Miami-Dade County:
Delighting Citizens with Seamless e-Government

An On Demand Business Case Study sponsored by IBM

Becoming on demand

When the citizens and businesses of Miami-Dade County issued a call for a more responsive, seamless way to do business with the County, it listened—and acted. In rolling out a new e-government system, the County shook up an established order based around rigid department processes by integrating, streamlining and personalizing them. Integral to its success was a flexible, innovative integration framework based on open standards. The system has made Miami-Dade more responsive to its citizens and business, while laying the groundwork for broad process transformation in the future.

Why IBM

"We needed a partner that could understand our problem, provide the open technologies we wanted to build on and bring the experience to put it all together. IBM was well positioned to meet these challenges."

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THE MIAMI-DADE COUNTY SOLUTION at a Glance

BUSINESS DRIVERS	**Challenge**	Miami-Dade is Florida's largest and one of its most rapidly growing counties. In recent years, citizens and businesses issued a vociferous call for more convenient access to County services. Far too often, citizens and businesses needed to navigate a complex path between multiple agencies and departments for tasks such as permitting, license renewals and other routine County business. This departmental fragmentation was both a symptom and a cause of underlying process inefficiencies that created roadblocks for the County's constituents and decreased the productivity of County staff. Providing citizens and businesses with the services they need when they need them required a cost effective, workable way to make departments work as a seamless whole.
	on demand Business Rationale	Enabling citizens and business to interact seamlessly with the County posed a number of challenges. First, the County needed a responsive system on the front-end that could match the needs of a diverse constituency with an equally diverse set of resources. Internally, the County needed a way to integrate departments that was both flexible enough to adapt to the department's diverse systems without having to change them and scalable enough to grow over time. The County's departments also needed a way to share and publish information to make it available to citizens faster.
BECOMING ON DEMAND	**Business Process Adaptations**	With the assistance of IBM Business Consulting Services, Miami-Dade created an e-government solution that redefined the way services were offered to constituents. While the old system mirrored the "siloing" of information that prevailed across departments, the new system began breaking down these silos by allowing new processes to be built around the citizens needs. The new system also enables the County to sense individual users' needs and respond with the service they need when they need it. Internally, the system's use of open technologies like XML allows for rapid delivery of new e-government services, while advanced systems management and a consolidated base of IBM servers makes the system highly resilient.
	on demand Operating Environment	Miami-Dade County's solution is a portal that integrates with legacy applications via an open, Web Services-based framework as well as a content management platform. The solution, whose key software elements include IBM WebSphere Portal, Interwoven TeamSite, IBM WebSphere MQ, IBM Rational development tools, IBM Tivoli SecureWay, IBM Tivoli Directory Server and IBM DB2 Universal Database, runs on IBM eServer pSeries and zSeries servers.
ON DEMAND BENEFITS		• The number of overall visitors to the portal increased by more than 50 percent in the last year to nearly 10 million. • Overall, the County processed 60,000 electronic payments totaling more than $4 million in revenue. • Consolidating its large server cluster enables the County to diagnose and correct problems faster, improving the solution's availability. • By integrating with Web Services, Miami-Dade expects to reduce the costs of managing the system by more than 25 percent. • A new content management system enables a more streamlined publishing workflow, getting information out to citizens faster.

SITUATION ANALYSIS

Background

With a population of 2.5 million, Miami-Dade County is Florida's largest. The County owes much of its steady growth to its renowned climate as well as its unofficial status as the "Gateway to Latin America and the Caribbean." As its population has burgeoned, so have the governmental resources needed to support it. A growing population means more cars to register, more licenses to renew and more building permits to file—the list, of course, goes on. As is typically the case, Miami-Dade's population growth over time led to more size and bureaucratic complexity within local and County-level governments. And as bureaucracy increases, the burden on citizens and business tends to grow along with it. That's the standard storyline.

Business Drivers: Heeding the Call for Convenient Services

Where multiple departments shared a role in delivering a particular service, there was the tendency for each department to be blind to the activities of the others. Poor interdepartmental coordination had also spilled over into its Web content management practices.

But along the way, something changed in Miami-Dade that promised to alter this dynamic. Citizens and businesses in the County began asking for a different way to do business. They wanted to spend less time waiting in lines, to fill out fewer forms and to have services that conformed to their needs and lifestyles—not to the operating hours of branch offices. It was, in short, a clear message from the County's constituents that they expected a higher standard of service, one that rivaled the customer-focused services that they had become accustomed to in the private sector.

While the call for more convenient services was hardly unique, Miami-Dade's rapid and vigorous response to it was. To identify obstacles, the County took a close look at the processes that citizens and businesses had to follow in their dealings with the County's 30,000 employees across 40 departments and agencies. What they found was an often-redundant set of processes that forced constituents to follow labyrinthine paths between various departments, agencies and municipalities. The case of commercial building permitting was especially glaring. The County's study revealed that builders had to pass through no fewer than seven points of review for their plans, involving five points of payment. Even payment schemes were uncoordinated, with some only taking checks and others allowing credit cards. Building permitting typified a more general problem with the County's service delivery processes—namely, in cases where multiple departments shared a role in delivering a particular service, there was the tendency for each department to be blind to the activities of the others. For citizens and businesses on the receiving end, this meant valuable time spent traveling to branches and waiting in line.

While department-level processes imposed pain at the "brick-and-mortar" level, Miami-Dade's early online initiatives also fell short. Its lack of interdepartmental coordination had, not surprisingly, spilled over into its Web content management approach. For the most part, departments went their own way with the look-and-feel of their sites, the technology needed to run them and the staff needed to support them. It was, in effect, the perfect recipe for the "siloing" of department-level information within the overall County government. Online resources were

organized in a way that reflected departments' internal operations with little or no regard for the citizen's online experience. Given the broad array of services handled by the County, citizens faced a daunting task of navigating what had become a crazy quilt of online resources—where solving their problems often meant "connecting the dots" between departments. The flip side of the decentralization problem was its inherent inefficiency within the various departments. Because the County lacked a common content management process, department staffers were forced to employ cumbersome, *ad hoc* approaches that resulted in long cycle times for content creation, editing and publishing. This not only taxed departmental resources, but also made it harder for staffers to respond to changing developments and provide citizens with the most up-to-date information.

To truly virtualize a service such as permitting for citizens, Miami-Dade needed to pull together the necessary resources from various department, yet mask its underlying complexity. This meant a flexible, open integration framework.

Cognizant of the rising demand for more and better access to its services, Miami-Dade realized it was ill-equipped to meet it. What was clear was the need to be responsive to the diverse and dynamic requirements of the County's individual citizens and businesses. Overall, the situation called for a new, more customer-centric way for Miami-Dade to present itself to its constituencies. To achieve this, the County needed to enable itself to recognize and sense the needs of citizens at the point of contact, and, in the backend, to configure its resources to respond seamlessly and efficiently to these needs. Put another way, Miami-Dade needed to give its constituents the information and transactions they needed when and how they needed them—and not allow established internal practices or boundaries to get in the way.

But blurring department boundaries and providing seamless access required the County to bridge the gaps in systems and processes that decentralization had created. Indeed, to truly virtualize a service such as permitting for citizens, Miami-Dade needed to pull together the necessary resources from various departments, yet mask their underlying complexity. This meant an open integration framework that was flexible enough to accommodate the wide variety of platforms that coexisted within the County without having to change them. Openness was also critical to minimize support requirements and maximize the speed at which these connections could be made. While traditional point-to-point integration was technically an option, it was costly to support and required the County to tie up its scarce resources—thus limiting the flexibility of its IT skill-set. Likewise, its lack of scalability would constrain Miami-Dade's ability to roll out new services quickly. The County, in short, needed a solution whose grounding in open standards like XML would make interdepartmental integration fast, easy and inexpensive to support.

MOVING TOWARD ON DEMAND

With the assistance of IBM Business Consulting Services, Miami-Dade created an open standards-based e-government solution that broadly redefined the County's approach to delivering services. The two most fundamental elements of this approach were first, an expansion of the services (especially transactional) available online and second, a shift from a department-centric to a service-based delivery model, under which the user experience is architected around the citizen's

goals (such as permitting or license renewal). Both were designed to make the County more responsive to its constituents' needs. How? On a basic level, these redesigned processes take the burden off citizens, who no longer need to know which array of departments are needed to satisfy a goal.

In Miami-Dade's efforts to be more responsive, a key precept has been the need to build closer relationships with constituents to better understand their needs. The County took a large step in this direction by adding personalization and subscription capabilities to the solution. By enabling users to register their preferences on the site, the solution can tailor the services and information presented to citizens, thus making the experience more streamlined and responsive to user needs. The solution's subscription capability—which automatically updates users with information from prescribed content areas via e-mail—further improves the County's ability to establish and strengthen relationships with citizens.

The County's open, rapid-integration capability has allowed it to deploy new services in a fraction of the time and cost it would have taken using traditional point-to-point integration. A major part of this efficiency derives from the framework's ability to create common elements and reuse them to build other services.

While all but invisible to the citizen, one of the solution's biggest process improvements was in the area of content management. To replace the unwieldy, fragmented process that had governed its content management, Miami-Dade established a common one that—by improving the efficiency of underlying workflow—drastically shortens the path from creation to editing to publishing. By creating a highly structured content management process, with well-defined roles, the County has been able to improve efficiency at all levels. For example, agency staffers now spend less time managing content "in transit" along the editorial chain—thus reducing costs and improving their productivity. Likewise, the ability to centralize content review and approval tasks not only provides scale-related cost benefits but also speeds the process significantly. And that's where the hefty benefits to citizens comes in. A shorter content management cycle means information gets out to citizens faster and, as a result, is more timely. Citizens using the County's solution also benefit from its common look-and-feel, a property enabled by the content management system's template-based publishing approach.

The final process adaptation is embodied by the County's new integration framework—the glue that links the County's agencies, departments and municipalities into a seamless whole. The XML-based framework enables Miami-Dade to rapidly connect department systems to each other without having to create costly-to-support custom interfaces. This open, rapid-integration capability has allowed the County to deploy new services in a fraction of the time and cost it would have taken using traditional point-to-point integration. A significant part of this efficiency derives from the framework's ability to create common elements—such as an online payment engine—and reuse them to build other services. Ira Feuer, Assistant Director of the County's Enterprise Technology Services Department, sees this reusability as the pillar of the framework's flexibility and an important foundation for the solution's future growth. "This [reusability] provides us with the kind of scalability we need to ramp up integration on a wide scale, and to do so in a cost-effective and easily managed way," says Feuer. "Employing common components in the solution also improves the economic efficiency of the system by enabling us to leverage parts of it across a number of services."

SOLUTION PROFILE AND IMPLEMENTATION STRATEGY

Key Components

Software

- IBM WebSphere Application Server
- IBM WebSphere Portal
- IBM WebSphere MQ
- IBM WebSphere Edge Server
- IBM WebSphere Translation Server
- IBM WebSphere Wireless Gateway
- IBM DB2 Universal Database
- IBM Rational Rose XDE Developer
- IBM Rational Rapid Developer
- IBM Tivoli SecureWay and Directory Server
- Interwoven TeamSite

Servers

- IBM eServer zSeries
- IBM eServer pSeries 690 Regatta

Business Partner

- Interwoven

Services

- IBM Business Consulting Services

Miami-Dade's e-government solution, www.miamidade.gov, has two primary elements:

- a **portal** that enables both information access and permit-based transactions (such as license renewals and block-party permits), and
- a **content management system** (underlying the portal) that is used by County departments to create, edit, approve and post content to the portal.

The solution was designed and developed by IBM Business Consulting Services, which was selected on the strength of a pilot portal solution that it developed as part of its proposal. [The fact that IBM had maintained a successful relationship with the County for over 40 years was also a significant factor.] At the outset of the project, the County convened a broad working group—comprised of representatives from all departments and coordinated by IBM—to articulate and validate the project's functional requirements. After the definition stage, the design of the solution followed two parallel tracks, one for the portal and one for the content management solution. Development tools employed included IBM Rational Rose XDE Developer and IBM Rational Rapid Developer (RAD), which were selected for their support of Unified Modeling Language (UML), their ability to facilitate integration with existing enterprise systems, and their ability to reuse software components to build highly scalable n-tier applications. Importantly, one of Miami-Dade's key IT goals is to use RAD to build J2EE applications without having to train their existing developers in Java or to hire highly skilled (and expensive) J2EE programmers.

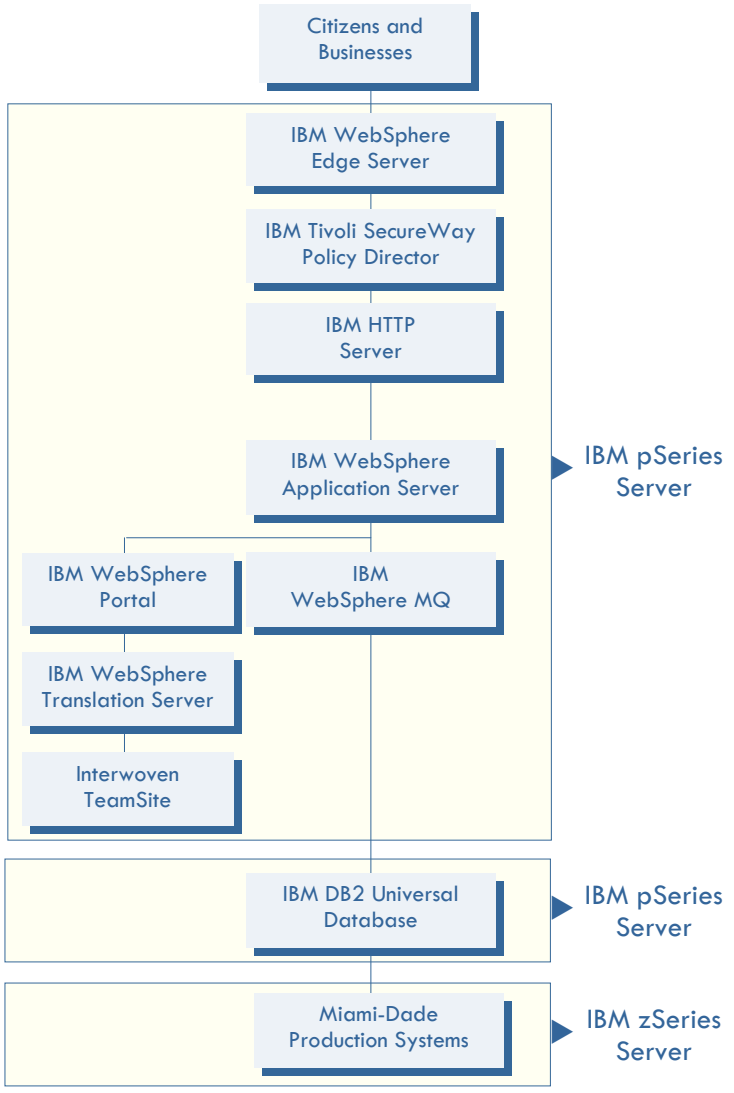
Integrating the portal with the County's backend systems was one of the project's biggest challenges. The County's strategy was straightforward: create Web Services from the various department-specific applications running on its IBM eServer zSeries server, and use portlets to access (or "consume") these Web Services. Here's how the solution works. Citizens accessing the portal come through the first tier (the Web server running IBM HTTP Server) and are authenticated by an LDAP server running IBM Tivoli Directory Server. If the user is registered, they are presented with a personalized portal interface, powered by IBM WebSphere Portal (running on IBM WebSphere Application Server in the second tier). Once in the portal, users access specific services via portlets (which function as windows into particular services). Users issue requests for information or transactions, which are sent via IBM WebSphere MQ to the backend where the core applications (running in IBM CICS and IDMS) reside as Web Services in the third tier of the solution. Completed requests and/or transactions are then sent back to the user along the same path, via WebSphere MQ.

Other key components within the solution's second tier running on top of WebSphere Application Server include:

- Interwoven TeamSite (Miami-Dade's content management system) and
- IBM WebSphere Wireless Gateway (which will help enable County law enforcement staff to remotely access citizen data from the field).

EXHIBIT 1: BASIC ARCHITECTURE: MIAMI-DADE COUNTY'S SOLUTION

Solution Topology



About Solution Elements

First Tier: HTTP Server

At the front end of the solution, load balancing is performed by **IBM WebSphere Edge Server.** Authentication is performed by **IBM Tivoli SecureWay Policy Director.** The portal's Web server is **IBM HTTP Server.** The Web server resides on the same server as the application server (see below).

Second Tier: Application Server and Associated Applications

Running on top of **IBM WebSphere Application Server** are:

- **IBM WebSphere Portal,** which provides access to the portal's informational and transactional applications.
- **IBM WebSphere Translation Server,** which is used to translate the County's Web pages into Spanish
- **Interwoven TeamSite,** which is used to create, edit, approve and post portal content.

IBM WebSphere MQ provides portal connectivity to backend applications, while **DB2 Universal Database** is used to house system configuration information related to the portal.

Third Tier: Backend Applications

The County's mainframe, an **IBM eServer zSeries,** is shared by all departments and agencies. Web Services are created and run on the mainframe.

Source: Miami-Dade County and IDC

Architecturally, Miami-Dade has begun consolidating its second tier from a cluster of Windows NT servers to a pair IBM eServer pSeries model p690 ("Regatta") servers. Under this scheme, the County will move applications from dedicated Windows NT servers to partitions or "virtual" servers within the Regatta servers, many of which would share data with each other. With this new strategy, the County expects the move to a more consolidated architecture to provide a host of dramatic benefits, including:

- *Better performance*, since applications will be sharing information over the "backplane" as opposed to between servers;
- *Improved self-optimization capabilities*, since server-to-server configuration issues will be minimized;
- *Improved self-healing capabilities*, a function of the system's ability to allow the system to continue operating in the event of component failures and/or system errors; and
- *Improved scalability*, a function of the Regatta's multiprocessor-based architecture. Ira Feuer: "The Regatta environment allows tremendous scalability and can handle an enormous line of transactions. To capitalize on this, we're now gearing up to handle all transactions—both from the public Internet and internal department staff."

BUSINESS RESULTS

The best evidence of how effective the solution has been in making County resources more available to citizens is the number of citizens using it. The number of overall visitors to the portal increased by more than 50 percent in the last year to nearly 10 million. A spike in the number of portal-based transactions in the most recent fiscal year reveals a similar pattern. Consider:

- 11,215 building permits and re-inspections were booked online, generating $1,175,000 in revenue;
- 8,053 recycling bins were ordered online, representing an increase of more than 200 percent and half of all bin orders; and
- 1.8 million property searches were conducted via the portal, an increase of 140 percent.

Overall, the County processed 60,000 electronic payments totaling more than $4 million in revenue. These figures, combined with fact that the County has been inundated with favorable feedback on the portal, provide compelling evidence that Miami-Dade has successfully risen to the challenge of being more responsive to its citizens' needs.

But like most customer-facing solutions, the real evidence of improved responsiveness lies in the underlying internal processes that support the portal. In the area of content management, the deployment of Interwoven TeamSite enabled the County to create a more streamlined publishing workflow, getting

information out faster and keeping it fresher. Similarly, notes County CIO Judi Zito, the embrace of Web Services technology has positioned the County to meet citizens' calls for new services in a more responsive way. "We can get new applications out very quickly as well as more economically, since we don't have to tamper with our legacy systems," says Zito. "We're counting on the inherent openness, flexibility and efficiency of Web Services to help us leverage our infrastructure to the max and keep our future integration manageable." By integrating with Web Services, Miami-Dade expects to reduce the costs of managing the portal by more than 25 percent.

Server consolidation—another key element of the County's architectural strategy—is also expected to yield significant increases in resiliency while at the same time reduce costs. The key, says Feuer, is the simplicity of "fewer-is-better" approach, and all the operational benefits that flow from it. "Going from 200 servers down to three makes management and troubleshooting easier, since we can more quickly diagnose and correct problems. And that," says Feuer, "keeps our availability unbelievably high."

While citizen convenience is one of e-government's most powerful value propositions, e-government is also about getting *more* out of government for *less* by improving and rebuilding processes. That's not just in the back-office or the data center, but in the branches and offices where most County business is conducted. Miami-Dade's portal initiative has been a catalyst of such process

EXHIBIT 2: BUSINESS RESULTS FOR THE MIAMI-DADE COUNTY SOLUTION

Benefits	Benefit Description/Metric
High Levels of Usage	The number of overall visitors to the portal increased by more than 50 percent in the last year to nearly 10 million. Overall, the County processed 60,000 electronic payments totaling more than $4 million in revenue.
Lower Infrastructure Support Costs	By integrating with Web Services, Miami-Dade expects to reduce the costs of managing the portal by more than 25 percent.
Improved Resiliency	Consolidating its large server cluster makes management and troubleshooting easier, since Miami-Dade can more quickly diagnose and correct problems—thus improving the solution's availability.
Lower Facilities and Administrative Costs	Driving more transactions to the portal has enabled agencies and departments to reduce their walk-in volume, which in turn has enabled them to consolidate their physical operations.
Improved Content Management Flow	In the area of content management, the deployment of Interwoven TeamSite enabled the County to create a more streamlined publishing workflow, getting information out to citizens faster.

Source: Miami-Dade County and IDC

initiatives, further enhancing its ROI for the County. Driving more transactions to the portal has enabled agencies and departments to reduce their walk-in volume, which in turn has enabled them to consolidate their physical operations. Take, for example, the aforementioned building permitting process, with its seven points of review and five points of payment. Moving it online not only cut the steps in the process, but also made it possible to consolidate seven satellite offices with no compromise in service quality.

CASE EPILOGUE

"Our citizens are truly thrilled with the level of service we've been able to provide through the portal. We're just as satisfied with the expertise, technology and support IBM has provided to make it happen."

— Judi Zito, CIO, Miami-Dade County

Going forward, Miami-Dade plans to expand both the range and functionality of the services it offers its constituents. For instance, the County plans to deploy IBM Lotus Sametime on the portal, which will enable builders to submit their plans electronically and review them online with the County engineers, making time and distance irrelevant. The County also plans to sharpen the portal's existing properties, including a more extensive personalization capability (delivered through Tivoli SecureWay Directory) and an even tighter integration between the portal and key processes (like Web publishing). Although Miami-Dade will continue to grow its citizen-oriented services, it also intends to increase its focus on employee-focused services, such as intradepartmental collaboration, e-procurement and remote wireless applications (all of which would leverage the WebSphere family of products).

In the wake of the project, CIO Zito believes that Miami-Dade is better positioned to adapt to a world of increasing demands and declining budgets—all the while keeping the citizens' interest front and center. "Our citizens are truly thrilled with the level of service we've been able to provide through the portal," says Zito. "We're just as satisfied with the expertise, technology and support IBM has provided to make it happen."

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