

# AGILE DEVELOPMENT WITH BITKEEPER

## **Work collaboratively**

*Push or pull changes peer-to-peer between developers to locally test and peer-review.*

## **Adapt to change**

*Flexible workflow with on-demand branching to focus resources on customer priorities.*

## **Test incrementally**

*Merge, commit, build, and test incrementally in a sandbox without affecting others.*

## **Track progress**

*Detailed audit trail of your work to track progress and preserve full reproducibility.*

## Improving time to market and quality

Agile development processes start with the right developer tools. BitKeeper helps you implement a flexible and productive workflow for scalable software development.

Software development organizations are feeling increasing pressure to react more quickly to customer needs. It is no surprise then that organizations are adopting a more incremental, iterative approach to software development. A family of “agile development” methodologies has emerged as a result, including Scrum, Extreme Programming, and Continuous Integration to name a few.

Many organizations unknowingly adopt certain characteristics of these models out of necessity. Unfortunately, legacy developer tools such as client-server based configuration management systems have now become the bottleneck to adopting a more nimble development and release process.

BitKeeper is paving the way for a new generation of software configuration management systems that enable developers to work more productively in the modern world. Whereas legacy client-server based solutions such as CVS, Perforce, and Subversion require a significant amount of preplanning and foresight into how a software project will progress, BitKeeper is a peer-to-peer, scalable configuration management system that will adapt to virtually any situation, whether planned or unplanned.

Let's consider some key principles of agile development and see how BitKeeper helps:

### **1. Collaborating in small teams.**

Whether working in pairs (Extreme Programming) or in small groups (Scrum), companies are putting higher emphasis on working collaboratively toward specific short term goals. Although greater reliance on verbal communication over formal documentation improves agility, the most important aspect of the development process, the code itself, does not lend itself to



## You're in control

*“BitKeeper has well designed features that work in concert to allow our development teams to be more agile and increase our flexibility in meeting our customers' needs.” - Maxtor*

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collaboration within traditional SCM solutions. As a result, developers often elect to work and share code outside of revision control. This practice is lossy and leads to large check-ins at the end of a release cycle, adding late stage churn and build breakages that affect the entire organization.

With BitKeeper, each developer has his own replica of the repository which can quickly sync changes with any other repository, whether it be the main repository or his colleague's repository. The ability to push or pull changes, peer-to-peer, within a version control environment is critical to working collaboratively in small teams. All work is recorded and merges, builds, and tests can be run in a sandbox. BitKeeper's workflow naturally leads developers to peer-review and test features early in the development cycle.

## **2. Responding to changing customer needs.**

Development organizations are moving away from documenting monolithic specifications of all product features and requirements and moving toward iterative solutions to ongoing customer needs. With legacy client-server based SCM systems, adapting to shifting priorities is cumbersome at best. Though conventional branches may help, they require heavyweight administration and preplanning, and often fail to support what was actually needed. Branches can quickly go out of sync as a result, rendering them virtually useless.

BitKeeper's branching is on-demand and adaptive. Workflow can quickly adjust to changing customer needs. If a developer's side project suddenly becomes top priority, for instance, the developer's repository can turn into the staging area for additional developers. Meanwhile, BitKeeper's best in class auto-merging and its rich set of triggers enable painless synchronization and process control.

## **3. Incremental build, test, and release.**

Agile development, and in particular Scrum, prescribes frequent prioritization of incremental features and bug fixes that can be turned around in days or weeks, not months. BitKeeper groups modifications into atomic units of work called changesets that encapsulate feature improvements or patches. Changesets can be easily pulled or pushed between repositories in a lightweight fashion. Unlike other SCM tools, BitKeeper ensures that changesets are atomic, immutable and fully reproducible, never leaving a repository in an inconsistent state. Each changeset also serves as an automatically tagged release, becoming a potential roll back or branch point.

BitKeeper customers take advantage of automated processes that push each changeset to a temporary staging repository, where triggers automatically run the build and acceptance tests. As builds, merges, and tests are done locally, load from these operations is distributed across all of the developers' machines, significantly reducing SCM hardware and administrative costs.

## **4. Keeping a detailed account of productivity and potential bottlenecks.**

A critical element of agile development is the ability to frequently collect new data and respond accordingly. This principle applies as much to internal productivity metrics as it does to customer data. Legacy SCM solutions do not track enough historical detail for organizations to run a reliable query on who did what, when, where, and why. In most situations, all of the work resulting from a merge is attributed to the person that merged and checked in the file, losing track of both the incremental work and authorship of other contributions to the merged work. Integrity checks are run efficiently and automatically in BitKeeper, further ensuring that valuable work and history are not lost in the event of hardware failure or memory corruption.

BitKeeper provides a full audit trail of every unit of work - down to each line of code. Customized queries can be run to aggregate productivity metrics by developer or by groups. Such information can be reviewed at Scrum meetings, for instance, to identify potential problems in productivity and closely track a group's ability to meet release deadlines.

In sum, BitKeeper is the right foundation for organizations wanting to upgrade to a more agile and productive workflow. BitKeeper's customers have seen as much as a 2x gain in productivity within the first year. What can BitKeeper do for you?

### **About BitMover, Inc.**

BitMover is a technology innovator in developer productivity tools. Founded in 1998, BitMover develops and supports BitKeeper, its flagship SCM system. BitKeeper significantly increases development speed and overall productivity by providing the industry's only peer-to-peer collaborative development tool. Software and hardware companies ranging from start-ups to the Fortune 500 are using BitKeeper to more effectively manage their development projects. BitMover is privately held with headquarters in Silicon Valley and development teams in North America and Europe.