

ACCELERATE THE DELIVERY OF MODERN APPLICATIONS

White paper



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The need to modernize

Application modernization is at the top of many CIO agendas. As budgets shrink and competition intensifies, companies begin to closely examine their IT portfolios and look for ways to cut costs while continuing to provide automation to support core business functions. Analysts estimate that as much as 70 percent of IT spending is focused on maintaining current applications, leaving only a small portion of resources to fuel innovation and growth. The main reason for high maintenance costs is the fact that many of the applications that make up today's IT portfolios are legacy systems that were developed decades ago and require specialized resources and skillsets to support. These systems are often outdated, redundant, and difficult to integrate with more modern applications and platforms. Some may have been added to the portfolio through acquisitions, while others were developed internally by engineers who have since departed the company, leaving the current IT team with no detailed understanding of the systems' functionality and maintenance requirements.

But cluttered application landscapes and costly legacy systems are not the only reasons why companies choose to invest in modernization initiatives. Perhaps even more important than streamlining IT portfolios is the need to bring core business applications up to modern standards and to enable them to support the latest technological innovations and meet customer demands. The emergence of new technologies such as cloud computing, mobile internet, and Web 2.0 are forcing IT to accelerate the transformation process. To stay competitive, businesses must provide services that require modern application infrastructure. IT simply cannot build new mobile Internet applications on old mainframe platforms or effectively leverage the elasticity benefits of the cloud without a service-based architecture. As a result, IT leaders are re-platforming their portfolios and focusing on modern technologies, cheaper implementation and maintenance, and easier integrations between systems.

Modernization also means changing the way applications are delivered. Today's businesses demand quality, reliability, and predictability across the entire application lifecycle—from the way portfolio planning is performed to how applications are built, deployed, managed, maintained, and eventually decommissioned. Without a clear view into the complete lifecycle and absolute transparency and alignment with the business, IT risks falling back into the pattern of supporting cluttered landscapes and disjointed systems. Application modernization is not a one-time initiative. It is a series of interconnected steps and best practices designed to transform the IT landscape from the collection of old sprawling applications to a set of unified, contemporary systems.

Managing modernization as a project

The term "modernization" doesn't refer to simply ripping out legacy applications and replacing them with new global packaged systems. There are several approaches to modernization, many of which are implemented in parallel. Often companies choose to retire their obsolete systems while standardizing the remaining ones in order to support the company's business processes more efficiently. Businesses that find themselves dealing with too many redundant systems—sometimes as a result of multiple acquisitions—often select data-archiving and consolidation approaches. Another approach is to change the way applications are deployed. Instead of maintaining extensive in-house data centers, companies may elect to migrate at least a portion of their applications to the cloud, enabling self-provisioning, more cost-effective infrastructure planning, and greater agility.

Most of the modernization projects share a common goal—to replace out-of-date IT systems with modern applications capable of supporting the company's dynamically changing needs and responding quickly to market opportunities. However, each venture is unique and should be managed as an application delivery project—with its own goals, timelines, requirements,

Figure 1: Shown are current and evolving trends in application delivery.

	Current	Evolving
People	Co-located teams	Distributed teams
Process	Sequential methods	Flexible methods
Technology	Thin client, self-contained	Composite, cloud, RIA

resource considerations, success criteria, and metrics. Whether IT is consolidating multiple instances of a packaged product-inventory system or replacing an outdated homegrown customer management application with a software-as-a-service (SaaS)-based solution, the effort can only be successful with the right tools, resources, and best practices throughout the lifecycle.

HP provides both a phased framework and tools to accelerate modernization projects. The journey to application transformation consists of the three essential phases: assess, modernize, and manage.

1. Assessing the landscape and aligning with the business

Before any transformation can begin, it is critical to conduct a thorough assessment of the existing IT landscape, take inventory of current systems, and figure out what processes and transactions they are supporting and what their present user base is. Part of the analysis can be done using automated discovery and dependency mapping solutions, which will help identify all services supported by IT and chart the complex inter-relationships between applications. It is important, however, to realize that a large portion of this phase needs to be conducted manually by interviewing end users and reviewing documentation to create a complete and accurate picture of the current IT landscape.

Once the discovery and inventory steps are completed, IT can begin creating a plan for transformation, which includes gathering requirements from the business, mapping out the new architecture, agreeing on technology platforms, and understanding resource requirements for the continuous support of the modernization initiative. This is an iterative process that involves negotiations and compromises to reconcile business demands with IT priorities and available resources. However, without an agreement between all parties, it is impossible to achieve results. Modernization cannot succeed without collaboration.

2. Modernizing the IT infrastructure

Based on the results of the assessment phase, organizations can embark on the many parallel projects aimed at rationalizing application functionality, platforms, and portfolios. Among the critical success factors for this phase are effective application quality management, application retirement, data archiving, and aligning improvements in IT portfolios with improvements in business processes. Outdated applications with no significant user base or data growth must be safely decommissioned and their data archived in accordance with company and industry policies so that budget used for maintenance of these applications can be freed up for higher-value services and innovation initiatives. Legacy applications that still support critical business processes can be updated with quality and security considerations in mind, and potentially re-hosted using modern, cost-effective infrastructure options.

3. Maintaining and managing the new landscape

A major part of any rationalization initiative is ongoing maintenance. Without implementing a series of lifecycle-based best practices and technical policy governance, organizations risk falling back into the pattern of sprawling application landscapes and uncontrollable data growth. By designing applications using modern platforms, standardized methods, and strategic automation, IT can build a portfolio that's easier to test, maintain, and change. A focus on quality and security during development can help prevent problems in production, and a requirements-based delivery approach can strengthen the alignment between IT and the business. Establishing technical policy that can easily be monitored and enforced provides a repeatable, scalable, and consistent way for teams to follow technical best practices and leverage reusable services as the application portfolio evolves and is supported going forward.

Unique quality challenges of modern technologies

Innovative technologies such as Web 2.0, cloud service delivery, or mobile present a new set of quality and security concerns that must be addressed throughout the application lifecycle. Web 2.0 applications for example push more logic (and thus complexity) to the browser and introduce interactive features such as pre-fetching, which can create an additional strain on resources and negatively impact application performance. The absence of common standards and the variety of frameworks and toolkits used in Web 2.0 development make it difficult to thoroughly validate application performance and functionality.

Developing applications that effectively take advantage of the cloud requires a loosely coupled, service-based architecture. While these are the preferred architectures in the cloud due to their elasticity and performance characteristics, they add further complexity to the task of validating application quality. Validating a collection of reusable web services that do not have user interfaces necessitates an entirely different approach to testing and test automation. In addition to testing the traditional "application" layer and verifying the user experience, QA now also needs to focus on the service layer and the end-to-end business process. Service-layer testing allows testers to be more agile by validating functionality much earlier in the lifecycle, without having to wait for a graphical user interface (GUI) to be created. The higher-level business process testing validates the end-to-end processes that may involve multiple applications. It provides a more robust, modular testing approach that aligns with the componentized or "composite" style used to develop many modernized applications.

HP Application Lifecycle Management software

Traditional delivery methods typically suffer from lack of visibility throughout the project lifecycle. Project managers' tools don't get a clear picture of the design, development, and testing activities, and therefore they struggle to get an accurate view of progress without the time-consuming process of polling team members and reconciling information from a variety of sources. Engineers use their own spreadsheets to track milestones, which are not shared with the rest of the organization. Testers keep their assets, schedules, and deliverables in yet another set of specialized tools that are not integrated with other IT systems, so it's impossible for the stakeholders to get an accurate assessment of application quality. These siloed point solutions across the different disciplines create unnecessary latency in project handoffs and inhibit the flow of information. The lack of transparency creates confusion among team members, who often can't prioritize effectively or plan

ahead for upcoming activities. Delivery schedules get delayed, deadlines are wrecked, and collaboration between teams turns into finger pointing.

These outdated legacy delivery practices are simply not adequate for managing today's high-profile modernization projects—modern delivery requires modern solutions. HP Application Lifecycle Management is a unified platform that connects and enables team members through cross-discipline collaboration, seamless information sharing, and innovative use of automation. It is ideally suited to support application transformation initiatives in global enterprises with portfolios that span hundreds of applications and geographically distributed teams.

HP Application Lifecycle Management empowers application teams to plan, build, and release better-quality applications more predictably by using consistent processes and integrated solutions. It provides complete visibility across project teams, supporting collaboration and reducing rework and duplication of effort.

Figure 2: Legacy delivery: islands, point tools, and brute force.

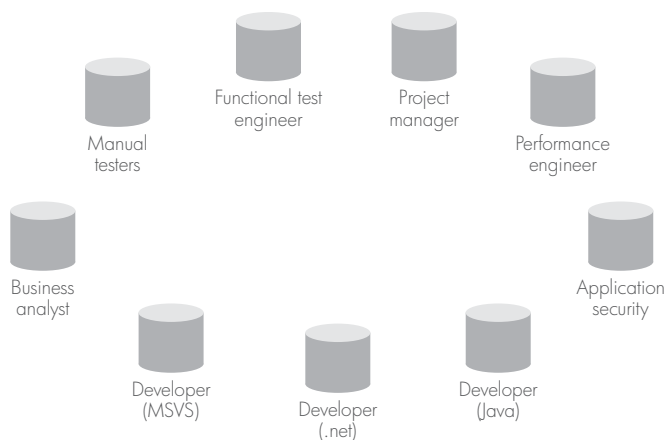
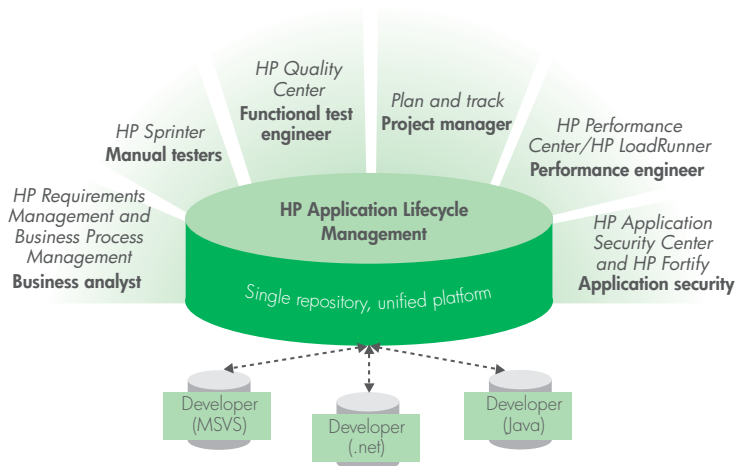


Figure 3: HP provides a lifecycle-based platform for managing modern application delivery.



Single repository, unified platform, global access

HP Application Lifecycle Management is built on a consistent, open, standards-based architecture that functions as a central repository for all aspects of the application lifecycle—including project metrics and milestones; application requirements; test data; test plans; and other project, development, and testing assets.

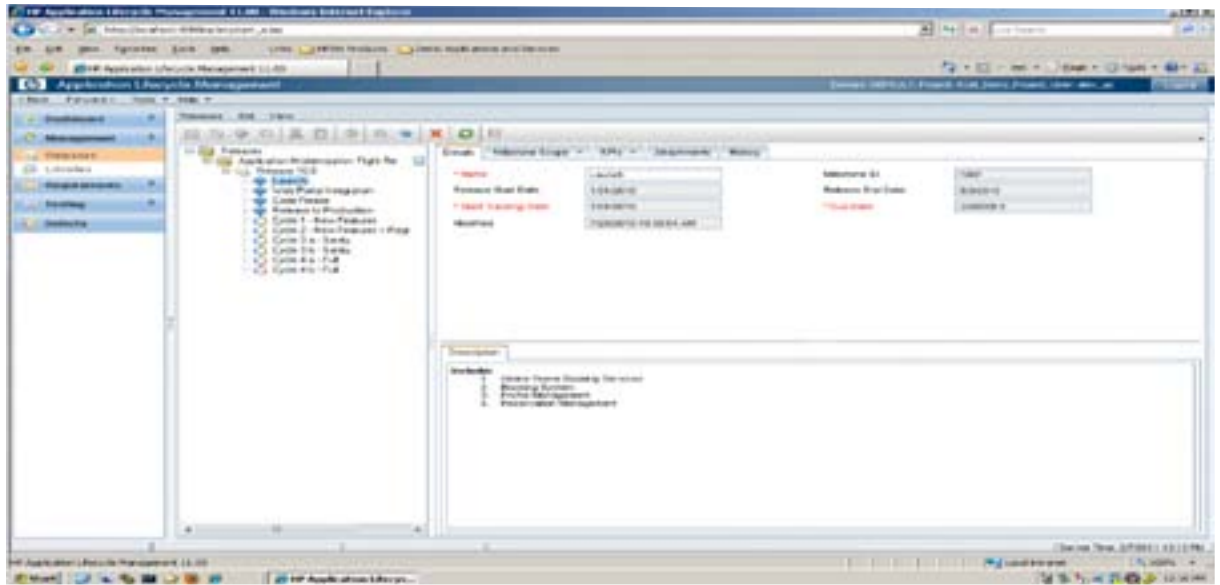
A single modernization project usually spans multiple applications, consolidating their functionality, eliminating redundancy, and updating the infrastructure. As these applications are rationalized, delivery teams need a mechanism for sharing requirements and testing assets across different systems. HP Application Lifecycle Management supports the concept of shared asset libraries that can be reused across projects. Individual project teams can make changes to these assets and then re-synch them with the library, maintaining data integrity and traceability.

Project management

Project manager: plans and tracks project milestones; removes impediments; gathers project metrics; reports on project progress to key stakeholders

Project management plays a key part in any delivery project. It is especially critical for modernization initiatives because companies often take on several projects at once, and many are interdependent. It is the responsibility of the project manager to plan and track the project milestones, remove impediments for the team, mitigate any conflicts between the stakeholders, and deliver project health metrics to management. In the traditional delivery model, project milestones are typically tracked manually and are not directly tied to development and testing objectives. As a result, project

Figure 4: HP Application Lifecycle Management provides real-time project layouts for complete visibility.



metrics are often outdated, presenting an incomplete picture to the organization and failing to accurately predict risks.

HP Application Lifecycle Management provides an integrated system for project planning and tracking. It allows project managers to create the project plan and define specific milestones and key performance indicators (KPIs) that define the acceptance criteria for these milestones. It also provides real-time project layouts such as Gantt charts as well as KPI updates, allowing project managers to take an accurate snapshot of project progress at any time during the cycle. For project teams practicing Agile methods, Agile-specific instrumentation and reports such as burn-down, burn-up and velocity are available. A Kanban/taskboard view also gives teams quick access to summary information across tasks, user stories, epics, and sprints as an additional way to visualize and manage project information and progress.

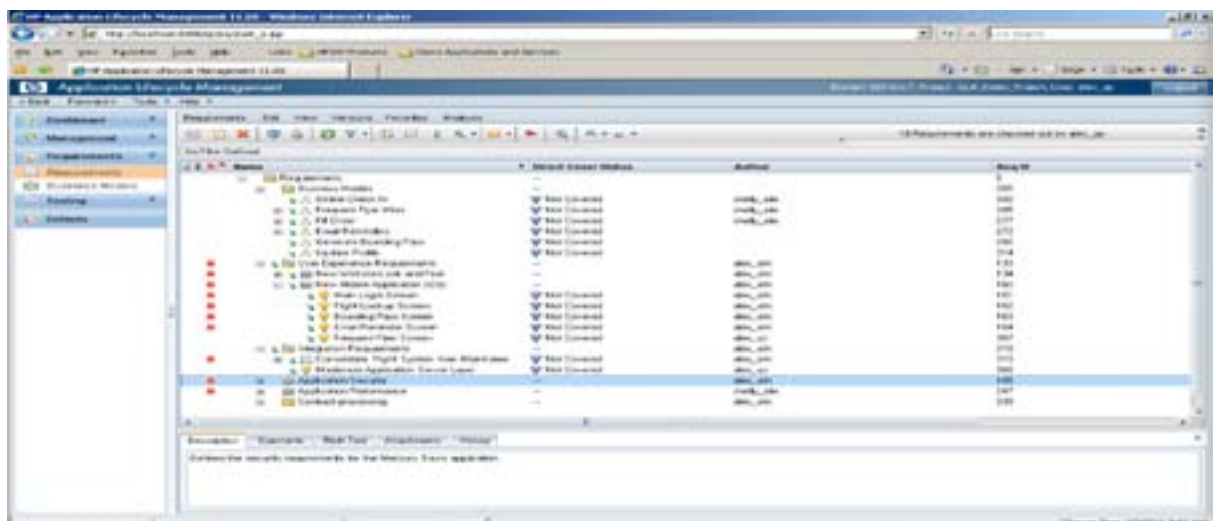
Requirements management

Business analyst: gathers and documents business requirements; validates requirements with project teams

Business analysts typically play the role of liaison between the business and IT, gathering and documenting business needs, translating them into functional and non-functional requirements, and validating those requirements with project teams. For business analysts and everyone else in the organization involved in requirements gathering, definition, and tracking, HP Application Lifecycle Management provides complete requirements management to help ensure close alignment between project teams.

As mentioned earlier, the process of understanding what application assets exist within an organization, what functionality is currently supported, and what the new, modernized applications should look like requires a form of “digital forensics”—including gathering of inputs and requirements from a variety of sources. When

Figure 5: Requirements can be imported directly into HP Application Lifecycle Management from Microsoft Word or Excel files.



these discoveries are complete, the requirements can either be entered directly into HP Application Lifecycle Management or imported from Word or Excel—converting them from lines in a spreadsheet or document to fully traceable records in the requirements repository that can be easily shared, reviewed, and updated among distributed team members.

HP Application Lifecycle Management also supports the import of business process models, which helps project teams visually understand the defined business process flows. HP Application Lifecycle Management can identify all project paths of a business process model, auto-defining requirements for each path and step in the path. For each path, it can generate new traceable business-model requirements with unique identifiers. Additionally, user interface (UI) layouts and mockups can be imported into HP Application Lifecycle Management as attachments to individual requirements. This functionality helps developers and testers understand how different stakeholders want the finished application UI to appear, and what ideas the layout designers wish to communicate to the rest of the team. From the requirements in HP Application Lifecycle Management, testers can auto-generate a test-plan framework, to make sure that they focus their efforts on high-priority business needs and make application quality decisions based on quantifiable business risks.

Building an application

Developer: builds an application in accordance with business requirements; tests code to ensure correct functionality

Application development involves building a system that adheres to the requirements and meets acceptable levels of quality. The biggest issue with traditional delivery methods is that developers are completely disconnected from the rest of the application lifecycle. They have limited visibility into project plans and status and have no direct line of communication with the business or those who define project requirements or with testers who find application defects.

HP Application Lifecycle Management can serve as a collaboration platform between developers and the rest of the project teams. Through connectors with the most commonly used integrated development environments (IDEs) such as Eclipse and Microsoft Visual Studio, engineers can view and edit HP Application Lifecycle Management requirements and tasks from within their development programs. They can even add screenshots to requirements from within an IDE to further illustrate specific parts of application functionality. Similarly, application defects that are discovered by QA can be communicated directly to the developers. By being able to view defects and the steps required for reproducing them inside the IDE, developers can more quickly fix problems, update defect status, and share their knowledge with other team members.

HP Application Lifecycle Management also features integrations with source-code change-management systems, which provide the ability to link code to tasks, requirements, tests, and defects. The overall result is improved collaboration between different roles, more comprehensive traceability, and enhanced ability to evaluate risk based on precise information about what has changed.

Quality assurance

QA tester: builds test plans and test cases; creates and runs automated and manual test scripts; reports on application quality levels and go-live readiness

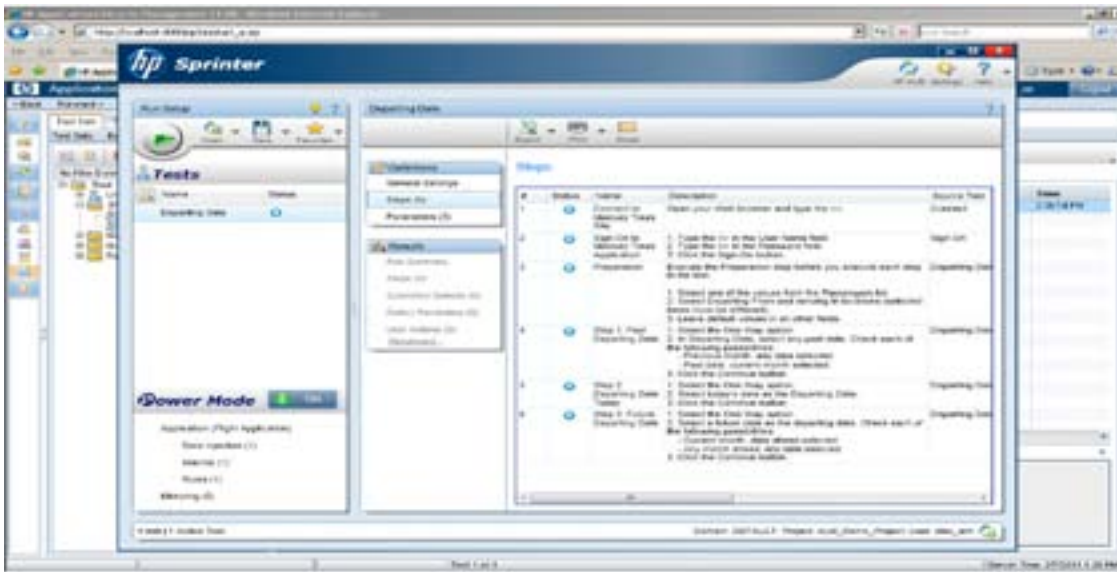
The tester's role is to create a test plan, build functional and performance test cases, record automated test scripts, run manual and automated test scripts, and report to the project team whether the application has sufficient quality to go live. HP Application Lifecycle Management provides the industry's only complete web-based repository for the entire testing process. With HP Application Lifecycle Management, test engineers develop tests based on the defined business processes, create reusable test components using both manual and automated methods, and share them with distributed quality teams. Tests are traceable to functional and non-functional requirements, making sure that testers focus on validating the correct business functionality and that tests are revised if a requirement changes or is deleted.

A component of HP Application Lifecycle Management—HP Unified Functional Testing software—helps accelerate application functional testing by simplifying test design and maintenance for both GUI and for non-GUI components. It can also validate complex end-to-end business processes that traverse multiple layers of composite applications, making it an essential solution for any modernization initiative.

HP Application Lifecycle Management also increases the speed and accuracy of manual test execution. HP Sprinter software is an easy-to-use solution to help build and run better, more accurate manual tests. HP Sprinter automatically collects relevant details and adds them to defect descriptions to help illustrate the issues and help testing teams in reproducing and solving them. It also features a host of advanced functions such as mirror testing—which automatically repeats tests on up to six additional machines with different browser and operating system configurations, increasing test coverage and validating the application on more environments.

HP Performance Center software also fully integrates with HP Application Lifecycle Management and can share assets, update project timelines, and provide real-time visibility into the progress and status of the application performance and load-testing efforts. HP Performance Center software can automate testing for a variety of applications, including emerging Web 2.0 and rich Internet applications (RIA) systems.

Figure 6: HP Sprinter enables real-time updates to test flow to correct errors on the test plan during execution.



HP LoadRunner TruClient is an innovative, browser-based virtual user generator (VUGen) that supports simple web as well as modern JavaScript-based applications. It utilizes a unique, patented approach to object recognition, which makes it the most flexible and extensible solution available today for testing Web 2.0 applications.

Reporting, analysis, and decision-making

VP of applications; manages portfolio and project funding; makes final project go-live decisions based on metrics and information from project teams

To make informed decisions about application readiness, management teams need complete visibility into all aspects of the project—from conception to delivery. HP Application Lifecycle Management provides complete, customizable, cross-project reports accessible directly through its central repository. By analyzing real-time data on the key milestones, quality KPIs, and requirements coverage, decision makers can see a complete picture of the project status and easily assess progress or application readiness.

Summary

Application transformation is a move from outdated application infrastructure to new technologies, methods, and deployment options in order to deliver innovative functionality, increase agility, and cut costs. However, transformation success cannot be achieved without fundamentally changing the way companies approach application delivery. Trends such as Web 2.0, composite applications, Agile, and cloud are demanding new levels of application quality, increased collaboration between project teams, and tighter alignment of IT goals with the business needs.

HP Application Lifecycle Management provides a centralized platform for managing and automating activities required for the application delivery lifecycle. It helps accelerate application transformation by facilitating planning, testing, and decision-making to release better-quality applications in less time.

To learn more about how HP can help accelerate application transformation, visit www.hp.com/go/alm.



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