Building better software, faster

Borland® solutions for fast and flexible software delivery

A Borland White Paper

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Contents

Abstract .................................................................................................................. 3

The application lifecycle ....................................................................................... 5

Building an application lifecycle management solution .................................. 7

Building an application lifecycle management solution

The Borland® Suite of application lifecycle management technologies .............. 8

Requirements definition ......................................................................................... 9

Analysis and design ............................................................................................... 9

Development .......................................................................................................... 9

Testing and profiling ............................................................................................... 10

Deployment ........................................................................................................... 10

Change management .............................................................................................. 10

Application lifecycle integration: more than the sum of the parts .................... 11

Integration for productivity .................................................................................. 11

Freedom to choose infrastructure ......................................................................... 15

Technology, processes, and people ..................................................................... 16

A new era in application lifecycle management .............................................. 18

Borland®
Abstract

To be competitive in today’s tough economic climate, the enterprise must have superbly efficient and flexible business systems. Contemporary business systems all rely on critical software applications and infrastructures to keep the enterprise operating at peak performance. With Borland technologies, organizations are poised for competitive advantage because they have the technologies to build better software, faster.

Application lifecycle management (ALM) regards the process of delivering software as a continuously repeating cycle of interrelated steps: definition, design, development, testing, deployment, and maintenance.

A true application lifecycle management solution

- **improves quality** by formally gathering requirements and ensuring the final application meets the needs of users
- **reduces costs**, as developers have a single shared set of best practices they can follow when creating applications
- **cuts maintenance time**, as application and design are always kept synchronized
- **maximizes use of resources**, as application developers need focus only on business requirements, not low-level infrastructure
- and **increases business flexibility** because it’s faster to build applications that support new business initiatives.

With the Borland® Suite of best-in-class technologies for managing all key elements of the application development process, Borland offers a highly integrated, comprehensive solution designed to accelerate application lifecycle management and deliver competitive advantage.
The solutions are not just for developers; the Borland approach is designed to coordinate the whole team involved with business systems including architects, analysts, testers, deployment group, production teams—and their managers.

Organizations today look for the leading technology to support each stage in the lifecycle. Indeed, a recent study of software developers confirms that 61% prefer to purchase “best-of-breed” products.¹ Individually and at all stages of the application lifecycle, Borland technologies are regarded as leaders in their respective fields, helping IT groups create comprehensive applications fast.

Business pressures require teams to deliver top-quality applications faster than ever before. Borland solutions are tightly integrated, designed to streamline the complete application lifecycle, speeding development and increasing quality. This integration helps each stage of the development process support the others, so teams can adopt an iterative approach to their work. Each team member is enabled to communicate more effectively, increasing productivity and improving quality.

No other software solution provides greater support for more languages, more infrastructures, more databases, and more operating systems than the ALM solutions from Borland. With Borland, there is no expensive lock-in to any particular platform: teams are free to use the appropriate and correct technology for the job. Borland solutions are well suited to the major software platforms including Java™, the Microsoft®.NET Framework, and Linux.®

Because Borland solutions support industry standards, they are flexible: it is possible to use them alongside products from other vendors. This flexibility preserves the investment you have made in your existing systems, skills, and processes, and it reveals a smooth path for migrating to the productive Borland technologies.

Uniquely fast, free, and flexible, Borland solutions transform the management of applications throughout their complete lifecycle.

¹ Developer Marketing Patterns, Evans Data Corp., January 2003
The application lifecycle

Today, efficient software systems are the lifeblood of any business. With good systems a company can dramatically streamline its processes and ensure that all members of the application team have the information they need.

For 20 years Borland has provided outstanding solutions for application development. But because enterprise applications are now so central to the success of a business, it is vital to recognize the importance of the whole application lifecycle.

There are five distinct stages involved in creating applications.

Define
First, it is necessary to define what the application will do. Requirements anchor the application lifecycle and help prevent the introduction of unnecessary and expensive changes. This stage provides a useful template for testing the final application and ensures that the team delivers what was initially specified.

Design
Once initial requirements have been established the design process can commence. At this stage, it is likely that the requirements will be refined further, so close communication between analysts and systems architects is essential.

Develop
With the design underway, it is then possible to develop the application, creating the first versions of the program code. Developers and architects need to collaborate on development at every step along the way to make sure the implementation accurately reflects the blueprints drawn up by the software architects. There is a lot of give and take in this process: designing will change in implementation and vice versa, so the tight coupling of these functions is most advantageous and should be enabled.

Test
For quality, engineers are asked to unit test code frequently but prior to checking source files back into the version control system. Developers also profile their code for performance analysis purposes, making sure that new code is implemented in an efficient and scalable manner. In some development philosophies such as Extreme Programming, programmers go much further, conducting regression tests on the entire code base prior to considering the changes committed.
With well-architected software that is designed using explicit requirements documents, the team can understand how the application will be used and can therefore create appropriate tests.

**Deploy**

There are many factors behind the choice of system used to deploy the completed application. Performance, security, reliability, and low ongoing maintenance costs are all important. So too is the ability to keep the application running when updates are made, ensuring maximum availability.

**Manage**

Through these five stages team members must communicate effectively. A change management system is essential for communication as the development process unfolds.

The application lifecycle starts with definition, moves through design, development, and testing, concluding with deployment. But that isn’t the end—once the system has been deployed, it typically is necessary to refine the system and rework it, returning to the initial system definition.

At the center of these stages lies effective change management. This function is pivotal in ensuring that all the team members responsible for separate steps in the creation of a system can communicate effectively with one another.

**Figure 1:** The Borland solution for Application Lifecycle Management considers each stage of system development as closely related and interdependent.
Building an application lifecycle management solution

Many products are available to support the different stages of application development. However, not all work well with each other or with the skills and infrastructure available.

Good product integration is essential because none of the five steps in application lifecycle management can be isolated from one another. For example, the testing team will need to know from the definition team what the application is intended to do, and the deployment group will need to know from the designers of any dependencies the application might have on other systems. Similarly, code modifications made by the developers will need to be incorporated back into the system design and documentation.

Without well-integrated solutions, it is difficult for teams to communicate effectively. Valuable time can be lost coordinating activities among the groups. To meet deadlines, it might even be necessary to adopt a very formal, restrictive design methodology that limits the flexibility of the final application. All applications will need to change and evolve, and an integrated development solution is essential for changes to be made easily.

Infrastructure flexibility is also important. For example, a design tool that can work only with Java is useless if the system will be deployed to the .NET platform. A tool that requires a central shared database will not work for team members who have to use dial-up network links.

Of course, there is more to software development than technology. Skilled people and flexible processes are essential for success, and these processes must adapt easily to change. Proper management of these people and processes can make the difference between success and failure, especially for large projects.

“Over the years, Borland has demonstrated an ability to give developers precisely what they want—sometimes even before they know they want it.”

– IDC, December 2002
Building better software, faster

The Borland® Suite of Application Lifecycle Management solutions

No other software vendor has a more comprehensive range of application lifecycle solutions than Borland. By closely integrating powerful solutions for development with outstanding design, testing, and requirements management solutions, Borland helps you deliver better software faster, reduce development costs, and increase business responsiveness.

Borland understands that an efficient application lifecycle does not necessarily follow a linear sequence of steps from design through coding and testing to deployment. Rather, many development teams adopt an iterative approach to the application development lifecycle, in which each stage of the process may affect any other stage.

For such an iterative approach to be successful, teams must leverage technologies that are tightly integrated with each other. Borland solutions are designed for integration: they are built to help each team member of the team communicate effectively with their colleagues, saving time and increasing the quality of the project.

Figure 2: The tightly integrated Borland solutions fully support the complete application lifecycle.
Requirements definition

One of the most difficult tasks for managers of enterprise projects is to ensure that the project finishes on time and within budget, yet satisfies the needs of its users. The Borland CaliberRM™ requirements management system automates the management of requirements and helps distributed team members manage centralized requirements data and team discussion records. It helps teams understand the impact that potential changes will make to the project.

Analysis and design

Industry experts agree that modeling is an ideal way for determining an accurate systems analysis and to then design applications accordingly. Borland Together® is a powerful design solution that uses the popular Unified Modeling Language™ to create different diagrams that together make up a blueprint for the design of an application. This can then be directly represented in program code for either Java and J2EE™ or C# and .NET.

Development

Borland has a range of powerful component-based development solutions. These environments are designed to take the application model and quickly create the final application, leveraging the features of the underlying infrastructure from the platform.

For Java, Borland JBuilder® is the world’s leader in development for J2EE systems. In thousands of software implementation projects around the world, JBuilder is the essential technology that speeds the development of EJB™, Web client, XML, Web Services, and database applications. For the new Microsoft .NET infrastructure, Project Sidewinder (slated for release in mid 2003) is an outstanding solution for developers who use the Microsoft C# language and need to integrate their projects with Java solutions. For the Microsoft Windows® platform, the Borland Delphi™ and C++Builder® studio products have unrivalled reputations as highly productive development environments. Specialized editions of the JBuilder and C++Builder environments address the particular demands of development for mobile and embedded devices.
Testing and profiling
Clearly, enterprise developers need to test their systems before the applications are checked into the team’s change management system. Borland Optimize™ Suite and Optimize™ ServerTrace go further than many performance testing technologies by helping developers profile their applications and optimize performance during the development process.

Deployment
Among the benefits of standards-based platforms such as Java is the freedom teams have to choose among different application servers for deployment. Borland® Enterprise Server delivers performance and security along with outstanding adherence to J2EE specifications.

Many applications have specific requirements for their deployment environment. Time-critical applications that use CORBA® technologies—such as those often deployed in the finance and telecommunications industries—can take advantage of Borland VisiBroker® for real-time performance.

Borland InterBase and JDataStore are powerful, low-maintenance, embeddable deployment databases that are optimized for native and Java programming environments. Seamlessly integrated with other Borland technologies, these standards-compliant databases also provide excellent support for development and prototyping, regardless of the deployment platform.

Change management
Each phase in the development of an application needs to be coordinated among the different team members. Borland StarTeam® is a comprehensive software configuration management solution that uses a central repository to facilitate communication among team members responsible for the various tasks.

Figure 3: Borland delivers value through tightly integrated products.
Lifecycle integration: more than the sum of the parts

The critical breakthrough behind the Borland approach to accelerating application lifecycle management is that each product is tightly integrated with others at key points of the development process. This means the whole team can keep up to date and working closely together, making decisions faster and keeping development on track.

For example, the Together design technologies work closely with the requirements management solution of CaliberRM to certify that the design accommodates only features for which there is a requirement. In turn, Together is tightly integrated with JBuilder so that changes to the model are directly reflected in program code. These changes can be managed with the StarTeam change management system.

Without this integration, developers have to resort to importing and exporting different views of their applications, updating changes in several places at once. This practice is hard to maintain: thus, when deadlines are tight, this maintenance is often overlooked. The result is documentation that no longer matches the delivered application, making future changes more difficult and overall quality less robust.

Integration for productivity

For Borland, “integration” means much more than the ability to read differing file formats between products. Rather, the integration is designed to reduce learning time and to provide relevant information to team members at each stage of the application development lifecycle.
There are three distinct styles of integration among Borland products. The first, “touchpoint integration,” provides menu options between different systems. For example, StarTeam change control menus can be seen directly from within the JBuilder development environment, helping to automate tasks performed between the two products.
Figure 5: “Embedded integration” makes it easier to work with the complete set of solutions.

“Embedded integration” goes one stage further, providing a window from one application within another. For example, JBuilder developers can display performance charts directly from the Optimize Suite test system—without leaving the development environment. Embedded integration makes it easier to use each of the capabilities of the development solution.
Finally, “synergistic integration” is the most powerful of all, and it is exclusive to the Borland solutions for application lifecycle management. A good example of synergistic integration is evidenced in the relationship between developers and architects: changes that are made in application code may be seen directly by an architect in the application model. This allows Microsoft .NET applications to directly use EJB components, for example. No further work is needed, saving days or weeks of development time and greatly speeding future maintenance.

Figure 6: “Synergistic integration” provides direct low-level links.

Borland products are available separately and are also offered in product suites. By purchasing and installing Borland products as a suite, developers have the tools they need for development, easily licensed from a single source and with the integration features automatically available. The first suite released is intended for Java developers and is currently planned to include CaliberRM, Together, JBuilder, Optimizeit Suite, and Borland Enterprise Server. Plans call for other suites in development to support the Microsoft .NET Framework and other infrastructures.

Alternatively, each Borland product can be used on its own as well as in combination with products from other vendors. Indeed, interoperability is a fundamental benefit of Borland products, many of which lead their respective markets and represent best-in-class implementations.
The unique Borland integration architecture is designed to substantially reduce the time enterprises need to complete an application lifecycle. This architecture helps verify that the software code created and deployed is robust and problem free, thereby speeding the entire application lifecycle and allowing enterprises to truly create better software, faster.

**Freedom to choose infrastructure**

In any development project, designers eventually have to choose the kind of deployment platform to use: Java™ and Enterprise JavaBeans,™ currently the most popular platform in use? Microsoft .NET, just emerging but with benefits and strengths of its own? Linux,® well respected for reliability and cost-effectiveness? What about Macintosh,® now based on a powerful UNIX® architecture?

Many vendors provide development solutions for a single platform. Borland is genuinely neutral and does not favor one platform over another. In each of the five stages of the application lifecycle Borland has solutions and technology for developers using each of the major platforms.

**Figure 7:** Third-party solutions can be used alternatively throughout the lifecycle.
This means that choosing Borland leaves architects free to choose their preferred platform for the job. It also makes possible the transition from one platform to another without requiring major rewrites of existing systems.

Similarly, Borland solutions work equally well with leading databases, application servers, and Web servers. This is especially valuable following business mergers, where different organizations may have standardized on different deployment systems. Borland solutions help preserve your existing investments.

“We expect Borland to utilize its assets and expertise to create frameworks and products that will make it easier to integrate .NET and Java components and to build robust service-oriented infrastructure. Organizations that are currently evaluating the mixed use of Java and .NET should pay close attention to Borland’s product line.”

– Meta Group, January 2003

Technology, processes, and people

The ability to build enterprise applications technology is essential, but it is not the only component of a complete solution: effective processes and skilled people are also essential for success.

In addition to its expertise in software technology, Borland offers the skills to train staff and develop effective processes for enterprise applications through its Professional Services organization.

Training from Borland is available in many different formats—including instructor-led courses held in classrooms and online training—for each technology domain. In addition, best-practice guidance in topics such as process management, test management, and application design is also available.

The Borland Developer Network is a comprehensive collection of online resources, including code samples and white papers. In addition, the popular annual Borland Developer Conferences held worldwide are considered excellent opportunities for learning from respected experts and for networking with thousands of software developers.
Different development teams will find they need different processes, so Borland provides support for a broad range of development styles. Some teams are better suited to structured techniques; others prefer to adopt looser methodologies such as Extreme Programming.

Borland Professional Services can help identify and diagnose challenges and implement effective and efficient development processes tailored specifically to suit the needs of each team. With offices in more than 20 countries worldwide, the Borland global team of consultants provides best-practice experience in real-world situations.

“Borland’s solution met our key requirement of scalability without sacrificing performance or reliability. It allowed us to handle much greater volumes without scaling our resources enormously. This has in turn translated into efficient cost savings.”

— Mr. G M Shenoy, Vice President, NSEIT
A new era in application lifecycle management

Good business applications are the lifeline of competitive companies. To stay competitive, applications have to be written and deployed quickly yet perform well to meet the demands of their users.

For 20 years, Borland has led the industry with innovative, market-leading software development solutions. More than 3 million developers in enterprises worldwide—including 25,000 large enterprises and 95 companies in the Fortune 100—depend on Borland for development technologies for their key business applications.

Today, Borland provides a breakthrough solution designed to accelerate the entire application lifecycle. With excellent technology integration at each stage of development, teams using Borland solutions are empowered to communicate better, to develop higher quality software faster, and to deliver it on budget.

What this means is that with Borland technologies behind it, a company’s software development is able to keep pace with the evolving goals of the business. And by responding quickly to these changing demands, the software supports the business and its objectives for productivity, rapid time-to-market, increased ROI, and competitive advantage.

For more information on the Borland solution for complete application lifecycle management, visit www.borland.com or contact your local Borland sales office.