"NO8DO" is More than a Rebus

Focus on Citizens Drives IT Strategy

A visitor to Seville, Spain, quickly notices that NO8DO is found on many of the city's landmarks—from monuments, including the tomb of Christopher Columbus, to the municipal sewer and water system, to taxis and buses, to sidewalks and bike racks. The motto of Seville, NO8DO, is a rebus (a word puzzle that uses a pictogram to represent a syllabic sound), combining the Spanish syllables "no" and "do" and a drawing in between—the figure eight. The figure eight stands for a skein of yarn—or madeja in Spanish. When read aloud in its entirety, the combination becomes "no me ha dejado" in Spanish or "it (Seville) has not abandoned me" in English.

By Patrick E. Spencer

Though a certain amount of embellishment has taken place over the years, the legend is that NO8DO originated in the 13th century during the reign of Alfonso X ("The Wise"). When the king's son attempted to usurp the throne from him, the citizens of Seville remained loyal to the king. Alfonso X rewarded the loyalty of Seville by bestowing the phrase NO8DO upon them.

The high esteem Alfonso X held for the citizens of Seville, the capital of the autonomous community of Andalusia located in southern Spain, is embodied by Servicio Andaluz de Salud (SAS) that provides healthcare services to the approximately 8.3 citizens of Andalusia. This focus on the citizen cascades to the charter of the IT organization. "The objective behind the public healthcare system is always the citizen," says Ana Ceballos, deputy director of information technologies at SAS. "Operational costs are a secondary, underlying objective, but the citizen is always in the forefront."

Putting the citizen-patient first

When Ceballos was appointed two years ago, she inherited a highly focused and talented team that included Adolfo García, the head of Information Systems Services. García joined SAS approximately six years ago and has overseen the transformation of the organization's information security and infrastructure systems.

The professional careers of Ceballos and García both originated in the private sector and outside of healthcare. Ceballos explains that the difference between the private and public sectors is that customer service and operational efficiency are synonymous in the private sector, whereas the quality of services to the citizen is always the primary driver in the public sector.

The demanding nature of the SAS IT infrastructure was what struck García, who started his career in

the telecommunications sector and then served as a business consultant before joining SAS. "The biggest challenge was in understanding the business and the accompanying technology requirements, which quite frankly are very demanding," he says.

The majority of the IT services SAS provides are essential to the business. "As IT has become more critical and involved in the delivery of care, the importance of maintaining 24×7×365 systems availability has become a key objective," Ceballos says.

Diraya—shared knowledge transforms care delivery

In 1998, SAS launched an effort to revolutionize how it delivers care to its patients. SAS sought to consolidate data across all of its information and care management systems. The prior IT environment consisted of various silos of information that largely could not be shared. This was inefficient and impeded health care providers from delivering optimal levels of care to patients. "The databases were distributed across different systems with little integration," Ceballos says. "This gave rise to communication issues whenever patients would move from one facility to another and ultimately to a degradation in the services provided."

The executive leadership team at SAS wanted to deliver shared knowledge across all touch points. The solution, a medical record model named Diraya—which means "knowledge" in Arabic—permits reference to and annotation of data on all devices at all care levels—primary care, specialized care, emergency rooms, and hospitalization. Diraya consists of three basic components: a User Data Base based on an Oracle database, which provides every citizen with a Single Andalusian Health Number; a Centralized Operator

Access Module, which provides healthcare providers with a single online entrance; and a Structure Module, which enables seamless integration across all healthcare departments. The User Data Base portion of the solution consists of 10 different Oracle databases containing approximately four terabytes of data.

Beyond the three basic components, the following services are also imcluded in Diraya: patient health information, which includes a number of different modules that facilitate clinical decision making; an electronic pre-scription service that streamlines doctor-pharmacist communications and reduces the number of medication prescription visits; an appointment service that man-ages primary care, outpatient specialized care consultation, and

Ana Ceballos (left), Deputy Director of Information Technologies, and Adolfo García, Head of Information Systems Services

diagnostic testing; and a public health system virtual office service (InterS@S). Additional data ware-housing and business intelligence systems were also added, providing

The Autonomous Community of Andalusia

Autonomous Communities in Spain: The Spanish constitution (passed in 1978) established 17 autonomous communities that are responsible for schools, universities, health, social services, culture, urban and rural development, and, in some locations, policing.
Provinces: Each autonomous community is comprised of a number of provinces—eight in the case of Andalusia.
Population: Approximately 8.3 million
Famous Claims: Bullfighting and the flamenco, a famous dance, originated in Andalusia
Coat of Arms: Young Hercules between two lions standing beside the pillars of Hercules, which represent either side of the Strait of Gibraltar.

SAS the ability to compile aggregated reports and data sets from disparate systems and data stores.

Standardizing creates operational efficiencies

Historically, SAS has relied on various Symantec technology solutions, initially within the data center with products such as Symantec NetBackup for data protection, Veritas Cluster Server and Veritas Storage Foundation for Oracle RAC for high availability, and Veritas Storage Foundation for storage management at the device. The installation was extended in

Server. The SAS IT team added Veritas Backup Reporter in late 2009 for more effective management of their storage environment.

Being a public entity and thus required to issue request for proposals (RFPs) for every new IT acquisition, SAS maintains a highly heterogeneous IT environment. Its server platforms include, for example, Solaris on Fujitsu and Sun servers and Red Hat Enterprise Linux, Novell SUSE Linux Enterprise, and Microsoft Windows on HP servers, among others. "Symantec's data center solutions and their support for various server platforms, oper-

Foundation, seeking to address business continuity requirements, the SAS IT team made a decision to move to a dual data center infrastructure strategy—the existing one in Seville and a new one in Malaga. A total of approximately 500 servers reside in each data center. The Seville data center powers the western Andalusia healthcare facilities, while the Malaga data center powers those in eastern Andalusia. However, for business continuity, both data centers are configured to handle a complete failover of all systems from the other data center.

late 2008, when the SAS IT team standardized on NetBackup— previously one of two solutions used for backup and recovery—and deployed Storage Foundation and Cluster Server beyond their UNIX environment to include Linux and Microsoft Windows platforms.

In addition to enabling compliance with the Spanish Data Protection Act, standardization of backup and recovery on NetBackup cut backup windows by 50 percent and reduced the amount of time required to manage backups by 2,000 hours annually. A total of 22 different partitions on the Sun Solaris servers powering the 10 different databases are configured as active-active clusters using Cluster

ating systems, and storage devices provide us with significant flexibility," says Jesús Romero Muñoz, the head of business and infrastructure at SAS.

As SAS is in the process of evaluating virtualization technologies, the heterogeneous virtualization support in Symantec NetBackup, including the enhanced functionality in NetBackup 7.0, is an important enabler. "Vendor lock is not an issue for us as we evaluate different virtualization technologies," García says.

New data center—data and servers not abandoned

In late 2008, at the same time SAS extended its use of NetBackup, Cluster Server, and Storage

For the launch of the new data center in Malaga, the SAS team leveraged the expertise of Symantec Consulting Services. Symantec consultants helped them define a migration strategy and architectural configuration for business continuity. In the case of the former, the two teams used Veritas Volume Replicator to replicate data across the approximately 560-kilometer (350-mile) distance between the two data center sites. The SAS IT team also added Symantec Residency Services to help with the management of Volume Replicator in conjunction with Altiris Server Management Suite. The Symantec Resident will

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work alongside the SAS IT team providing managed services for the next year.

The entire migration of data from Seville to Malaga was completed in less than two weeks, a feat the IT team indicates would have been impossible without Volume Replicator. "It was an indispensible tool," indicates Diego Manuel Alonso, infrastructure and applications manager at SAS. "It would have required a significantly longer time to complete the migration and would have incurred more cost, not to mention that we were able to verify the data was exactly

without the Altiris solution. They are also using it for ongoing automated patch management. "Altiris Server Management Suite allows us to manage provisioning, reimaging, and patching of our data center servers in an automated manner that saves us significant IT staff time," Alonso says. "It not only reduces cost but drives significant operational efficiencies through automation."

Many endpoints make security critical

The SAS IT team moved to Symantec AntiVirus for endpoint security

vulnerabilities that could have a dramatic impact."

More than 30,000 endpoints have been migrated to Endpoint Protection to date, with the anticipation that the migration will be completed by mid 2010. The antivirus and antispyware features are used across all endpoints. Symantec Consulting Services helped the SAS IT team define policies for different clients, and additional features such as personal firewall and intrusion prevention are being customized per each client grouping. A Symantec Resident was also added to provide ongoing management support. In addition to reducing IT risk, the upgrade to Endpoint Protection is streamlining management of endpoint security for IT staff.

Holistic endpoint management

The SAS team acquired Altiris Total Management Suite in late 2005, including Altiris Client Management Suite for patch management, provisioning and reimaging, and remote management. This proved useful with the upgrade to Endpoint Protection, as the team was able to leverage it to automate much of the process. The deployment of Altiris Client Management Suite is delivering tangible results for García and his team. For example, the remote control feature allows them to save valuable travel time to remote locations, as they are able to remotely manage updates and remediation. In the case of client provisioning, an estimated 22,500 hours annually are saved with Altiris Client Management Suite. Approximately 30,000 hours are saved annually in reimaging time.

The SAS team also rolled out Altiris Service & Asset Management Suite when they acquired Altiris Total Management Suite. "We are

> ❝Budgetary constraints resulting from the economic downturn simply increase the importance of business and IT alignment.❞
>
> *– Ricardo Franco, CFO, Servicio Andaluz de Salud*

the same upon arrival as upon departure." Alonso specifically notes that the asynchronous replication of Volume Replicator allowed them to maintain database and application consistency. And now that the two data centers are in production, the IT team is using Volume Replicator to replicate data between the two locations for disaster recovery.

For the provisioning of a new set of standard images in the Malaga data center, the teams from SAS and Symantec used Altiris Server Management Suite. As the process was largely automated, the team was able to complete the provisioning process in less than two weeks, a task that would have taken several months

following an attack in 2007. The virus mutated and shut down various systems, prompting SAS to engage Symantec for help. Symantec Consulting Services worked with García and his team to remediate the infection and get the systems back online. In mid 2009, as part of a larger refresh of the SAS IT environment, García and his team began upgrading approximately 50,000 endpoints—clients such as desktops, laptops, and various devices and data center servers—to Symantec Endpoint Protection. "Security is a very critical element of any organization, and that is certainly true for SAS," García notes. "Neglecting any aspect of security could quickly create

Ricardo Franco (upper left), Diego Manuel Alonso (upper right), Jesús Romero Muñoz (middle right), Ana Ceballos (lower right), and Adolfo García lower left)

▶ SAS: The Second Largest HMO in the World

History: Founded in 1986
Facilities: 33 hospitals, about 1,500 primary health centers, and more than 100 specialized health centers
Employees: Nearly 83,000 (almost 19,000 in primary care and 65,000 in specialized care)
Citizens Served: Approximately 8.3 million
Facts: 65 million medical visits, 500,000 surgical operations, and nine million medical emergencies annually
IT Organization: 40 employees and more than 1,800 contracted resources
Website: *www.juntadeandalucia.es/servicioandaluzdesalud*

able to see what types of applications are deployed and on what machines," García says. "Moving forward, we plan to begin identifying instances where we own too many licenses, which will enable us to reduce cost."

Cross business-IT alignment

Aligning IT with business objectives is a key focus for Ceballos and her team. "We reside in a very dynamic business environment; everything from process improvements, to new therapies, to new ways of treating patients, to new tools for our healthcare providers," she says. The 2008-09 economic crisis makes this even more difficult to achieve. IT governance is particularly important in helping to ensure cross business-IT alignment and compliance with different regulations and policies. "Symantec Residents, coupled with Symantec Business Critical Services, enhance our ability to collaborate with the larger Symantec team," García observes. "Their support certainly helps us in our efforts to align our business requirements with the right technology solutions from Symantec."

The different Altiris products are playing an important role in helping SAS to gain deeper insight and tighter management of its different IT processes, according to García. The SAS IT team is in the process of adding Symantec Control Compliance Suite and Symantec Security Information Manager to further enhance their efforts around IT governance. "We have over 100 applications in deployment and having the right software management tools in place is essential in efficiently managing them," Ceballos adds.

"Budgetary constraints resulting from the economic downturn increase the importance of business and IT alignment," observes Ricardo Franco, chief financial officer for SAS. Prioritization and seamless project execution are critical in this scenario. "Ana and her team are successful because they have a keen understanding our business objectives and are able to map those against available technology requirements," he concludes. ■

Patrick E. Spencer (Ph.D.) is the editor in chief for CIO Digest *and* The Confident SMB *and the author of a book and various articles and reviews published by Continuum Books and Sage Publications, among others.*

▶ Symantec Prescription

> Symantec Endpoint Protection
> Symantec NetBackup
> Veritas Cluster Server
> Veritas Storage Foundation
> Veritas Storage Foundation for Oracle RAC
> Veritas Storage Foundation for Windows
> Veritas Volume Replicator
> Altiris Server Management Suite

> Altiris Client Management Suite
> Altiris Service & Asset Management Suite
> Symantec Control Compliance Suite
> Symantec Security Information Manager
> Symantec Consulting Services
> Symantec Residency Services
> Symantec Education Services
> Symantec Business Critical Services

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