

Technology Audit

Application Development

Borland
 Borland Caliber Analyst

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Abstract

Borland Caliber Analyst combines two Borland solutions, Caliber DefineIT for Requirements Definition and CaliberRM for Requirements Management, in one package. The products are strongly integrated, making use of a common repository to hold all requirements definitions and project details. RM is a key part of Application Lifecycle Management and plays a role in development throughout the lifecycle, not just at the start of a project. If there is one attribute that singles out the need for it then it is communication. For large-scale projects and medium-scale complex projects the likelihood of misunderstanding grows high, and a tool that can capture all requirements and consequent changes efficiently and with rapid access to all stakeholders can greatly enhance communication and understanding. Caliber DefineIT can be used by non-technical business analysts and users to create application scenarios that can be ‘executed’ by means of visual storyboarding: this means the steps in a process are visited in sequence and various resources associated at appropriate stages, helping to validate the project requirements. The scenario can then be exported to CaliberRM as the basis for the requirements during development. The key benefit of Caliber Analyst is the tight integration, including two-way synchronisation, between the definition and management tools.

KEY FINDINGS

Key: ✓ Product Strength ✗ Product Weakness ⓘ Point of Information

✓	Advanced Requirements Definition and Requirements Management package.	✓	Automatically generates test cases.
✓	Two-way synchronisation between Caliber DefineIT and CaliberRM.	✓	Helps exploit re-use of artefacts.
✓	Centralised repository for all requirements definitions and project details.	✓	Web-based access for distributed development teams.
ⓘ	Borland offers process guidance to help make best use of its tools.	✗	The Server component will only run on a Microsoft Windows platform.

LOOK AHEAD

A new major release of CaliberRM was made at the end of 2006 with improved Application Lifecycle Management tool integrations and a host of other product enhancements. Butler Group expects the new Requirements Definition tool, Caliber DefineIT, to reinforce Borland’s strong standing in this sector.

► FUNCTIONALITY

Product Analysis

The aerospace and defence industries have traditionally had a far more disciplined and rigorous approach to software development, or software engineering as often referred to in this vertical, than other industries. This can be attributed to the nature of government and important national enterprises attempting to do things by the book and laying down standards, as much as to the high risk nature of their applications. There are benefits to the wider development community as the good practices filter down; the emergence of Application Lifecycle Management (ALM) and the Software Engineering Institute's Capability Maturity Model Integration (CMMI) are prime examples of this trickling down of good practices. Another example is Requirements Engineering, or Requirements Management as it is known in the business sphere.

Requirements Management has tended to be neglected in comparison with some of the other lifecycle segments, with adoption of poor practices such as paper-based requirements gathering, no tracing of agreed requirements to code artefacts, and a general lack of understanding as to the lifecycle role played by requirements. For Requirements Management does not end with the signed-off project deliverables, rather it is a practice of ensuring developers are building the right components and testers are testing to the right specifications throughout the lifecycle. Projects continually go through requirements changes and the early release cycles also feed back important information that needs to be channelled into the current development version. Re-use of components is another practice that often is not associated with Requirements Management, but a well-managed system will identify where existing artefacts match new requirements and can be re-used.

A number of studies have revealed that the lack of attention to doing requirements right, results in a large degree of re-work with consequent increase in costs. Also, the later in the lifecycle a faulty requirement is discovered then the greater the costs and delays in putting it right. Therefore project managers have a strong incentive to addressing the question of what it means to do Requirements Management right. Using the right tools is one step, for any enterprise-level project or medium-level upwards project with a high degree of complexity, a dedicated Requirements Management tool is essential.

Borland's CaliberRM is a respected tool in this field and the vendor has been looking to see how it can further improve the art. The result is a companion tool, Caliber DefineIT, that bridges the gap between the traditional Requirements Management tool and the initial business case phase of a project. Caliber Analyst is the complete integrated package of these two tools, currently in version CaliberRM 2005 R2 SP1 and Caliber DefineIT 2006.

Product Operation

The main product features are as follows:

Caliber DefineIT: This tool covers Requirements Definition, using a visual storyboard with specification of actors and policies; it allows business users and analysts to capture requirements through scenario modelling. There is simultaneous side-by-side textual and graphical capture of requirements, with cross generation when an entry is made in any one so that both text and graphical displays are in synchrony. The immediate feedback this provides leads to clearer communication and less likelihood of mis-understanding to develop. Once the initial requirements have been elicited, they are analysed for prioritisation and project estimation. Next, the specification phase, input is taken from all stakeholders and the details are added. Finally, the requirements model is validated through execution in the interactive storyboard. This entails running through the process and invoking prototypes and other resources where they exist to visualise how the application behaves.

The visual storyboard provides an alternative to Unified Modelling Language (UML) which non-technical users find daunting. Also, as a dedicated RM tool the diagrams allow necessary detail to be associated in text fields. For example a process can be drawn, which may include entering search criteria and the description of these can be held with the appropriate step in the process.

CaliberRM: The software requirement management tool, it provides a centralised repository to store the project requirements. When a new scenario is created in DefineIT it could be automatically held in this repository and is then accessible by CaliberRM users. The product offers requirements traceability to developer artefacts.

The effects of changes can be assessed by impact analysis. Multiple methods of traceability visualisation help users immediately understand the scope of analysis required to gauge the effect of a requirements change. There is full audit tracking to satisfy governance needs. Test cases can be automatically generated, thus for a project scenario a suite of tests are generated which can then be exported into a system test tool, such as from Borland or Mercury. Business Process Modelling Notation and UML diagrams can be generated and exported to modelling tools. Other benefits include online glossaries which help standardise and define terminology. There is support for integration with Integrated Development Environment clients: Eclipse and Microsoft Visual Studio Team System, and of particular interest in a distributed development environment, there is full Web access.

The tight integration between the tools means that any additions made in CaliberRM can be merged back into DefineIT and if necessary a full re-generation of a scenario can be made based on the CaliberRM project details.

Caliber DefineIT uses local file-based storage for the desktop client and is built on the Eclipse Rich Client Platform. It can serve as an off-line client for CaliberRM using its synchronisation capabilities. CaliberRM uses a client-server architecture (see Figure 1) and includes at the back-end an object orientated database. A Windows-based server component handles all project administration, customisation, and user management. Graphical User Interface clients are available in the form of Win32 and Java cross-platform, browser-based clients for the front-end.

Caliber Analyst includes Caliber EstimatePro, a tool for estimating project metrics based on a Monte Carlo analysis of similar projects stored in the database. The tool provides plans for the project based on the requirements, suggesting effort required, time-to-delivery, costs, and other metrics.

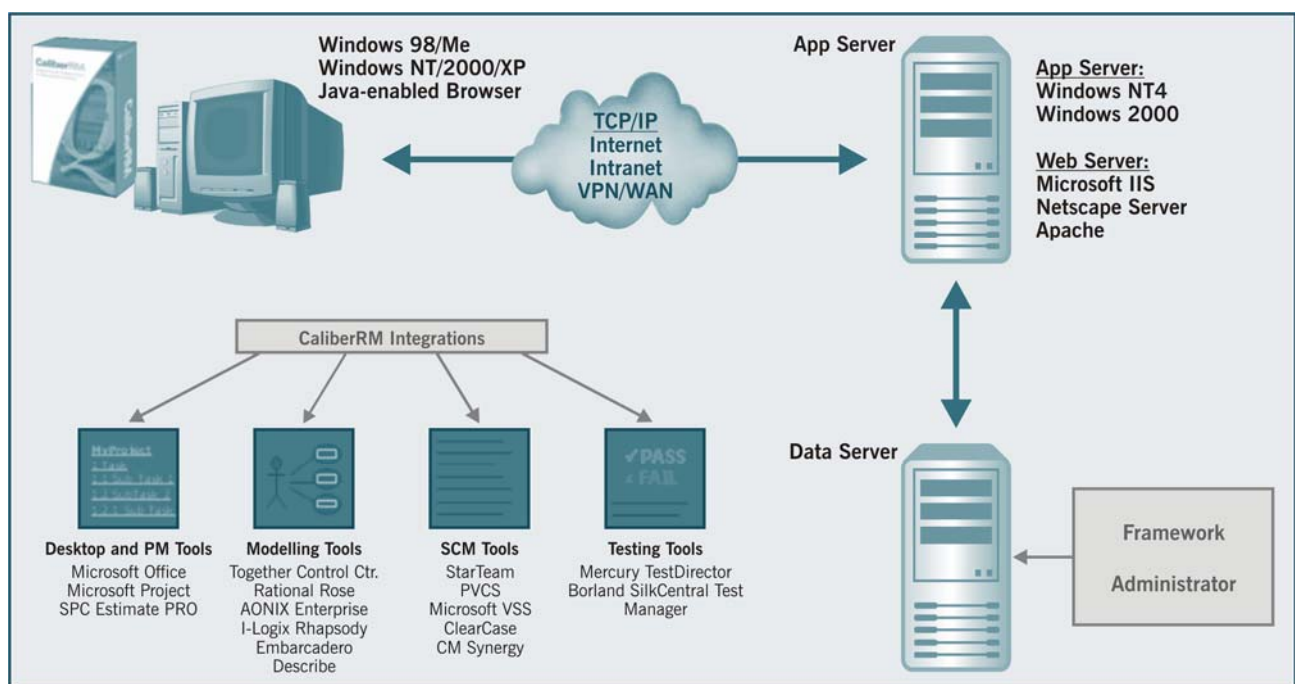


Figure 1: CaliberRM Architecture

Integrations are achieved through two open Application Product Interfaces (APIs), known as the Vendor Plug-in and the Software Development Kit for CaliberRM, which support both Borland and third-party integrations. The APIs support both COM and Java interfaces.

CaliberRM, being a client-server application, has an upper limit of active connections recommended by Borland of 500 users. However, there is no practical limit to the number of users that can be registered with the user manager. Borland cites as an example of a large scale deployment, British Telecom in the UK, and according to the vendor some of the largest CaliberRM repositories in the world today contain as much as 60GB of requirements data. CaliberRM also uses a message broker based technology to improve performance for users, by broadcasting event updates from the server to the clients. This is known as MPX technology and is part of the CaliberRM product. A mixture of several message brokers and a single-centralised server can be deployed to create a globally distributed RM infrastructure.

CaliberRM ships with built in backup/restore features for its backend repository. Third-party failover and high-availability solutions are also available, for example, from Borland's Technology and Services partner, Dunn Solutions. These solutions typically employ redundant hardware and in extreme cases software-based load balancing as well.

Product Emphasis

Caliber Analyst provides full coverage of both Requirements Definition (RD) and Requirement Management and by offering both tools as an integrated package in Caliber Analyst it helps to bridge the gap between business and IT, through improved communication, as well as improve the quality of the requirements phase through quick and easy-to-use tools, as contrasted with a paper-based approach that can easily become outdated and difficult to access when needed by the development team. As part of Borland's holistic approach to software development, placing equal emphasis on people and processes as much as on tools, Butler Group believes Caliber Analyst can help raise the quality of software development.

► DEPLOYMENT

Borland has taken a new, holistic approach in reaching out to its customers, this means that rather than just being a tools vendor it wants to ensure its customers are successful in how they use the tools. It calls this engagement model 'Borland Accelerate' and based on past experience, Borland finds that customers taking a purely technology-based focus to improve their application development delivery have unpredictable results. What is necessary is to provide support for an appropriate project management process and development methodology. With Borland Accelerate the first step is an Appraisal and Assessment, drawing on Borland's expertise in Capability Maturity Model Integration (CMMI): Borland has one of the largest concentrations of Software Engineering Institute approved CMMI Lead Assessors in the world. This service would help identify areas for improving management practice and ensure development tools are used in an appropriate way. This service also addresses the question of which development methodology suits a particular project.

In addition there are the following resources available:

- **Technical Asset Library:** For turn-key solutions, such as standards-based project templates and other ready-to-use technical assets.
- **Process Asset library:** Ready-to-use and proven process improvement templates, workflows, created by domain experts over many years in practical situations.
- **Maturity Models:** Apart from CMMI, Borland can train in ITIL and COBIT best practices.
- **Borland University:** Training facilities for users, with online, onsite, and offsite options.

Borland tailors a solution based on a combination of the above resources according to the needs and maturity of the customer organisation and its engagement goals with Borland. Third-party SI involvement is sometimes applicable, especially when the customer already has an established relationship with an SI who is also a Borland partner.

A typical Borland Accelerator program lasts roughly three months, characterised by relatively short-term goals, with further Accelerators to follow each other if applicable. The average time for implementing Caliber Analyst depends on deployment scale and locations, so for example, an installation of 50 users with training for end-users, and on administration and project management, plus server installation and configuration, client deployment, and basic process enablement would in total be in the range 5 to 10 days (any Borland Accelerate programme is in addition to that).

Apart from the Accelerator service Borland delivers three types of training: End-User, Server Administration, and Project Administration, and also general training in Requirements Definition and Management. Training is typically provided on-site or at Borland premises. Alternatively, the 'Borland University' can deliver a CBT and Web-based training solution. Borland also offers a 'train-the-trainer' program with a customer to create additional scalability of education.

According to Borland a typical installation of 100 users would require a single dedicated administrator, not necessarily full-time. Customers normally take Admin training and in larger deployments where Borland has partnered up with a third party, this service could be provided by the partner.

Caliber Analyst is deployed out-of-the-box as a bundle of Caliber RM and Caliber DefineIT: there are no optional parts. CaliberRM and Caliber DefineIT are both individually listed at US\$2000 per named license and US\$6000 for concurrent licenses. Caliber Analyst is listed at US\$3000 per named license, and US\$9000 for concurrent. Volume discounts are available. For the DataMart Reporting solution, used in conjunction with CaliberRM, an external RDBMS can be used: either Oracle or Microsoft SQL Server.

Local Borland technical support teams operate in every major country where it has a presence, and these are in turn supported by regional Tech Support centres (4 regions globally), which in turn are supported by the product group (engineering). Maintenance and technical support is 20% of the license cost fee and is sold on an annual basis.

Caliber DefineIT runs on a Windows platform and requires the Java SE 5 runtime engine. CaliberRM client and server are also designed for the Windows platform; the CaliberRM Web client will need either Microsoft Internet Explorer 6 and higher or Netscape 6 or higher.

► PRODUCT STRATEGY

Borland sees a key market opportunity in helping organisations improve their Requirements Engineering capabilities, particularly those aiming to establish a requirements infrastructure to support the product lifecycle. Distributed development, whether harnessing the benefits of offshore/near-shore or outsourcing, raises new challenges that only a process management approach can tackle effectively.

Caliber Analyst is aimed at a horizontal market. To date, most customers tend to be from the following vertical industry sectors: Automotive, Defence, Medical Equipment, Pharmaceutical, Financial Services, High Tech/IT, and Telecoms. In terms of market size, the typical customer has 50 developers and this can go up to several hundred, in some cases a few thousand. Although the company has several smaller customers it does not consider these a primary target. The primary user role is Analyst and within a software developing organisation this is typically 10% above the purely developer role numbers. There are also several other roles that use Caliber Analyst: Architects, Testers, Product Management, and Project Management.

The expected Return On Investment (ROI) is calculated on a per-case basis and typically varies from 10% to 30%. This is calculated by measuring performance metrics before and after implementation and Borland finds this is highly dependant on the customer's own aggressiveness in pursuing performance targets/goals. Borland's Process Improvement services can help in implementing Caliber Analyst and setting up metrics measurements.

The direct route to market is through Borland's internal Sales and Pre-Sales teams, and also through the establishment of an extensive Partner & Alliance program. The key business partnerships that support this product are: EDS, Accenture, Microsoft, Oracle, Atos Origin, SAP, T-Systems, Avanade, Getronics, and CapGemini.

Key technology partners for integrating Caliber Analyst with other products include Eclipse, HP/Mercury, and Microsoft. TIBCO is used by the message broker technology found in the MPX implementation (used to set up a distributed development environment) and Borland's own VisiBroker is used as the Object Request Broker.

The licensing structure for the solution is Named and Concurrent licensing. The Server for CaliberRM is not licensed separately. Network license management is provided through Borland's own BLS system or FlexLM.

The average project value for a typical installation is in the range between US\$250 000 to US\$750 000. Professional services and customisation activities are negotiated separately. A typical split ratio between license and professional service cost is 60:40.

Software maintenance and support is typically 20% of the license cost on an annual basis. This includes designating up to three contract contacts, telephone, fax, and e-mail support, during normal (local) office hours. Extended support is available for true 24 x 7 global support. Most of Borland's customers can get support in their own time-zone and language, escalations being handled on a regional basis, before being further escalated to Engineering.

The release strategy for Caliber Analyst is typically one major release per year, with at least one additional point release (Service Pack or Patch) in between major releases. Customers also sometimes get customer specific patches, which gets rolled into the above mentioned standard releases.

Future developments for RDM in 2007 include: Requirements Definition Prototyping Support; Extending the integration between Requirement Definition, Requirement Management, and Test Management; enhanced data visibility through RM-PPM integration; unified or federated data storage; and offline Requirement Editing.

► COMPANY PROFILE

Borland (NASDAQ: BORL) is headquartered in Cupertino, USA, with main offices in US East Coast, UK, Germany, France, Austria, Singapore, Australia, Japan, The Netherlands, and Ireland. The company was founded in 1983, having established itself as a major player in the IDE market initially with tools such as Turbo Pascal, Delphi, and later JBuilder. In recent years the focus has shifted from individual developer productivity to team productivity, in particular with the acquisition of Starbase Corp. which brought the CaliberRM and StarTeam SCM solutions into the product mix. Most recently Borland has once again shifted its focus from team productivity for developers to its Software Delivery Optimisation (SDO) vision, which is about transforming software development into a predictable and reliable business function. In its pursuit of SDO, Borland acquired Segue and the Silk Test Management suite of products in early 2006. The IDE tools division has been spun off into a wholly owned subsidiary named CodeGear. This makes Borland a pure software vendor in the ALM space.

Following its series of acquisitions, the company now has around 1,200 employees worldwide, of whom 55% are based in the USA, 30% in the Europe, Middle East, and Africa (EMEA) region, and 15% in Asia-Pacific. Its Research and Development (R&D) function operates on a global scale, with development teams based in California, Russia, the Czech Republic, and Singapore, with 557 people undertaking roles in R&D or technical support. Borland also has 69 people active in marketing, 12 in legal roles, 15 in human resources, 151 in finance, and 501 in field operations (sales and services roles). Overall it expects to add 10% to the size of its workforce in the forthcoming 12 months.

Published financial figures for the past three years are as follows:

Year ending 31 December	2005	2004	2003
Revenue (US\$ million):	277	310	295
Change on previous year (%):	(10.6%)	4.8%	20.7%
Total Net Income/(Loss) (US\$ million):	(29.8)	11.4	(40.5)

CaliberRM is one of the fastest growing product lines within Borland and the company expects Caliber Analyst to grow by at least 50% from 2005. Overall ALM product revenue has grown by 100% over the last 2 financial years. The geographical split of revenues by region is: USA – 50%, EMEA – 35%, and AsiaPac – 15%.

Examples of eight key customers are:

EDS: Approximately 5000 user license (growing), Deployed in at least 5 countries globally with a central hosting service based in Sydney, Australia.

British Telecom (UK): Approx 3000 user licenses, deployed in more than 6 locations in the UK. Global Deployment (outsourcing support to India).

Hewlett Packard (OpenView Division, Germany): 200 Deployed licenses in at least 4 countries (Japan, Germany, France, and USA) Global Deployment.

Jaguar Cars (UK): Approx 200 licenses, mainly deployed at HQ in the UK. Departmental Deployment (Electrical Engineering).

NOKIA (Finland): Approx 200 licenses, mainly deployed in Finland. Departmental Deployment.

MetOffice (UK) – Departmental Deployment.

ABN Amro (The Netherlands) – Departmental Deployment covering mostly the Benelux countries.

ING Direct (Benelux) – Global deployment.

Borland has approximately 3,000 customers globally using the Caliber solution. The total customer base including the IDE business runs to millions worldwide, including 25,000 large enterprises and 95 companies in the Fortune 100. Considering only the ALM tools business, the number of customers is in the region of 5000.

► SUMMARY

Organisations that want to improve their software development are advised to start with a review of their Requirements Definition and RM process. Doing it right means reduced project costs, reduced software defects, faster time-to-market, increased customer satisfaction, reduced scope creep, and reduced schedule overruns. Borland has produced a holistic package in Caliber Analyst that will encourage business analysts, business users, and the development team to use tools rather than detached documents, because they offer rapid access to important information, a visual, easy-to-use interface, and a single repository that means data is never out of date. When these tools are used in combination with project processes the net benefits outlined above can be realised. Butler Group believes that for the large and/or complex project, Caliber Analyst can help deliver higher quality software applications.

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