City Government of Buenos Aires Better Serves Its Citizens

A New SAP Platform Modernizes How the City Maintains Public Spaces

by **Lauren Bonneau**, Managing Editor

When drivers see construction on the street ahead, their first reaction is likely frustration at the resulting traffic and delays. Most of us don't consider roadwork as a necessary operation that helps ensure citizen safety on the roadways. However, this is the exact rationale behind these types of projects. Every city must maintain its roads and other public spaces so that these areas are clean and safe for residents. And the larger a city grows, more and more pieces need to be managed and maintained.

For example, Buenos Aires, the capital of Argentina, has about 3.5 million people entering the city daily, as reported by the city's Sub-Secretary of Transport. The capital's population is estimated at 3 million inhabitants, according to the 2010 census, and its urban agglomeration, the Greater Buenos Aires, is around 13 million. This makes it the second largest urban area in South America (and the Southern Hemisphere) and one of the world's 20 largest cities (with a population smaller than Mumbai, Los Angeles, and Beijing, but larger than London, Paris, and Chicago).

Operating as an autonomous city, Buenos Aires encompasses a metropolitan area of almost 2,000 square miles that the city government, known as the Gobierno de la Ciudad Autónoma de Buenos Aires (GCBA), must maintain. This includes approximately 700,000 objects: 450,000 trees, 125,000 lights, 54,000 sidewalks, 30,000 drains, and 27,000 roads. One particularly significant road is Florida Street, a popular pedestrian walkway in the heart of the city that spans about 10 blocks and is an important commercial and tourist attraction.

The Environment and Public Spaces Ministry is the sector of GCBA that is responsible for managing and maintaining all aspects of work performed on public areas of the city, such as landscaping public parks, cleaning and replacing light bulbs in street lamps, filling potholes in city streets, emptying trash receptacles, and repairing bus stop shelters. The ministry works with various suppliers and contractors to perform this work, and has an annual budget of more than AR$4,300 million to complete these tasks.

The Real Need for New, Updated Systems

Management and administration of the public spaces sector is open to public suggestion and scrutiny. The ministry fields service requests and complaints that are submitted daily (by phone, email, internet, and mobile applications) from local citizens and other organizations — including residents who report uneven sidewalks, a water company that needs to tear up a street to lay new piping, or an electric company that needs to cut back trees around electrical wires, for example. All of this work is regulated by the ministry. Proper permits need to be obtained before work commences, the complaints should be addressed and answered, and the work must be documented. Each year, the ministry has roughly 190,000 claims to investigate, 150,000 failures detected upon inspection, and 150,000 contractors hired to complete the work.

Previously, the ministry's 3,000 employees had no integrated system to properly regulate this work and communicate specifications to contractors. To accomplish their tasks, they used mostly Microsoft Word, Excel, and Access — solutions that were not effectively supporting management of the ministry's operations or the routing of service requests to the appropriate departments for quick resolution. These mostly manual and non-integrated processes greatly affected maintenance and planning decisions.

"All our contracts were on paper, and there was no active control of what was being done. We couldn't administer claims or answer citizens efficiently or effectively because we had no execution protocols or administrative processes in place," says Rodrigo Silvosa, General Director of Control Management for the Environment and Public Spaces Ministry sector of GCBA. "Without any

At a Glance

Goal: Adopt an integrated system to properly regulate service requests submitted by citizens and work performed by contractors in the public spaces of Buenos Aires

Action: Implemented SAP ERP functionality (among others), customized to fit the city's unique needs

Benefits: Improved response to citizen requests as well as supplier relations; streamlined administrative processes and data management; and enabled preventive planning and more transparent budgeting

quality measures, payments to suppliers took five months or longer, which created administrative issues and delayed action to remedy problems. We wanted to build an infrastructure where our team could inspect the quality, deadlines, and execution of the work to be carried out in the public spaces, enabling us to be more in control of projects and have more transparent reporting."

Without the information or ability to plan what it needed, it was difficult for the ministry to manage operations and obtain correct information in a timely fashion to enable faster decision making. The ministry knew it needed to transform how it operated, but required assistance to reach this goal. As it looked for a solution that would provide the appropriate control of operations as well as quality, integration, and continuity, so began a project to modernize the sector's IT systems — an IT project that would be one of the most complex and risk-intensive of any in the city's history.

Three Phases to a Modernized Infrastructure

To begin the complex and historic project, the ministry spent a year studying and comparing the different business processes in place at its various departments. "We developed a list of core shared processes — from how we log complaints to how we pay contractors — based on the cycles of standard industrial processes," says Silvosa. "After that, we searched for a tool that could accommodate the parallel processes we selected to use throughout the organization moving forward."

Another crucial decision at the onset of the project was selecting a partner to work with. After an open competition in 2009, the ministry chose Deloitte Consulting to help identify and implement a scalable and flexible IT system to support the sector's operations, improve coordination among the multiple departments, streamline administrative tasks for faster service response, and move from a reactive approach for complaint response to more preventive planning.

After analyzing the ministry's needs, Deloitte recommended a three-phased implementation approach to customize SAP ERP to fit the ministry's business processes, which are very similar to those of an industrial plant, and to integrate data across multiple departments. (For more information about Deloitte's involvement, see the sidebar at the end of the article.)

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Phase One of the project focused on the permit process for roadway and sidewalk construction. The changes in this phase completely automated the previously paper-based permit process and allowed for smooth integration to contractor information in non-SAP back-end systems. To handle integration with contractor information, this phase of the project required a dual implementation of SAP Customer Relationship Management (SAP CRM).

Phase Two involved an integrated maintenance system to manage service requests received at the call center regarding incidents concerning streets, sidewalks, parks, and trees, as well as responses to these requests. The SAP ERP functionality for plant maintenance was customized to handle the work order management aspects and preventive maintenance, and the material management functionality was customized for the purchase management aspects. With the new functionality, departments can now generate their own work orders and also manage purchase orders and contracts. Because the SAP ERP system is linked to a CRM system built in house for claims, departments can communicate with the residents who filed the requests more accurately and quickly through an automated process.

Phase Three expanded the system to include the three departments overseeing lighting, sewer systems, and shelters. This phase included a rollout of the warehouse management functionality of SAP ERP to coordinate the handling of equipment the ministry must maintain. It also involved an implementation of SAP NetWeaver Process Integration (SAP NetWeaver PI) as the application to tie everything together, SAP NetWeaver Business Warehouse (SAP NetWeaver BW) to consolidate data, and the SAP Mobility Platform to deliver applications to workers in the field.

Edgardo Cenzón, Urban Hygiene Undersecretary, explains why the phases were broken down this way: "After identifying the processes and systems and building the infrastructure so the systems worked, we focused first on the areas perceived to be our weakest: streets, sidewalks, and trees. Most of the claims and complaints from citizens were related to the state of those objects and the performance of their maintenance. The SAP software proved to be a reliable system for managing those issues, so when we felt comfortable with those areas, we continued our SAP journey and rolled out more functionality."

The Results Are In

The Environment and Public Spaces Ministry sector of the Gobierno de la Ciudad Autónoma de Buenos Aires (GCBA) is experiencing many high-level benefits from its SAP project:

- The ministry is better able to integrate information to respond more quickly to citizen needs through centralized incident management, permit registration, and purchase management.
- With the streamlined administrative processes and automated back-office functions, the ministry can take control of its operation and make more timely decisions.
- Supplier relationships have been improved, as ministry workers can now better assess contractor work performance and effectively communicate feedback.
- Due to improved data access and recording of project progress, the ministry can track maintenance history on specific objects and equipment, which helps with planning budgets.

Currently, just three years after the start of the project, all of the ministry's departments are integrated onto the new IT platform, and according to Cenzón, they will continue to grow the SAP landscape. "We plan to implement the logistics functionality in SAP ERP for garbage collection, recycling treatment, and related warehousing," he says. "We also plan to take more advantage of the SAP NetWeaver BW features and profit from the real-time dashboarding capabilities."

Dashboards Provide Real-Time Metrics

The ministry so far has built more than 30 dashboards that take data from SAP NetWeaver BW and allow for real-time analysis of the information: Half of the dashboards measure how the ministry's contracted work is budgeted and executed, while the rest provide accurate insight into the status of submitted service requests and how the ministry is responding to these claims.
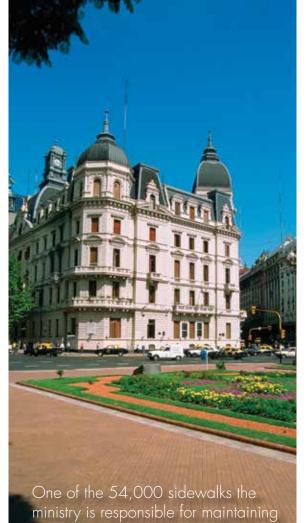
Using these dashboards, departments can run reports and perform analysis to see the total number of claims for the year or for a month, for example, and make comparisons month over month. They can drill down to see how many of those claims were just for tree maintenance compared to street construction. They can drill down even further into the status of the claims for each area to see how many street complaints have been verified or how many tree issues were resolved.

"We can clearly identify and monitor the incoming, pending, and outstanding claims day to day and determine how many have been logged or resolved and what corresponds to each of the areas," says Silvosa. "The claims are not all equal and therefore require different kinds of intervention. On the other hand, we can estimate with some accuracy the investment required for the needed work and the areas where we should pay more attention or be more assertive."

For example, in February 2012, the ministry contracted to perform around 30,000 square meters of sidewalk construction — work that was completely unrelated to residents' complaints. Compare this work to the following calendar year, where almost 60,000 square meters of sidewalk construction was completed — double the amount of the previous year. An even more staggering difference is that nearly 100% of this work was related to claims from residents.

The SAP implementation has dramatically changed the way the ministry is able to resolve claims. Each month, as the system becomes more and more integrated and adopted by business users, the number of claims that the ministry resolves skyrockets. For example, in March 2012, the ministry addressed less than 100 claims. In March 2013, that number jumped to 1,400 complaints addressed and resolved.

"With the metrics and dashboards, we can group information for more reliable decision making and see exactly how much work has been done and how much more is left

One of the 54,000 sidewalks the ministry is responsible for maintaining

to do," says Silvosa. "In this sense, we are inspired by the future challenges."

The Benefits of Automated Processes

Already, the ministry is seeing major impacts from the project, due in large part to the shift away from paper-based processes. Prior to the SAP implementation, the claims management process was completed on paper, and there was no central system for storing complaint or contractor information. This meant ministry workers operated in a reactive environment, focusing mainly on responding to complaints. But now, employees can be more proactive. "Because the SAP system provides an inventory of the objects and a geographical data model, we can concentrate mainly on preventing maintenance," says Silvosa. "And in cases where we still need to be reactive to complaints, we are much faster and more precise now in our responses."

The claims-entry process itself has undergone improvements. Before, the first response to a complaint was paper-based and often didn't exist at all. Some citizens had stopped filing claims because they had little confidence that the issue would be addressed. Now, in addition to phoning complaints into the call center, residents can log claims in a portal interface that integrates with the SAP system and keeps them informed of the work's progress in real time. Citizens can review the work order, contractor, date, and other claim

information. And ministry workers use dashboards to measure and track complaints daily. Every claim must be addressed within a certain time period, and contractors must comply with the specified deadline or else they are penalized with a fine applied directly through the SAP system.

"Today, every complaint receives a response within one or two days. That doesn't mean the repair happens in two days. The problem is recorded in the SAP system in real time once the claim is made, and then we can plan the maintenance to be completed in a few days," Silvosa says. "Also, the dashboards can identify bottlenecks. If we find that claims in one area of the city are not being resolved within a certain period of time, we can decide to either increase the investment and strengthen the work team, or change the execution priorities so that indicator goes back to normal."

When it comes to planning city maintenance and repairs, the now automated process has more than doubled the ministry's productivity. "In 2012, after the SAP implementation, we did 600,000 square meters of sidewalk repair and 1.5 million square meters of construction on the streets themselves. Without the SAP software, we maybe did a maximum of 400,000 square meters of street construction," Silvosa explains. "When everything was paper-based, these repairs were not related to what people were requesting. The contractors would basically decide the work they would complete, and those repairs didn't necessarily relate to the complaints or claims that were coming in from the citizens." With better visibility into claims themselves, the ministry can ensure that repairs are actually addressing citizen complaints.

And of course, more visibility means enhanced, transparent reporting capabilities. Because there is no more paperwork, reports are now seamlessly forwarded internally to all pertinent stakeholders and easily tracked. "Thanks to this reporting, we have reshaped the entire organization, from top to bottom. Our main work now is

change management," says Silvosa. "Cultural change is what's next on the agenda, and we've already put forth serious efforts to achieve this goal. We spent 40% of our SAP investment on training programs for the 800 SAP users to learn to use the new system."

Parting Words

According to Silvosa, the ministry's processes have gone from complicated to problem-free. For example, where work orders and payments for contractors were previously communicated by phone, now the coordination is much more precise. And contractors are happier because they are now paid within 30 days. But he says that the biggest business benefit is the new budgeting transparency, which means that people aren't relying on guesswork anymore. "It's much easier to foresee budgetary issues because you know you're getting trustworthy data every day," he says. "Where before, we were blind — now, we can see."

Silvosa offers this piece of advice to others considering a similar implementation: "The most important decision you will make is choosing a reliable and trustworthy partner — one that delivers results and can create the synergy between SAP, the product, and the work team — no matter what happens. SAP is one of the best software providers in the world, but the partner is as strategic as the product."

While at the onset of the implementation project the finish line seemed like an impossible goal, the ministry believed that it was achievable through close collaboration, commitment, and dedication.

"Once we chose the product and partner, we had deep conviction that we could achieve our objectives despite the high risk of the project," Silvosa says. "As the famous quote says, 'Boldness has genius, power, and magic.' We believed we could undertake a bold project of this magnitude, so we set off and ideas started flourishing. And all of this would not have been possible without that deep initial commitment of the whole team." ∎