

MBARI

Monterey Bay Aquarium Research
Institute

Application:

Collecting, managing, and disseminating
information for oceanographic research

Tools:

JBuilder 2007 Enterprise Edition

Challenges:

- Heterogeneous systems environment
across user base
- Variety of projects each with unique
technical requirements
- Parallel, overlapping development
projects with tight delivery schedules
- Continuous integration of code
submissions

Results:

- Support for diverse user environments
across multiple operating systems,
databases, and application servers
- Flexible, open Eclipse-based
development environment
configurable with a variety of Eclipse
plug-ins
- Reduced learning curve and greater
flexibility for switching between
multiple projects
- Improved quality for daily code builds



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next level"*

Kevin Gomes, Senior Software Engineer

Introduction

The engineering team at the Monterey Bay Aquarium Research Institute (MBARI) develops applications for collecting, managing, and disseminating information from scientific research in the deep waters of the ocean. The institute is a leader in developing innovative instruments and systems to collect data from a variety of sensors and equipment, such as fixed-location buoys, ships with Remotely Operated Vehicles (ROV), and Autonomous Underwater Vehicles (AUV). MBARI has selected JBuilder from CodeGear as part of the organization's strategy for Java software development in a dynamic and highly collaborative environment.

Moving to JBuilder 2007 has been a real advantage for the development team at MBARI, especially given their commitment to the Eclipse open source platform. Kevin Gomes Senior Software Engineer, explains, "Because JBuilder is based on Eclipse, the product has gained a lot of functionality that is very, very useful to us. We get the best of both worlds. We can take advantage of the many Eclipse plug-ins currently available, plus we can continue to use the JBuilder features such as LiveSource, Audits and Metrics. With JBuilder 2007, CodeGear raises Eclipse to the next level with productivity and quality enhancements that help our developers deliver Java applications that meet the needs of our users."

Building on the Benefits of Eclipse

MBARI shares a belief in the benefits of an open and collaborative community, publishing many of the organization's applications as open source. The fact that JBuilder 2007 is based on Eclipse was an important factor in MBARI's selection of JBuilder for Java development.

According to Gomes, "Most of our developers know and use Eclipse, and so with JBuilder they don't have to learn a new environment. What's more, each of our developers use a variety of Eclipse plug-ins that address the unique requirements of individual projects. We have been very pleased to find that JBuilder works seamlessly with all of the Eclipse plug-ins that we use, and also brings us advanced capabilities with JBuilder's performance and modeling features."

Open Architecture Provides Greater Flexibility

JBuilder provides MBARI's development team the flexibility to support a wide range of end-user operating environments. Their applications are frequently deployed both inside and outside the institute by engineers, scientists, marine systems operators, educators, and in some cases the general public. Gomes explains, "We have to design our applications to support operating systems, databases, and application servers from a number of different vendors. Consequently, we require a development tool that lets us quickly and easily test and deploy applications that run reliably on both open source and proprietary server products including Microsoft Internet Information Server, Apache Tomcat, JBoss, PostgreSQL, MySQL, Microsoft SQL Server, and others."



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Productivity Enhancements Ease Tight Schedules

MBARI developers commonly work on a number of projects in parallel, and so they need tools that help reduce the learning curve between projects. JBuilder's LiveSource technology provides a graphical environment that lets developers quickly understand application logic and the underlying code.

Says Gomes, “All of us are working on several different applications, frequently in parallel, and context switching is costly because of the learning curve for each project. So we use JBuilder's LiveSource UML modeling tool to transition efficiently from one project to the next. For example, team members can join a project 'mid-stream' and quickly become productive because with JBuilder they can visualize the application design and logic. What's even better is that any changes to the model or the underlying code are automatically synchronized (bidirectionally). We don't face the tedium of having to reconcile our code and model manually.

Audits and Metrics Improve Quality

MBARI follows a practice of continuous integration for building and testing code submissions on a daily basis. As a result, the developers can identify and resolve integration errors much more quickly. At the same time, they rely on JBuilder's Audits and Metrics functionality to pinpoint areas of the code that may require atten-

tion. JBuilder Metrics highlights sections of application code that may introduce design concerns, while the Audits function ensures quality and consistency in code development by verifying Java code against standards set by MBARI's development organization.



“We integrated JBuilder Audits and Metrics as part of our continuous build process to help maintain the quality of our code and to identify areas of opportunity for improving our applications. JBuilder helps us follow coding standards for our applications and reduces the number of software defects that may be introduced in new code,” explains Gomes.

Supporting Collaboration within a Growing Department

While Kevin's organization has not had an opportunity to try out JBuilder's collaboration features, they are looking forward to taking advantage of the benefits of these functions. “We are really excited about ProjectAssist and TeamInsight because we are moving toward larger projects, and as a result we have a growing need for integrated requirements tracking and project

management within our development environment. Right now, we use Subversion to check in our code as well as Jira for bug tracking. JBuilder supports both these tools and we look forward to exploring the possibility of adding requirements tracking and management functionality.”

About MBARI

The mission of MBARI is to achieve and maintain a position as a world center for advanced research and education in ocean science and technology, and to do so through the development of better instruments, systems, and methods for scientific research in the deep waters of the ocean. MBARI emphasizes the peer relationship between engineers and scientists as a basic principle of its operation. All of the activities of MBARI must be characterized by excellence, innovation, and vision.

About CodeGear

CodeGear delivers innovative, high-productivity development tools for a wide spectrum of software developers, from individuals to enterprise teams. Formed from the Developer Tools Division of Borland to focus exclusively on technical innovation and support for software developers, CodeGear has more than 25 years of technology leadership and 7.5 million registered users of its products worldwide.