problems, while eliminating the need to define excessively large table spaces.*
 - Use of native SQL procedures. *Univar USA has multiple developers who work most comfortably in a workstation development environment. With native SQL procedures, these developers are easily able to modify, develop, debug, and deploy SQL procedures. Native SQL procedures provide a richer language and better portability from other platforms, according to Univar USA. In addition, these procedures can perform significantly faster by using the zIIP specialty engine that is available in z/OS environments. Univar USA compared their old procedures to the native SQL procedures in DB2 9; they cite a 30-40 percent performance improvement and reduction in CPU time in these procedures, especially for those with complex business logic.*



- Use of Data Studio development tools. *Java developers and others at Univar USA who are most comfortable developing in a workstation environment find these tools to be natural and easy to use in developing and deploying stored procedures. Univar USA says that the availability of Data Studio tools opens up the z/OS development environment to a whole new group of application developers. Kevin Campbell, Univar USA Application Architect, says, “IBM Data Studio enables us to bridge the gap between object-oriented design and relational database technology. By doing so, we can speed the development of high-quality applications and improve developer productivity by 25 to 50 percent.” And increased developer productivity means decreased development costs.*
- Use of OmniFind® Text Search Server. *This no-charge feature is included in the IBM DB2 Accessories Suite for z/OS. With this tool, you can do very sophisticated full-text searches with a minimal amount of z/OS platform overhead. Here is an example of how Univar USA used this tool: The Canadian subsidiary of Univar was migrating to the Univar USA system that uses DB2 and CICS. The Canadian system included a popular “Google-like” search for data about customers or products, regardless of what fields the data was in. Univar USA developed external user-defined functions that concatenate a large number of character columns within a row of user data and return a 300-400 byte string. OmniFind Text Search then indexes this returned string, and users can then do full-text searches without knowing the column names of the underlying data. These searches, which run orders of magnitude faster than traditional searches, can support Boolean operations and other sophisticated text searches. As a result, decision makers can collect data that they need much more efficiently, thereby speeding the time they take to make good decisions.*
- Use of pureXML. *Univar USA application processes generate between 10,000 and 20,000 XML messages, both internally and with trading partners. To facilitate problem resolution, auditing, and tracking of communication with trading partners, Univar USA wanted to warehouse these messages. After exploring the use of file systems and shredding, Univar USA decided to use pureXML with DB2 9. They created a table that has several traditional relational columns, plus a single XML column, which stores instance documents of multiple types. Univar USA also built a front end to this warehouse by using Data Studio Web Services. The data is rendered in HTML, with no Java or HTML coding involved. As a result, decision makers can easily search the contents of these XML documents.*



- Use of index on expression. *By creating an index on a general expression, you can enhance query performance if DB2 chooses to use that index. For example, Univar USA data is frequently stored in mixed-case, which generally limits the use of indexes. Now Univar USA can create an index on the result of the UPPER scalar function. That way, an index can be used to retrieve mixed-case data. As a result, queries against mixed-case data return results more quickly, which also decreases the time spent making decisions.*
- *Many DB2 9 improvements to the company's system programming environment, including:*
 - *Improved synergy with Univar USA's zSeries mainframe*
 - *Improved price/performance ratios as a result of DB2 support for zIIP and zAAP specialty engines*
 - *Improved efficiencies and cost savings through optimization*
 - *Improved efficiencies and cost savings through streamlined security and regulatory compliance*
 - *Reduced CPU time and cost, resulting in decreased energy costs*

This integrated IBM System z solution satisfies the overall goals of a Smarter Planet for Univar USA:

- *New intelligence. Decision makers have access to more data much more quickly than ever before.*
- *Dynamic infrastructure. The underlying infrastructure at Univar USA is now in a far better position to accommodate dynamic growth than ever before, as a result of the power of the z/OS operating system and the many functions and features of DB2.*
- *Green and beyond. As a result of more efficient use of CPU processing power, energy costs are reduced.*
- *Smart work. The overall cost of ownership and of operating their IT environment is lower than before, even though Univar USA is handling more data than in the past.*



With the help of IBM technology solutions, Univar USA achieved its goals so well that technology planners in other parts of the company have taken notice. Dean Schultz, Manager of Technical Services, Univar USA, says, “They’re now looking at what we did in the U.S. and saying, ‘They have a cost effective, scalable distribution control system and we are a global distribution control company. So why don’t we look at what we could do there?’” Thanks to the success of this effort, discussions are now taking place regarding ways to extend the solution within Univar USA as well as to other sectors of the company. “The z9 was the perfect solution for what we needed,” Schultz concludes. “No matter what the business does in the future, we have a footprint that we can grow in.”

For more information

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