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CUSTOMER STORY – RETAIL & LOGISTICS

Hamburger Hafen und Logistik AG (HHLA)

Development and testing go hand in hand

Background

Hamburger Hafen und Logistik AG (HHLA) is one of Europe's leading port logistics companies. With its Container, Intermodal and Logistics segments, HHLA is vertically positioned along the transport chain. Efficient container terminals in Hamburg und Odessa, high-performance transport systems and a full range of logistics services form a complete network between the overseas port and the European hinterland. HHLA is the largest container handling company at the Port of Hamburg. HHLA handles around 95 percent of its containers at the three Hamburg terminals: Altenwerder, Burchardkai and Tollerort. The HHLA Container Terminal Altenwerder (CTA) is almost fully automated. The company employs approximately 4,700 people worldwide, over 3,500 of whom are based in Hamburg.

Challenge

To replace its old customs system, HHLA developed an almost fully automated customs system (TZS). It is already designed to fulfil future requirements established by the revenue authorities, such as the new customs code that will come into force in 2013. The business-critical TZS acts as the interface to the customs offices of the regional tax office and ensures that containers receive customs clearance and can leave HHLA's premises. It is also integrated into the overall operative and administrative system landscape of a port logistics company. Correspondingly high requirements are placed on the system availability and the data throughput and accuracy. The TZS eliminates almost all manual processes and simplifies data amendment and customer communications. Jörg Vanhoefer, Project Manager of HHLA Container Terminals, explained, "The system now more or less guides the users. If all the data is correct, manual intervention is no longer required and the containers are automatically processed". The TZS was developed within the scope of the ISETEC II funding initiative from the Federal Ministry of Economics and Technology in cooperation with the project sponsor TÜV Rheinland Consulting GmbH.

Before the TZS could completely replace the old system and be put into operation in mid-2009, comprehensive functional and integration tests were required. In view of a tight schedule, the HHLA managers commissioned external specialists to develop and test the new software and the quality management and assurance processes. SQS was therefore responsible for test design and quality assurance. The aim was to quickly introduce test process automation (TPA) for the functional tests on the basis of a functional specification. HHLA commissioned the SQS test centre in Görlitz to conduct the subsequent system-wide integration tests, which examined whether the new customs system also functioned smoothly within the complex IT system landscape. The HHLA Project Manager who selected the test centre justified his decision by stating, "External testers have to provide professional-technical transferability and write good test cases. To do this, you need to be systematic and flexible and have a certain level of cultural proximity. All of these preconditions were met in Görlitz".

Solution

Test automation in Hamburg

The main tools used within the scope of an agile software development process were CVS (Concurrent Versions System) for configuration management; Jira for fault management, requirement planning, troubleshooting and project management; SQS-TEST®/Professional for test case recording and automation; Cruise Control for automating the build; PMD for automatically testing the code quality and JUnit for developer tests. Development and test teams worked in parallel. Each day, a ‚daily build‘ of the latest TZS version was created, the function and correct operation of which was then tested overnight using the SQS test script. The developers therefore received daily updates as to whether their programming was correct or whether faults existed. The new software thus achieved a high level of stability in a short time.

The procedure was characterised by:

- Immediate integration of the developed software code

- Daily Check In (the developers each check in their versions in the evening. The version must pass all JUnit tests without error)

- Classic tests in the agile environment, use of test stages

- Tool-aided project work (incl. CVS, Jira)

- Processes in line with the methods of the PMI (Project Management Institute)

- Specialist concepts as a basis for test cases

- Division in the developer, integration and development testing teams

- Automation of the test environment

- Introduction and monitoring of quality gates on the basis of specific criteria, several test stages (developer tests conducted as part of the project before the software, functional and application tests are checked in, system test conducted by the test centre)

- Nightly functional and application tests using SQS-TEST®/Professional

- Gradual rollout of the new customs system

- Integration tests across the entire system landscape (HHLA + customs)

Integration tests in Görlitz

To examine whether the new customs system could also be harmonised with all of HHLA's other operative and administrative IT systems, each of the new releases had to be subjected to individual integration tests. These tests aimed to find and eliminate errors in the operative processes arising through the interaction of the systems. These integration tests took place in SQS's test centre in Görlitz. The testers provided a complete test environment with the HHLA system landscape, which not only included the newly developed TZS, but also all peripheral systems such as logistical management software, administrative systems, transport device simulations and a customs testing system. Jörg Vanhoefer explained, "This complete run-through is a needed to eradicate any interface risks between the individual systems".

The specific services provided by the test centre included:

- Mapping the complete system landscape in the test centre

- Monitoring the interface risks

- Using tried and tested methods to conduct systematic tests

- Categorising and prioritising test cases on the basis of the business processes

- Conducting specialist-technical transfers in specific test cases

- Providing rapid feedback to the developer and development testing team in Hamburg

- Monitoring the requirements and concepts

Benefits for the Customer

Hamburg

- High system quality through the achievement of a defined level of maturity

- Increased level of test automation

- Majority of software errors already discovered during functional tests using SQS-TEST®/Professional

- Short testing periods, modifications for end users already visible after a single iteration (an iteration lasts one month)

- High level of user satisfaction as the dialogs have been directly agreed up with the end users

- Specialist departments can write their own test cases in SQS-TEST®/Professional

Görlitz

- Use of the existing test infrastructure, including the methodology, processes and tools

- Flexible and needs-based use of personnel resources

- Greater value for money than in-house testing

- Smooth replacement of the old system without reloading releases

- Expertise gained in the customs system project can be used for future projects and integration tests

HHLA Project Manager Vanhoefer believes that the use of external specialists and professional testers in-house has paid off: "This iterative procedure has clearly added new dimensions to the developer-centred use of agile methods. Both our specialist departments and the developers were impressed by the procedure. We hope to use the expertise gained from the customs project in the future. I guess we could call TZS a pilot project, which we will now extend to further terminals under consideration of upcoming customs requirements."

Contact

If you are interested in SQS' service offering regarding testing and quality management for the Retail & Logistics industry, please do not hesitate to send us an e-mail: info@sqs.com

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