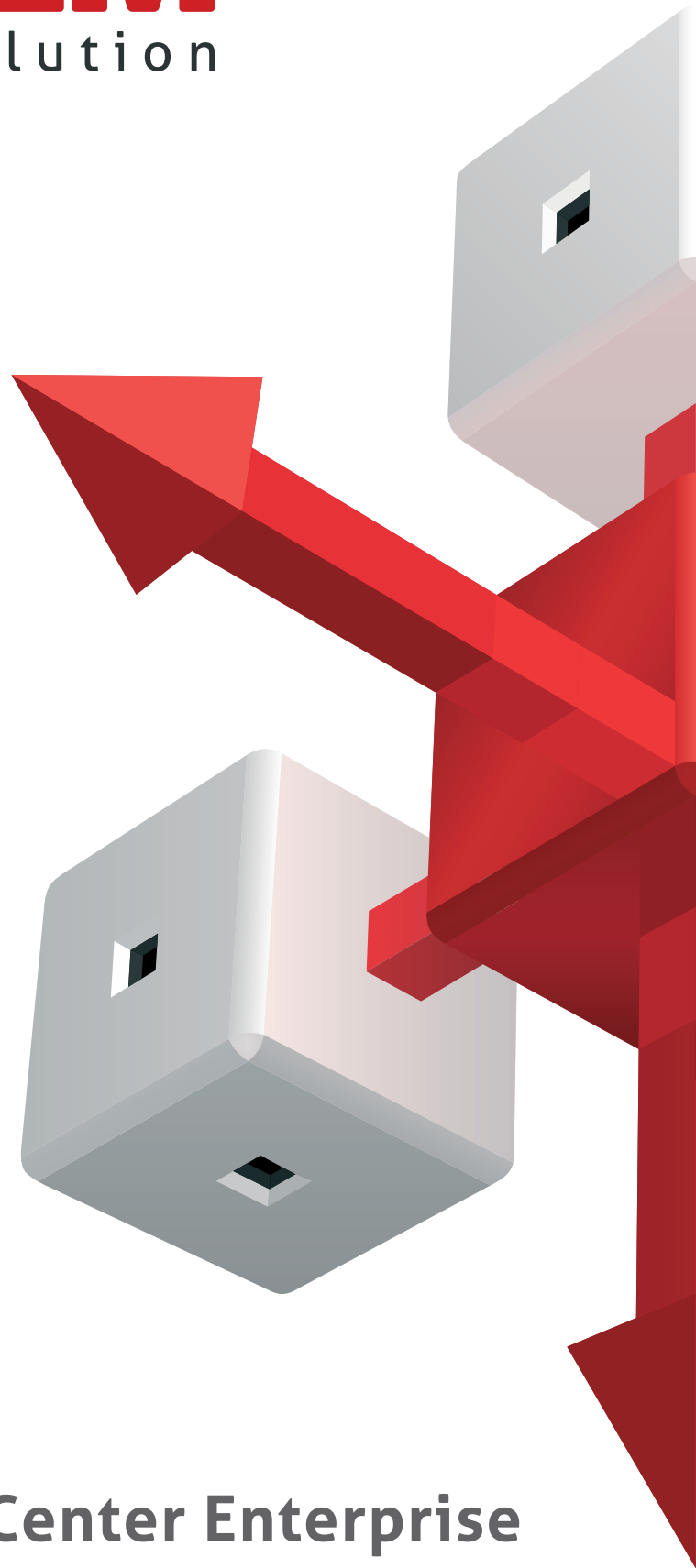# IKAN**ALM**

ALM through evolution

IKAN ALM and
HP ALM/HP Quality Center Enterprise

Where Development, Testing and Operations meet

Table of contents

Executive summary

Application Lifecycle Management (ALM) is a key discipline aimed at managing the entire software development process from requirements through deployment, involving Business Analysis, Project Management, Development, Quality Assurance (QA), and Testing and, finally, the delivery of the results to Operations.

The trend toward globalization (distributed teams), evolving development methodologies (from Waterfall to Agile), the omnipresent budget restrictions and the necessity to deliver more applications faster, increase the need to automate the complete ALM process in order to:

✔ Make the ALM process enforceable

✔ Improve communication between all stakeholders

✔ Enhance closer collaboration and teamwork

✔ More efficiently use the appropriate development, testing and operations resources

✔ Deliver applications faster and with higher quality

✔ Reduce the overall cost and increase the efficiency of application development and delivery

IKAN Development, an HP Gold EMAP Partner, provides an end-to-end ALM solution to our clients leveraging HP ALM/HP Quality Center, the ultimate goal to apply enterprise-wide ALM standards, will provide higher quality applications, in less time and at lower cost.

This White Paper targets all parties technically interested in ALM, be it executives, technical managers, software architects, operations people or developers.

Problem statement

In many cases, our customers' standard application development and delivery processes do not automatically link up the activities of the QA and Testing people with the activities of the Developers. For example, defects identified by the QA and Testing department and stored in a standard repository such as HP Quality Center Enterprise/HP ALM, may not be automatically linked to the concerned development cycle.

On the other hand, when Developers release a new cycle to the QA and Testing department, the status of any reported Defects may not be automatically synchronized and the newly developed code – whereby Defects are fixed –and may not be available to the QA and Testing people in a transparent and coherent way.

This lack of integrated tracking of Defects results in redundant communication efforts trying to find out the overall status of the Defects: which Defects are solved by which Builds, where can I find the different Builds and how do I install them? Furthermore, it slows down the development process and increases development costs due to these communication problems. For customers wanting to integrate defects between IKAN ALM and HP ALM/HP Quality Center Enterprise, the HPQcITSPlugin from IKAN Development provides

the missing link to enable fully integrated defect tracking between the two solutions.

Another area which may need improvement is the triggering of automated tests that are stored in HP ALM or HP Quality Center Enterprise. Before now, a developer committed his code and the defect tracking number(s) with comments into the VCR (Version Control Repository), and the Build process linked the Defects to a Build. Next, the QA and Testing department could execute the automated tests stored in HP ALM/HP Quality Center and communicated the results to the Development department. The HPQcTestRunner from IKAN Development provides an answer to this inefficient way of working by systematically triggering the automated tests as part of the fully automated Build or Deploy process in IKAN ALM.

The advantage is two-fold: the developer immediately receives feedback on the successful or unsuccessful execution of the tests, and the QA and Testing department gains precious time by not having to launch the tests manually.

Note: For the remainder of this document, we will use the term "Defect" to refer to both Defects (HP ALM/HP Quality Center Enterprise) and Issues (IKAN ALM), except for when it is part of a name.

Solution Description
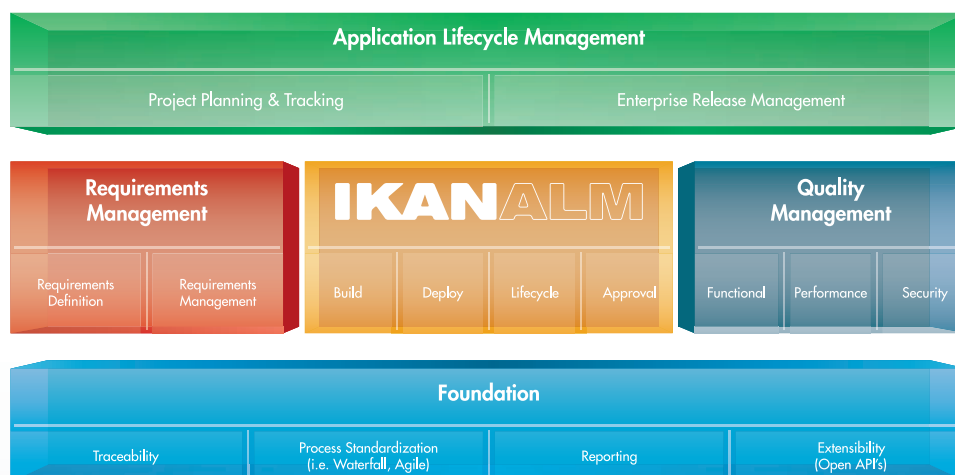
The IKAN ALM Issue Tracking System plugin (HPQcITSPlugin) for HP ALM/HP Quality Center Enterprise

IKAN Development has developed an IKAN ALM Defect tracking plugin for HP ALM/HP Quality Center Enterprise: the HPQcITSPlugin. Implementing this plugin will establish the automated integration between the QA and Testing department and the Development department.

The HPQcITSPlugin uses the HP REST API to interact with HP ALM/HP Quality Center Enterprise. The plugin is a Java JAR file which is deployed as part of the IKAN ALM web application. All required configuration parameters are stored in IKAN ALM and provided by the HPQcITSPlugin when they are required for request fulfillment.
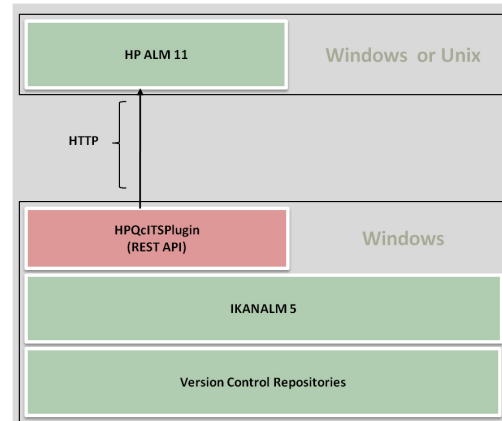
## The HP Quality Center TestRunner (HPQcTestRunner)

IKAN Development has developed a client to automatically trigger automated tests in HP ALM/HP Quality Center Enterprise from within the IKAN ALM application: HPQcTestRunner.

HPQcTestRunner is a Pure Java COM client which connects to a registered Open Test Architecture COM Server. Open Test Architecture represents an entry point to HP ALM/HP Quality Center Enterprise and provides the capability to start automated tests. Since OTA is a 32-bit COM object, it must be deployed on a 32-bit Windows system. Although both IKAN ALM and HP ALM/HP Quality Center Enterprise support UNIX, there must be at least one Windows installation to host the OTA COM object.

During build or deployment procedures, IKAN ALM invokes various targets/goals defined in build and deployment scripts. All parameters are defined in IKAN ALM and, if required, they are passed to a scripting tool as properties.

The HPQcTestRunner configuration provides various sample build scripts to start automated tests from within IKAN ALM. HPQcTestRunner is a Java application.

As Maven 2 keeps all dependencies in local or remote repositories, a custom plugin has been developed for Maven 2 which can start a java application from a JAR file (ikanExec-maven-plugin).
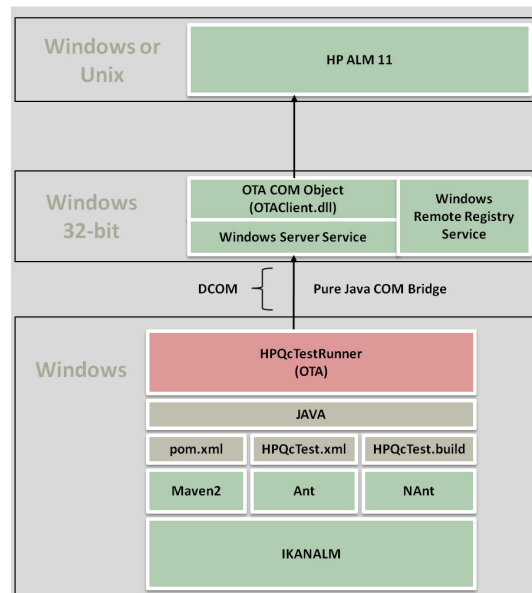
Benefits

The integration of HP ALM/HP Quality Center Enterprise with IKAN ALM provides the following benefits:

Benefits for HP ALM/HP Quality Center Enterprise customers:

- Better control over build environments, predictable build results, repeatable builds, nightly/automated builds, predictable deployment results, automated deployment to test/production systems.

- Committed source code changes (potential bug fixes, new features) are automatically reported to the HP ALM/HP Quality Center Enterprise defect tracking system.

- Functional test results will be launched after each build and automatically reported to the HP ALM/HP Quality Center Enterprise testing module.

Benefits for IKAN ALM customers:

- Requirements management
- Automated test case generation from requirements
- Test scheduling and execution
- Access to other testing products through HP ALM/HP Quality Center Enterprise

Implementation scenario

The IKAN ALM Issue Tracking System plugin (HPQcITSPlugin) for HP ALM/HP Quality Center Enterprise

The IKAN ALM Issue Tracking functionality provides the possibility to link Defects from an external defect tracking system to an IKAN ALM Level Request. Defects can be linked to a Level Request in the following ways:

1 Via manual addition of a Defect to a successful Level Request, using the GUI widgets on the IKAN ALM Level Request Detailed Overview panel.

2 Via an automated search for handled Defects in the comments provided by the developers when committing or checking in sources into the VCR. This automated search is done in a separate phase during the handling of a Build Level Request, and is based on a regular expression describing the Defect tracking number format. Currently this is only supported for a Subversion or CVS Version Control Repository.

3 Via the enumeration of solved Defects when delivering to Test/Production levels enabling easy generation of Release Notes.

The scenario is as follows:

1 An IKAN ALM Defect is updated with the content of an HP ALM/HP Quality Center Enterprise Defect

The HPQcITSPlugin provides a solution for automated updates of IKAN ALM Defects linked to HP ALM/HP Quality Center Defects on Build, Test and Production levels. (An HP ALM/HP Quality Center Enterprise Defect can be opened from within IKAN ALM with a single click).

2 The IKAN ALM Defect is linked to a Defect stored in HP ALM/HP Quality Center Enterprise

The HPQcITSPlugin provides a mechanism for updating Defects in HP ALM/HP Quality Center Enterprise from within IKAN ALM.

The HP Quality Center Issue Tracking System plugin (HPQcITSPlugin)

HPQcTestRunner provides a mechanism for IKAN ALM to trigger automated tests created by QTP/UFT and stored in ALM/QCE. By adapting the IKAN ALM project build and/or deploy scripts, the automated tests are triggered after every automated build or deploy. As a result, the number of faulty builds/deploys will be minimized.

The following screenshots show the automated test set execution log in IKAN ALM and the results logged into HP ALM/HP Quality Center Enterprise.

The automated tests in HP Quality Center can be triggered in different ways:

1 By Ant Test Runner

Ant Test Runner runs specific HP ALM/HP Quality Center Enterprise sets of tests or whole test folders according to the configuration defined in the Ant XML script. Test results can be ignored or they can stop a whole build.

2 By Maven 2 Test Runner

Maven 2 Test Runner runs specific HP ALM/HP Quality Center Enterprise sets of tests or whole test folders according to the configuration defined in the Maven 2 POM file. Test results can be ignored or they can stop a whole build.

3 By NAnt Test Runner

NAnt Test Runner runs specific HP ALM/HP Quality Center Enterprise sets of tests or whole test folders according to the configuration defined in the NAnt XML script. Test results can be ignored or they can stop a whole build.

Architectural components used for this solution

- **HP ALM**
  is a unified platform for accelerating and simplifying application delivery and empowering application teams – which include quality and development teams – to deliver better results for the business. HP ALM 11 provides actionable information and workflows designed to accelerate delivery of secure, reliable, modern applications.

  Its key capabilities include cross-project planning and tracking, requirements definitions and management with integration to business process models, complete traceability from requirements through developer tasks, testing and defects, and support for multiple development methodologies such as agile and waterfall. In addition, HP ALM shares a common foundation with HP Quality Center Enterprise and supports complete quality planning and management, asset sharing, innovative manual testing with HP Sprinter, and integrated automated testing.

- **HP Quality Center Enterprise**
  HP Quality Center Enterprise software manages application quality across the entire application lifecycle. It provides requirements management, release and lifecycle management, test management, defect management, and reporting – all from a single platform. It also includes a robust repository for your test cases and defects. To close the loop on your application lifecycle, HP Quality Center Enterprise includes a full-featured requirements management system with a risk-based quality management module so that you can effectively gauge the risk of release.

- **IKAN ALM**

  is IKAN Development's product providing a support to the continuous process of managing the life of an application through governance, development and maintenance.

- **OTA COM Object**

  is an HP ALM/HP Quality Center Enterprise client's library registered as COM object. OTA COM Object behaves as entry point to HP ALM/HP Quality Center Enterprise servers. Every HP ALM/HP Quality Center Enterprise client, as well as 3rd party integrations, uses it to communicate with the HP ALM/HP Quality Center Enterprise server.

- **Pure Java COM Bridge**

  is a Java library that implements the DCOM wire protocol (MSRPC) to enable development of Pure, Bi-Directional, Non-Native Java applications which can interoperate with any COM component.

- **REST API**

  is an interface to interact with the HP ALM/HP Quality Center Enterprise Server. It relies on the HTTP protocol which makes it platform-independent and usable without any coding. However, it is not to be considered as an alternative to OTA as it does not cover all HP ALM/HP Quality Center Enterprise features.

- **HPQcITSPlugin (REST API)**

  uses REST API to interact with HP ALM/ HP Quality Center Enterprise. REST API methods are used for retrieving customized Defect properties, updating IKAN ALM Defects and adding comments to HP ALM/HP Quality Center Enterprise Defects.

- **HPQcTestRunner (OTA):**

  uses Pure Java COM Bridge to call OTA COM Object methods. OTA COM methods are used to schedule HP ALM/HP Quality Center Enterprise test sets for execution.

Summary/Conclusion

The integration between HP ALM / HP Quality Center Enterprise and IKAN ALM brings together the best of both worlds.

IKAN Development provides an integrated web-based Application Lifecycle Management (IKAN ALM) platform for both Agile and traditional software development teams.

It combines Continuous Integration and Lifecycle Management, offering a single point of control and delivering support for build and deploy processes (manually generated or automated), approval processes, release management and software lifecycles.

IKAN ALM tightly integrates with leading existing third-party versioning solutions (e.g. IBM® Rational® ClearCase®, Microsoft® Visual SourceSafe®, Serena® PVCS Version Manager, CVS, Subversion) and build and deploy tools (Make, Ant, NAnt, Maven 2), and also provides a defect tracking software plugin (Atlassian® JIRA®, HP ALM®, …). This results in being a unique cross-platform ALM solution.

HP is a technology solutions provider to consumers, businesses and institutions globally. Their offerings span IT infrastructure, global services, business and home computing, and imaging and printing.

HP software helps IT organizations make sure that every dollar invested in IT, every resource allocated, and every application or service delivers positive business outcomes. Their business technology optimization (BTO) products make up the industry's most comprehensive suite of IT management software for automating key processes across critical IT functions, including strategy, applications, and operations.

HP Software leads the BTO market by partnering with industry leaders to provide complete solutions which extend and enhance their software portfolio. As the focus of IT shifts from systems management to business results, leading companies are investing in HP Software to lower costs, improve delivery time and reduce risk for their most strategic business initiatives.

Together we create an integrated ALM solution which establishes an environment where developers, testers and operations people seamlessly work together, each of them doing what he is best at without having to waste time in figuring out what he needs from another stakeholder or what he needs to deliver.

Our solution fully synchronizes defects between IKAN ALM and HP ALM/HP Quality Center Enterprise and enables launching of automated tests stored in HP ALM/HP Quality Center Enterprise from the IKAN ALM Build module., and will obviously lead to enhanced collaboration, higher quality applications, faster delivery times and reduced costs.

For more information

To know more, visit http://www.ikanalm.com and http://www.hp.com/go/alm

Contact IKAN Development info@ikanalm.com

IKAN Development N.V.
Kardinaal Mercierplein 2
2800 Mechelen
Tel +32 15 797306
www.ikanalm.com
info@ikanalm.com

IKAN