

DATA DYNAMICS COMPONENTS HELP PRECISION.BI CREATE POWERFUL, EASY-TO-USE BUSINESS INTELLIGENCE APPLICATIONS FOR HEALTHCARE

CASE STUDY



Precision.BI needed powerful analysis and reporting components for its healthcare business intelligence solution. For analysis, they were looking for a component that could handle the complexity of healthcare data without bogging down performance. For reporting, they wanted a component that would enable end users who weren't programmers to design their own reports. They found what they needed in Data Dynamics products: DynamiCube for OLAP, enabling users to explore and summarize huge quantities of data instantaneously; and ActiveReports, enabling users to easily make queries and generate reports on an ad hoc basis. And now, as Precision.BI moves the application to .NET, they're adopting Data Dynamics Analysis and Data Dynamics Reports for their products.

Background

Healthcare organizations hold vast amounts of patient data in their databases—data that could be used to improve their profitability and competitive position, if only they were able to easily access and query it. But converting all this raw data into insights that will help healthcare executives in their strategic planning is no easy task.

Precision.BI, established in Wyomissing, PA in 2001, provides a business intelligence (BI) solution designed to do exactly that. Created specifically for healthcare organizations, ranging from multi-hospital enterprises to large healthcare billing companies, the solution, also called Precision.BI, enables healthcare entities to access and analyze patient information that otherwise would be locked away in its files.

In developing its product, Precision.BI applied its extensive experience in the healthcare vertical to create complex algorithms that would help healthcare business intelligence specialists analyze and better understand the huge amounts of data in their organization's repositories. For example, in examining the results of a clinical trial, organizations need to be able to verify that a particular outcome is the result of the treatment being provided—not a function of the doctor providing the treatment, the time of year, or any other external variable. Precision.BI's product helps them do just that.

Challenge

A key problem that Precision.BI faced in developing its solution is the incredible complexity of healthcare data. Application developers for other types of businesses, such as financial or industrial companies, can readily integrate OLAP (online analytical processing) cubes into their solutions. However, medical data involves so many different dimensions that trying to process it through OLAP cubes adds too much overhead to the application, making performance unacceptably slow.

Reporting was also a challenge. In the healthcare world, not only does each entity have its own reporting needs, but individual users within an entity may also require custom reports, so providing a set of standard reports clearly would not be sufficient. The problem was how to give end users an easy way to design their own reports without requiring programming skills.

Solution

Precision.BI found the capabilities it needed in components from Data Dynamics.

For OLAP, after searching online for a tool that mimicked the look and feel of a cube without the processing overhead, Precision.BI found DynamiCube, an interactive OLAP tool implemented as an

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Internet-enabled, lightweight ActiveX control. DynamiCube enables end users to interact dynamically with massive databases, giving them the ability to explore and summarize huge quantities of data instantaneously. Precision.BI’s crosstabs feature, built on DynamiCube, provides end users with a tab for each key performance indicator, so they can quickly get a snapshot view of all key data and can drill down to get more details as needed.

For reporting, Precision.BI chose Data Dynamics ActiveReports, a powerful ActiveX report generator that works within the Microsoft Visual Basic environment. Using the exposed APIs (application programming interfaces) in ActiveReports, developers set up an easy-to-use interface that enables end users to make queries and generate reports on an ad hoc basis. They can choose the properties they want to explore, combine data from disparate sources, drag and drop objects such as charts and graphs into a report, and click on a cell to drill down for more details.

Moving to .NET

Precision.BI is now using Microsoft Visual Studio.NET to convert its solution to .NET, so users will be able to access key data and quick reports from an offsite location, although for detailed reports, they will still want to use the onsite client-server version. In the .NET environment, Precision.BI is replacing DynamiCube with Data Dynamics Analysis, a component that combines analysis, visualization, and reporting and installs with both a Windows Forms component and an ASP.NET Ajax web component. Like DynamiCube, Data Dynamics Analysis is highly programmable, so Precision.BI’s developers can give the analytics the exact look and feel they want and can tailor them to the specific types of data their end users work with. Data Dynamics Analysis also enables managers and executives to use a simple drag-and-drop environment to visually explore the data in their databases, examine trends, and determine how different attributes affect each other. For example, users may want to examine usage of a particular CPT (procedure) code on a hierarchical basis, determining its usage within each division, within each department of a particular division, and even on a doctor-by-doctor basis within a department. Data Dynamics enables them to easily locate and analyze this data.

For reporting in the .NET version, Precision.BI is using both Data Dynamics Reports and ActiveReports for .NET. Data Dynamics Reports requires very little coding, enabling end users to quickly create mini-reports with a simple drag-and-drop approach. ActiveReports for .NET is a little more complex, but sophisticated end users can apply it to create detailed reports that are also attractively formatted. In addition, ActiveReports for .NET is useful for exporting data, for example, to an Excel spreadsheet or a .PDF file.

Benefits

Among the many benefits that Precision.BI has experienced from using Data Dynamics components are:

- **Major time savings.** “I was the only developer working on this project through version 4,” says Daniel Reber, Lead Product Architect for Precision.BI. “If I had had to create the entire solution from scratch, without the help of Data Dynamics components, I simply wouldn’t have been able to do it.”
- **Great customer support.** Reber also appreciates the excellent support that Data Dynamics provides by e-mail, by phone, and through posts on its forum. “When we run into a problem, they get back to us right away, either with a fix or a workaround, so our development work is able to keep moving right along,” says Reber. “I initially chose DynamiCube and ActiveReports because they were the only components available that had the capabilities I needed, and I’ve stayed with Data Dynamics components all these years because of their great support.”

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- **Complete set of BI components with consistent API models.** Reber likes the fact that he can easily create a business intelligence application based on Data Dynamics components, because all the necessary capabilities are available, the components work well together, and they all follow the same API models. “The APIs all have the same look and feel, so once you learn one, you can easily work with the others,” he says. “Plus the components expose a lot of APIs, which gives us plenty of flexibility and makes them highly extensible. Using the exposed APIs, we can create applications that make it easy for end users to tailor queries and reports to get the data they need.”
- **Unique capabilities that make both end users’ and developers’ lives easier.** One feature of Data Dynamics Analysis that Reber particularly appreciates is the ease of moving between numerical data and graphs and charts. “Not only can end users view the data in both numbers and graphs, but we can easily modify the size, color, and other features of graphs to help them quickly grasp what’s happening,” he says. “No other component can do that.” In the case of Data Dynamics Reports, he notes, “It’s the quickest way available to create reports, and you don’t need to be a programmer to do it.” And in the case of DynamiCube, Reber says, “It’s the essence of our crosstabs module, which is the most popular aspect of our application, it’s what lets end users drill down through the data to get at the details they need. Without DynamiCube, we probably wouldn’t even have a crosstabs module.”

Looking Forward

As Precision.BI maps out its future applications, Data Dynamics components will continue to play a major role. “Pretty much all our plans involve Data Dynamics Reports, Data Dynamics Analysis, and ActiveReports,” says Reber, “plus we may use other Data Dynamics components as they come out. With the time savings and unique capabilities they provide, plus the great support we get from Data Dynamics, these components are a key part of our strategy.”

About Data Dynamics

Data Dynamics, a GrapeCity company, is a software component developer with headquarters in Columbus, Ohio. Established in 1996, the company provides innovative award-winning tools and support for application developers who work with Microsoft design environments. Its products include data analysis and information reporting components, plus components for user interface development. For more information, visit www.datadynamics.com.

About GrapeCity

GrapeCity is a Microsoft Gold Certified Partner and an international award-winning software development firm with headquarters in Japan and U.S. headquarters in Kirkland, WA, employing more than 800 worldwide. GrapeCity’s mission is to turn new ideas for software into marketable products and business solutions. For over 25 years, the company has provided enterprises around the world with state-of-the-art software services to help accomplish this goal. For more information, visit www.grapacity.com or call (425) 828-4440.

About Precision.BI

Precision.BI LLC, based in Wyomissing, PA, is a leader in business and clinical intelligence solutions for the healthcare industry, including clinics, hospitals, and insurance payers. Its principals have over 75 years of relevant healthcare experience and have been working with business intelligence for over a decade. Precision.BI has regional offices in Park City, UT and Amherst, NH. Visit www.PrecisionBI.com for more information or call Rick Speaker at (435) 671-3333 (West) or Tim McNamara at (617)413-4884 (East).

