

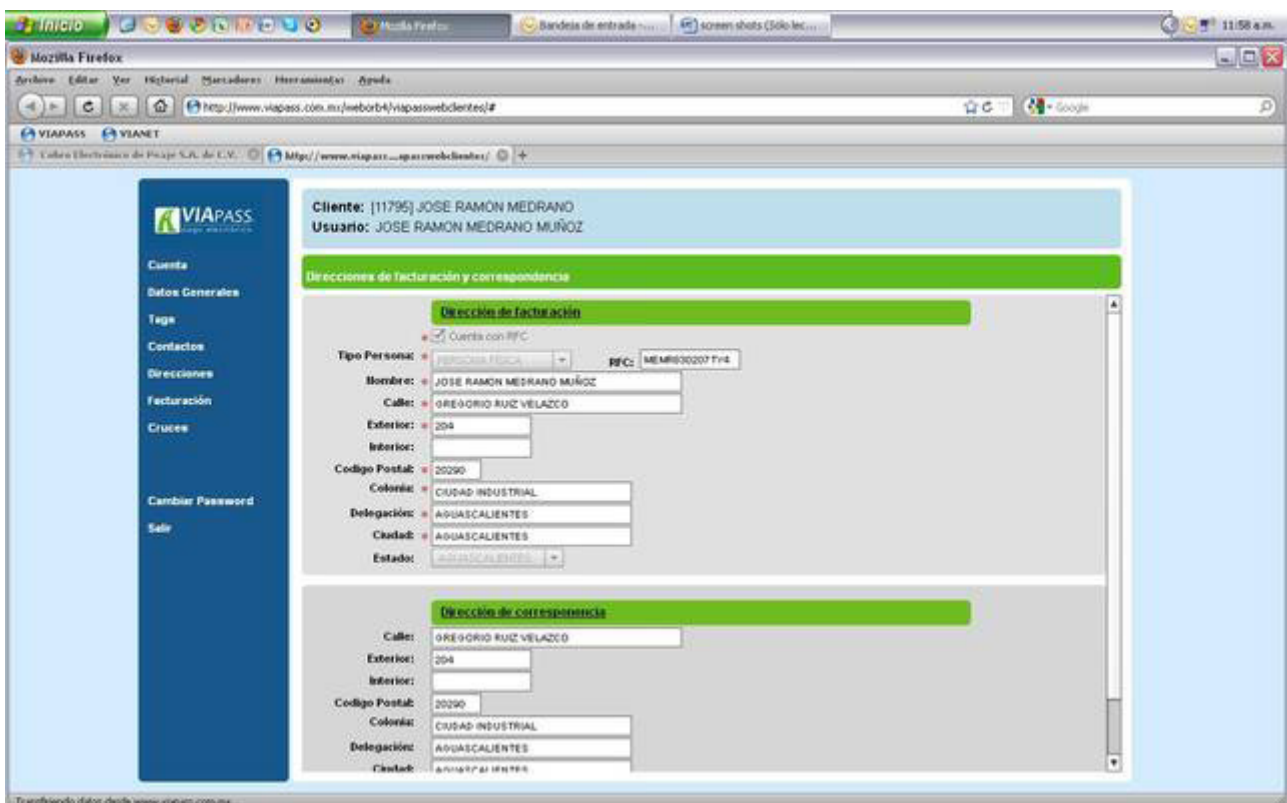
Pinfra Case Study

Pinfra is at the forefront of large scale construction and operations throughout Mexico and Latin America. It is focused on the construction, operation, maintenance, financing and promotion of major manufacturing and construction projects and is a leading concessionaire for highways, parking lots, bridges and ports. ViaPass is the Electronic Toll Collection System created by Pinfra developers.



Business Situation

Tolling trends, which call for the reduction of pollution, congestion, accidents and crime against toll booth operators is prompting many countries to adopt what is called “free-flow” tolling strategies. Free-flowing eliminates the stop-start cycles associated with conventional cash tolling, which means Mexico and Latin American toll roads can accommodate increased capacity. Free-flow tolling also reduces operational cost and increases revenues for toll road operators like Pinfra.



Application Description

Electronic Payments ETC (Electronic Toll Collection System) is designed for highway toll collection, based on RFID technology. This technology enables nonstop, automatic and accurate fee collection without cash or human interference, which reduces mechanical attrition, fuel consumption and vehicle exhaust. It also helps speed up vehicle passage, improves highway efficiency, and minimizes the possibility of mistaken and unsuccessful collection. The application manages the customer information that is collected via RFID technology.

Problem Definition

Pinfra needed a way to not only capture tollroad usage information via RFID, but they also needed to be able to capture this information accurately and quickly for reporting purposes. Pinfra's development team had experience with both .NET and Flex, but they did not have experience with how to make a connection between the two that could support a large number of concurrent user connections. Most companies will typically create an integration using XML Web Services only to find degraded performance as the datasets and concurrent connections increase.

Fortunately for Pinfra, the development timeframe was somewhat relaxed, giving them time to evaluate their options. Both BlazeDS and FluorineFX were considered, but BlazeDS was quickly ruled out considering Pinfra's .NET backend environment.

The Solution

Pinfra chose WebORB because it met their requirements for remoting, code generation, real-time messaging and management console. Pinfra could have gone with FluorineFX, but the fact that WebORB had a superior and mature commercial offering is what steered Pinfra to WebORB. These are some of the features the Pinfra team found most valuable:

- **AMF Remoting** - remoting is a binary communication protocol that is proven to out-perform web services. Midnight Coders just happens to have a benchmark tool that you can use to test this claim yourself. [Click Here](#) for the link to this tool.
- **Real-time Messaging** - WebORB supports the Real Time Messaging Protocol (RTMP), including RTMPT and RTMPS, which is important when users need data fast and users need to share data with one another. In addition to real-time messaging, WebORB supports client synchronization and conflict resolution. [Learn More](#)
- **Code Generator** - this feature enables developers to write literally NO integration code saving them countless hours that they can spend instead on application logic. [View This](#) to learn more about how Pinfra saved both development time and money.
- **Management Console** - the management console provided a centralized location to not only view available services, but also generate and test the integration and deploy the

hooks into the Flex client with essentially a single click of the mouse. Also, since WebORB sat in the middle of the Flex client and .NET backend, it gave the development team more control over development and more information security.

- Runtime Engine - WebORB includes a powerful runtime engine that coordinates and marshals all interactions between the client and server applications. These interactions can include remoting, messaging (data and media streaming), and data management. Currently, Pinfra is only utilizing remoting and real-time data messaging.

Benefits

- On-Time Delivery - Pinfra had constantly changing requirements. The one constant was WebORB, which enabled the team to auto-generate, test and deploy integration code simply from a single unified management console.
- Greater Development Control and Security - WebORB enables two separate development environments to work effectively together without requiring developers in one environment to know anything about the other environment. This, according to Project Leader Jose Ramon Medrano, also provides “greater application security”. WebORB is the universal translator that enables programmers in two different environments to work together effectively and efficiently.
- Lower Development Cost - given the savings in time that WebORB affords, Pinfra’s overall development costs to build and manage their application were lower.
- Higher Profitability - much like other toll road operators with electronic toll systems in place, Pinfra should have an opportunity to process more toll road users through the system.

Solution Stack

- WebORB for .NET
- Adobe Flex
- MS SQL Server 2008
- ASP.NET/IIS 6.0
- Windows Server 2003
- Intel Xeon 2.0 GHz, 4GB RAM (currently supports 32,767 connections)