PMTC -
Professional Software Testing

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Content

1 Introduction

In the early nineties, PMTC was founded by Philips Media, as one of only two CD-I test centres in the world. Due to the high demand for quality testing, we quickly extended our activities into the new multimedia market by offering testing services for both PC and Mac software.

Throughout the years we have developed a range of techniques and procedures for both our hardware and software testing activities. Our expertise can be integrated in every area of product development.

If your product is consumer oriented or intended for the professional market or even a custom made B2B application, here at PMTC we have the correct approach to solve your software-testing problem.

Currently PMTC has around 50 full-time test engineers. They, together with our extensive hardware and software test environment, can satisfy virtually all your testing needs.

The following document will give you a good overview of how PMTC approaches the testing of software applications and will also give you a description of our general services.

Should you require any further information or if you have any questions, please do not hesitate to contact us.

Best regards,

Cliff Oxlade
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2 Procedure Descriptions

2.1 Customised Test Procedures

Through years of testing experience, we have learned that each product requires a different testing approach. This means each testing request for a product or title is handled as an individual and unique test run. We strongly believe that only a customised testing approach can guarantee the high quality level that your product deserves.

2.1.1 Full Quality Test

Procedure

Our optimised testing procedures offer a complete and thorough check of your program and/or device in any stage of its development. A team of testing engineers examines the product in order to design an in-depth test plan and test matrix. This procedure will be followed for each new test version.

A full quality check contains the following stages:

Functionality testing:

Based on the test plan and the test matrix, each section of the program is checked in order to get a full test coverage of your title. This check is performed on both high-end and low-end systems.

The test plan combines a wide variety of testing issues such as:

- normal program walk-through
- install & uninstall tests
- OS compatibility on PC and Mac
- foolproof & user interface
- presentation and concept comments
- exhaustive testing (boundary, range & stress tests)
- exploration testing

This functionality test is the key to PMTC's testing services. It combines a complete and professional working method with a unique test plan and a personalised testing approach specially designed for your product.

Compatibility testing:

The standard compatibility test is an integrated part of PMTC's full quality test. It is performed in accordance with the product specifications in order to check both compatibility and performance issues. Whereas the functionality test ensures the proper working of the product. As such, the compatibility test covers the general working on a wide range of platforms and computer configurations.

User Acceptance Test

This test is designed to get an impression of the overall quality and to supply a third party evaluation of the product. This test is included in the Full Quality Test as an extra service for our clients. It enables you to get a clear unbiased view of the strengths and weaknesses of the product.

The test report describes how the consumer would rate the current quality level of the product according to his own needs and to other products he uses or knows about.

Level of Quality Control

Quality control and costs are ideally balanced in this test. If all reported bugs are fixed, the product can be considered reliable for the defined test objectives.

For an in-depth look at the Full Quality Test and PMTC's testing approach, our Testing Consultants will gladly inform you personally on the different possibilities of testing at PMTC. This first analysis and quotation for your product is totally free.

Testing costs

As each product is approached in a unique way, the total testing costs vary greatly, depending on the product's characteristics. Elements such as complexity, size, compatibility, coverage, sub-structures and random functionality all have an effect.

Some examples:

- E-business site :
  - System Requirements : Pentium 133, 16 Mb, 256 colours, 800*600
  - OS Windows 95 or higher
  - Limited compatibility test with popular browsers and operating systems
    - 60 hours for first test round

- Theoretical training program for bank personnel :
  - System requirements : Pentium 200, 64 Mb RAM, 16-bit colours, 640*480, 45 Mb HD space
  - OS Windows 95 or higher,
  - Full network functionality with central server at TBase 100 and DHCP server
  - Local Install from CD-ROM
  - Few graphics, restricted 'random' events, straightforward structure
    - 110 hours for the initial test run

- Online banking program :
  - System Requirements : Pentium 166, 32 Mb RAM, 16-bit colours, 800*600
  - OS Windows 95 or higher
  - Full functionality and connection compatibility test
  - Test on 40 configurations using various connection types (modem, ISDN, …)
    - 160 hours for first test round

- Test of online security system using biometric identification and card reader:
  - System Requirements : Pentium 120 Mhz, 32 MB RAM (Windows 9x/Me) or 64 Mb RAM (Windows NT/2000), 50 Mb HD space
  - Creation of extensive product specific test plan
  - Full functionality test
  - Compatibility test on 50 machines
  - 195 hours for the first test round

Note that testing projects such as this are always discussed in detail with the client to get a clear understanding of our testing procedures and techniques combined with the clients and programmer's milestones and deadlines.

2.1.2 Language Conversion Test

Procedure

This test is intended to give additional quality control when a product is translated on the same platform or to add to the functionality coverage when a title has been translated and released on another platform. The test has 2 focus points:

1. The actual translation of the texts

- Has all content been translated into the correct language and located correctly in the product?
- Are the translated texts displayed properly in the complete product?
- Does the translation match the meaning and atmosphere of the original product?

This test is performed based on complete scripts provided by the developer. Every text and audio file is located and checked.

2. The functionality check after translation

- In addition to the translation check, a functionality test can be performed to check if the translation procedure and possible new programming did not influence the basic program structure and functionality.

The Language Conversion Test can be performed in Dutch, French, English and German. Other languages can also be tested but only when requested in advance.

Level of Quality Control

This test offers complete quality control with regard to the translation and presentation of the scripts. All translated text and audio is checked.

A pure conversion test does not contain functional debugging. Therefore, this test is only advisable for programs that have already been completely checked in their original language. Of course, all functional bugs found during the conversion test are reported. When a functionality check is added to the test, both the actual translation of scripts and the full functionality of the product fall under the quality control offered by the test run.

Testing Costs

The costs for conversion testing depend on the number of texts and audio fragments to be checked, their accessibility and whether or not a functionality test is included in the test run.

- For a straightforward company presentation, the test takes about 20 hours
- For a program with a complex structure, elaborated texts and a large number of functional features, the test may take up to 150 hours to complete.

In both examples, we assume that the conversion did not include a functionality test and that no new functional bugs were encountered.

2.2 Standardised Test Procedures

2.2.1 Compatibility Test

Procedure

The main purpose of this test is to check whether the product or title functions correctly on a wide range of configurations. These configurations are specific set-ups of computers with different combinations of hardware and software.

The product is installed on these platforms and the main functions are checked for 30 to 120 minutes, depending on the product functionality and complexity. This is followed by testing the uninstall functionality.

PMTC has a wide range of devices that can be used for compatibility testing purposes:

- Over 70 standard computer configurations representing the actual European market
    - Setups ranging from 386 SX to Pentium 4, Athlon and Coppermine
    - Wide range of processor types from Intel, AMD and Cyrix
    - Macintosh configurations including the iMac, iMac DVD, G3 and G4
    - DVD & DVD-ROM playback systems
    - VCD players

Testing can be performed with various peripherals and extensions:

- Printer compatibility on laser & inkjet printers
- Modems, modem connectivity and performance
    - 28.8, 33.6, 56K and 120K range and ISDN
- Input devices (Webcams, mice, etc.)
- USB peripherals
- …

Networking facilities:

- LAN: Novell Netware 5.0, Windows NT 4.0 and Windows 2000 Advanced Server (Beta 3) on COAX and/or STP
- IPX
- TCP/IP
- Serial link
- Cross-link
- Modem-to-modem
- Internet & Intranet
- 100BT, 10BT, 10B2, 100VGA

Online testing

- Multi-user functionality on Internet (with or without server)
- Testing of Internet sites with the available browsers and plug-ins (Java, JavaScript and ActiveX)
- Connectivity and connection performance

Tests can be performed on the following operating systems:

- MS-DOS versions starting from 3.0
- Windows 3.1 and Windows for Workgroups 3.1x
- Windows 95 Original, SR1, OSR2, OSR 2.1 USB, OSR 2.5
- Windows 98 Gold, Plus, SE
- Windows NT 3.51
- Windows NT 4.0, Service packs 2 to 6a
- Windows Millennium
- Windows 2000, Pro and Advanced Server
- Mac OS 7.5.1 to 9.1

PMTC also offers a variety of standard OS languages (English, Dutch, French and German) in the standard configuration setup. Other languages can also be checked on demand.

Level of Quality Control

As a result of the large number of configurations, the compatibility test guarantees an extensive quality control with regard to the compatibility of your product on the defined platforms.

We do recommend the full quality check if you wish to cover the program functionality itself. The compatibility test is used for European releases of an existing product, to increase the compatibility check of a product that has already been tested or to measure stability and performance in early stages of development.

Testing Costs

The testing costs for a product compatibility test mainly depends on the number of configurations used during the test. A test may take between 20 and 300 configurations.

Checking the program on a single configuration takes anywhere between 30 and 120 minutes depending on the installation type, functionality and complexity of the product.

2.2.2 User Acceptance Test

Procedure

This test has been designed to get an impression of the overall quality of the product before it goes into a new development stage or before it is released. Note that it must still be possible to make changes to the product in order to benefit from the User Acceptance Test.

The test consists of 3 major parts.

In the first part of the test, the test team searches for weak points in the program. Based on our vast experience, we then recommend possible improvements. This part also contains a comparison with existing products in order to point out the strengths and flaws of the product.

- The Unguided Test

  This is where the test engineer receives the program without any additional documentation except for the booklet the consumer would get when buying the product. This test mainly focuses on interactivity, user friendliness, documentation and overall design.
- The Guided Testplan

  For this test, the test engineer receives both the product as well as all available consumer information about it. There is also a little exploration time to get to know the product before starting the test. The testplan then handles elements like usability, basic functionality, sub-structure and product idea.

In the second part, the tester rates the product on a number of important elements such as user friendliness, design and documentation and general functionality.

The final stage is the generation of an in-depth and understandable test report. This report contains an evaluation table of the product and the general comments on the product evaluation. This way, the client gets a clear overview of the possible improvements and possibilities of his product and a good view of its market position..

Level of Quality Control

This test is primarily used to get an impression of a third party appreciation of your product, not to debug it. The test engineer does not actively search for bugs but approaches the product like an end-user would. It describes how the consumer would rate the current quality level of the product according to his own needs and to the other products he knows or uses. Naturally, all bugs encountered during these tests are reported.

Testing Costs

A standard test run takes up 15 to 60 hours depending on the product's functionality features and complexity.

This test is also included in PMTC's Full Quality Test as an extra testing service without adding any extra hours, as to allow our clients to get a clear look on the quality level of their product.

2.3 Special Requests

Procedure

These are all the testing services for which the customer himself specifies in detail how, when, where and why the product has to be tested. This procedure is also used when the product requires a testing approach that cannot be derived from our standard procedures, requiring PMTC to develop an adapted test plan

This includes tests to pinpoint a specific problem, test plans designed by the client for a new product as well as test modules or products requiring specific hardware setups. All of these need very in-depth and special test plans. These can be set up by the client or developed in co-operation with PMTC.

Level of Quality Control

As the test plan is set up in co-operation with the customer or by the customer himself, he determines the level of quality control. The tests are performed exactly as described by the customer.

Testing Costs

The costs for these tests entirely depend on the customer's wishes as laid down in the test plan.

3 Project flow for Testing

Each product that enters testing goes through a standard procedure before PMTC starts testing.

After receiving a request for a testing quote, PMTC always asks the client to provide our test engineers with the available basic product information and/or an example or demo of the product.

This information can be the product description, flow charts, minimum configuration, booklet, walkthrough, cheats, hidden features, available beta-or demo versions of the product… in order to tailor the quote to the product's requirements

This quote is sent to the client for approval. The actual testing can only start after this approval and an agreement on the testing date and time period. The product has to be at PMTC's test lab at least 2 weeks in advance of this testing period.

That way, our engineers can start the preparation of the test :

- Creation final test plan
- Creation checklists
- Creation bug sheets
- Creation bug database

The test co-ordinator and testers appointed for this test round can then start testing according to the designed test plans. Bug reports can be sent daily (starting from day 2), weekly, every other day or at the end of the test round.

At the end of the test run, all final documents and reports are generated and sent to the client. These documents can include:

- Final bug report
- Overview reports
- Overall comments and appreciation
- Quote and schedule for additional test rounds (if so desired by the customer)

4 Testing Knowledge

Over the years, PMTC has built up a wide experience in the field of software testing. As a test centre, we incorporate 3 major qualifications:

- Independent
- Professional
- Experienced

We have tested over 5000 titles on PC, Macintosh, DVD and CD-I for all sorts of clients, such as multimedia book publishers, educational and edutainment software publishers, international financial companies and leading consumer electronics companies.

Our specialisation lies in full functionality and compatibility testing for all genres of software titles. The combination of our testing experience with profound market-end product knowledge enables us to perform alpha, beta and gold master tests for a very wide range of products.

As an active member of the Software Testing Workgroup, we constantly strive to update and improve our testing techniques in order to provide an even higher quality level for your product.