



## Overview

**Country or Region:** United States

**Industry:** Tourism

## Customer Profile

The National Aquarium in Baltimore, Maryland, is dedicated to environmental education and stewardship. Its 300 staffers oversee more than 16,000 animals from more than 600 species.

## Business Situation

The National Aquarium wanted to use the data locked in its systems for better decision making to increase attendance and enhance customer satisfaction.

## Solution

A solution based on the Microsoft® Business Intelligence framework gathers information in a central data warehouse and makes it readily accessible through scorecards and reports.

## Benefits

- Provides useful data for better decision making
- Cuts data access time from days to minutes
- Cuts costs
- Increases productivity up to 30 percent
- Provides an extensible foundation for data access

## Tourist Destination Gains Business Intelligence; Productivity Climbs 30 Percent

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Hans Keller, Chief Technology Officer, National Aquarium in Baltimore

The National Aquarium in Baltimore had 16,000 animals, 2.2 million gallons of water—and too much data. At least, too much of it was locked away in isolated databases, where it was inaccessible and unable to be used for timely decision making. Now, by using Microsoft® Business Intelligence, all-important attendance data is available in near real time rather than after a week’s delay, so it can be used to make marketing decisions that enhance attendance. A range of key performance indicators is immediately accessible to staff through business scorecards, with drill-down reports just a click away. Staff members regain up to 30 percent of their time by not having to create reports manually. And the solution can be easily extended to provide new analysis capabilities to functions and departments throughout the organization.



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## Situation

Maybe there is such a thing as too much data.

At the National Aquarium in Baltimore, Maryland, they didn’t lack for data. The Aquarium, a major tourist attraction and education center since its creation 26 years ago, maintained databases for attendance, customer satisfaction, financials, animal management, building controls, and more. Data on attendance alone ran to millions of recorded transactions per year. And that was part of the problem—the data was alone, maintained in separate databases and incompatible platforms.

Visitor attendance information, for example, was maintained in a UNIX-based IBM UniVerse database running on an IBM RS/6000 server. Customer satisfaction data was maintained in Microsoft® Office Excel® 2003 spreadsheets, based on data pulled from reports that the Aquarium received from a vendor in the form of Portable Document Format files (PDFs). Still other data was maintained in Microsoft SQL Server™ databases and pulled into the Business Objects Crystal Reports reporting tool. Aquarium administrators would download and maintain data in their own Office Excel spreadsheets, complicating the data situation further.

The consequence of multiple, independent versions of data was felt when representatives of various departments came together at joint meetings. With the Aquarium able to admit only 250 visitors every 15 minutes, competition was often keen on how that number should be divided among the various audiences—including the general public, Aquarium members, tours, and private groups—that the institution serves. With different departments bringing different spreadsheets and different data to the table, it was difficult to make allocations and projections.

The Aquarium had too much data—and not enough real information—to make some of its most important decisions.

Even when the institution had consolidated data from disparate sources, it was sometimes difficult to obtain the information needed for better decision making. Producing reports from the attendance database was a time-consuming process to which two staffers devoted 30 percent of their time. When they were done posting the data to spreadsheets and manipulating it, the information that they delivered was a week old.

“On the admissions side, we weren’t agile in any way, shape, or form,” says Hans Keller, Chief Technology Officer, National Aquarium. “When information was a week old, there was no way you could react to it in any kind of timely fashion. How did we do against admission projections yesterday? How could we use the information to boost actual admissions? We didn’t know.”

Customer satisfaction data was equally unsatisfying. The data was delivered quarterly in an 80-page PDF. Business users would have to search the document to find information that they wanted. People from different departments would replicate one another’s efforts to pull the same data for different purposes. Then the data would be rekeyed into spreadsheets and other databases, opening the door to inaccuracy.

“There was no good visibility into the data—no way for people to look at the information in a meaningful way and pull it together quickly and accurately in one central location,” says Keller.

The National Aquarium had good reason to want to make better use of its data. Although the organization receives no federal funds, it competes with federal institutions—such as the Smithsonian—in Washington, D.C. And in

Figure 1. The business scorecard on the Aquarium's "FishNet" network provides easily understood measures and trends, presented through a readily accessible Web portal.

2005 it opened its largest exhibition ever, devoted to marine and other wildlife of Australia. Understanding just how attractive its various attractions were—and how to boost that attractiveness where possible—was important to ensuring the continued success of the National Aquarium.

### Solution

To address its data management concerns, the National Aquarium turned to SM Consulting, a Microsoft Gold Certified Partner based in Linthicum, Maryland. Together, SM Consulting and National Aquarium technology staff created an end-to-end business intelligence solution based on Microsoft technologies.

To National Aquarium employees, the most visible part of the effort to make data more visible is a series of business scorecards based on Microsoft Office Business Scorecard Manager 2005 (see Figure 1). For

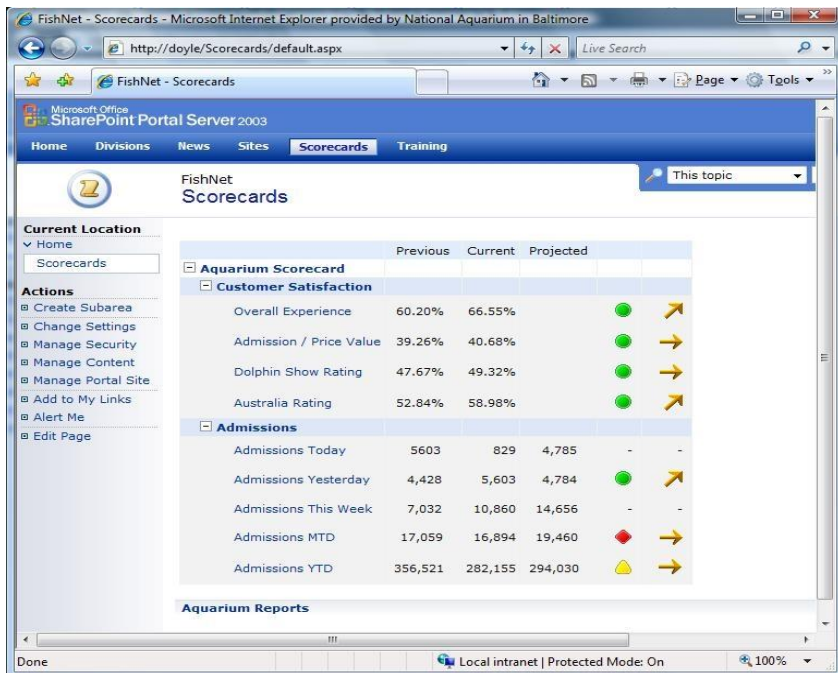
the key performance indicators that Aquarium staff members want to see, the scorecards provide past, present, and projected figures. Red, yellow, and green "health" indicators provide an instant appraisal of the data. Yellow arrows identify the direction of trends. Perhaps most important, the attendance data in the scorecards isn't from the previous week—it's updated every 15 minutes, providing near-real-time information. SM Consulting and Aquarium staff used Web parts to expose trends within the admissions and customer satisfaction data.

Configurable business scorecards deployed at the National Aquarium can include:

- Financial—including weekly revenue and revenue comparisons
- Internal—showing current expenses and monthly business highlights
- Customer satisfaction—including graphical representation of monthly and quarterly comparison data
- Admissions—based on a live feed from the admissions system, showing daily, weekly, and monthly figures and their variance to budget

Aquarium staff members aren't limited to data provided on the scorecards. They can click any of that data to bring up reports—created using Microsoft SQL Server 2005 Reporting Services—that allow them to drill down on the data. They also have the option to export their data to an Office Excel spreadsheet for further analysis.

The entire presentation of information—including scorecards, drill-down reports, and the data export feature—is maintained in Microsoft Office SharePoint® Portal Server 2003, making it easy for people to access and use the information. And because the data portal is Web-based, Aquarium staff can access it from any computer on the network—



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or while they’re at home or traveling, from any computer with an Internet connection.

Feeding the SharePoint Portal Server-based portal are the foundation elements of Microsoft Business Intelligence: SQL Server 2005 and its Integration Services, Analysis Services, and Reporting Services. A data warehouse serves as a central repository for the Aquarium’s data. The stand-alone data systems, such as the UNIX-based admissions application and database, still exist. But now SQL Server 2005 Integration Services performs the extract, transform, and load sequences needed to pull that data into the central data warehouse.

To enable staff members to conduct impromptu reporting without directly accessing the database, the data is extracted by SQL Server 2005 Analysis Services into a series of four modestly sized data cubes. These cubes in turn feed the business scorecards, the SQL Server 2005 Reporting Services drill-down reports, and the Office Excel spreadsheets.

### Benefits

The National Aquarium business intelligence solution is making more useful information available so that the institution can make better decisions. And that information is available at a lower cost compared with a previously used reporting tool. In addition, the solution provides an extensible foundation for data access.

### More Useful Information

“We’ve taken all the information we had that was unusable and made it usable,” says Keller. “The result is that we can put the information to work to make us more successful at what we do.”

For example, Keller cites a recent example when attendance was running 12 percent above the previous year—but below

projections based on exhibitions, tourism patterns, and other factors. Admissions staff members were able to spot the shortfall while it was occurring. Working with marketing staffers, who could use the data portal to view the same data at the same time, the admissions people devised a strategy to immediately increase radio advertising. They then used the solution to note the effect of the advertising on attendance for the rest of the week. In the past, staffers wouldn’t have received the original attendance information until it was too late to address it.

Staffers can act on real-time attendance data in other ways, too. When attendance is running over projections by midday, for example, administrators can use the information to adjust staffing levels to ensure that they have appropriate numbers of staffers to serve visitors.

The ability to more easily access and manipulate customer satisfaction data also enables aquarium staffers to enhance their operations. For example, they can use Office Excel PivotTable® dynamic views to explore the relationships between data points. What was the satisfaction level of people who visited the dolphin show and then the Australian exhibit? What was the satisfaction level of people who visited those exhibits in the opposite order? Or of those who skipped one of the exhibits to go to the gift shop? Staffers can identify combinations with the highest satisfaction and then use signage and other tools to drive more visitors along the best path.

### Time and Cost Savings

National Aquarium isn’t just creating more useful information from its business data—it’s also spending less time and money to do it. Because information is always available through the business scorecards, SQL Server Reporting Services reports, and Office Excel spreadsheets, the two admissions staffers

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who formerly spent 30 percent of their time preparing reports are now freed for more strategic activities that increase attendance and customer satisfaction.

Keller’s IT department is more productive, too, because it saves the half-day per week that a staffer there formerly spent creating custom reports. Nor is productivity savings the only cost reduction from the move to the Microsoft Business Intelligence framework. In the past, National Aquarium relied on Crystal Reports as its reporting tool. But the end-user licensing requirements of Crystal Reports made it too expensive for broad deployment at the Aquarium.

“We couldn’t have afforded to create this solution using Crystal Reports,” says Keller. “This was a test case for SQL Server Reporting Services and it passed handily. We’re now looking to convert all our reports to SQL Server Reporting Services.

“I think business intelligence is traditionally regarded as very expensive and time-consuming to implement. Microsoft Business Intelligence enabled us to get a usable scorecard up and running with key performance indicators in a very short time. And because our people can work with the data in the same Excel spreadsheets with which they’re already familiar, it’s as easy for them to use as it was for us to implement.”

#### Extensible Foundation for Data Access

“A real advantage that we get from Microsoft Business Intelligence framework is that we can show people what’s possible,” says Keller. “The challenge of any information technology department is getting people to think a bit differently. People are starting to ask new questions about the data, what it includes, and what they could be doing with it. By implementing this solution, we’re getting people to question the data rather than just accept it. And we’re expecting to

see people asking for more data and for more parts of the institution to become visible through the data.”

In contrast to the isolated collections of information with which National Aquarium formerly grappled, the business intelligence solution provides a central foundation on which Keller and his colleagues can expand the information that they provide to their institution. For example, Keller envisions using scorecards to show the rainforest curator the humidity and other climate levels throughout his exhibits, so he can take more timely action to address unexpected fluctuations. Similarly, Keller envisions using the reporting tools to analyze the Aquarium’s facilities management operations and show, for example, trends in work order filings and completion rates.

## For More Information

For more information about Microsoft products and services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada Information Centre at (877) 568-2495. Customers who are deaf or hard-of-hearing can reach Microsoft text telephone (TTY/TDD) services at (800) 892-5234 in the United States or (905) 568-9641 in Canada. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information using the World Wide Web, go to: [www.microsoft.com](http://www.microsoft.com)

For more information about SM Consulting products and services, call (410) 691-5200 or visit the Web site at: [www.smcteam.com](http://www.smcteam.com)

For more information about National Aquarium in Baltimore products and services, call (410) 576-3800 or visit the Web site at: [www.aqua.org](http://www.aqua.org)

## Microsoft Server Product Portfolio

For more information about the Microsoft server product portfolio, go to: [www.microsoft.com/servers/default.aspx](http://www.microsoft.com/servers/default.aspx)

### Software and Services

- Microsoft Server Product Portfolio
  - Microsoft SQL Server 2005
- Microsoft Office
  - Microsoft Office Business Scorecard Manager 2005
  - Microsoft Office Excel 2003
  - Microsoft Office SharePoint Portal Server 2003

### Technologies

- Microsoft SQL Server 2005 Analysis Services
- Microsoft SQL Server 2005 Integration Services
- Microsoft SQL Server 2005 Reporting Services
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### Partner

- SM Consulting