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QUALITY ASSURANCE

QA & SOFTWARE TESTING GUIDE

NEOXEN MODUS METHODOLOGY

RELEASE 5.0.0

NEOXEN MODUS METHODOLOGY

RELEASE 5.0.0.2

INTRODUCTION TO QA & SOFTWARE TESTING GUIDE

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Table of Contents

1 About this Document 7
1.1 Intended Audience 7
1.2 Organization 7
1.3 Typographic Conventions 7
1.4 Terms and Concepts 8
1.4.1 Abbreviations 8
1.4.2 Terminology 8
1.5 Related Documentation 9
2 Introduction 10
2.1 Introduction to QA & Software Testing Guide 10
2.2 Outlining 10
2.3 Benefits of Using the Methodology 11
3 Commitment to Quality 12
4 Key Advantages 14
4.1 Improved Quality and Customer Satisfaction 14
4.2 Improved Productivity 14
4.3 Reduced Costs 14
4.4 Reduced Time 14
4.5 Consistent Procedures 15
4.6 Process Automation 15

1 About this Document

This document summarizes the contents, principles and objectives of Neoxen® Modus QA & Software Testing Guide. Neoxen® Modus is an industry standard methodology designed for Product Development, Project Work and Quality Assurance for international software and services companies.

The methodology is developed in a EUREKA project.

1.1 Intended Audience

This document is intended for QA personnel, project personnel, support personnel, corporate management, partners and customers.

1.2 Organization

This document is organized as follows:

Chapter	Contents
Chapter 1	Describes the purpose of the document. It also explains the terminology and typographic conventions used in the document. A list of related documents can also be found in this chapter.
Chapter 2	Introduces and outlines QA & Software Testing Guide.
Chapter 3	Describes the commitment to quality and process improvement.
Chapter 4	Describes the key advantages of quality assurance improvements.

1.3 Typographic Conventions

Convention	Description	
Italics	*Italicized*	Text is used to call attention to cross-references.
Bold	**Note**	Important notes are written in bold.

1.4 Terms and Concepts

The following abbreviations, terms and concepts are used in the document:

1.4.1 Abbreviations

Abbreviation	Meaning, definition
CMMI	Capability Maturity Model Integration
ISO	International Organization for Standardization
MSF	Microsoft Solutions Framework
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
PRINCE2	Projects in Controlled Environments
RFP	Request for Proposal
QA	Quality Assurance
QMS	Quality Management System
SEI	Software Engineering Institute
SOW	Statement of Work

1.4.2 Terminology

Term, Concept	Meaning, definition
Professional Services	Professional Services is an organization that provides a suite of services ranging from high-level consulting to improve business processes to custom application development, implementation, training and support.
Neoxen® Modus	Neoxen® Modus is a Product Development, Project Work and Quality Assurance Methodology based on over a decade of software engineering expertise, best industry practices and well-acknowledged standards and guidelines listed in *Appendix I.*

1.5 Related Documentation

The following list comprises all documents referred to herein. It also lists documents, which provide with additional information about this topic:

#	Document
[1]	Introduction to General Methodology Guide
[2]	Introduction to Project Management Guide
[3]	Introduction to Development Guide
[4]	Introduction to Auditing Guide
[5]	Introduction to Support Services Guide

2 Introduction

Neoxen® Modus Methodology is based on over a decade of software engineering and consultancy expertise, best industry practices and the well-acknowledged ISO standards and guidelines listed in *Appendix I.* Neoxen® Modus is verified against other accepted industry standards, such as PMI's PMBOK, Six Sigma, PRINCE2, SEI CMMI and MSF.

2.1 Introduction to QA & Software Testing Guide

The QA & Software Testing Guide describes the standardized model for Quality Assurance in product development and project work from the perspective of the project team members and QA personnel.

Although QA & Software Testing Guide is primarily intended for QA personnel and project team members, it is also suitable study material for all the company's representatives participating in the project work, including members of R&D, account managers and project steering boards.

The QA & Software Testing Guide describes the Quality Assurance processes, guidelines, testing methods and acceptance criteria for project deliverables. It covers the phases from certification plan to test cases, from certification sessions to sign-off.

There are templates and checklists available to software quality assurance and testing and they are referred to in the QA & Software Testing Guide. These templates and checklists give detailed information on how to create the certification plan, test cases, test reports, etc.

2.2 Outlining

Standardizing Quality Assurance procedures aims at carrying out projects as production-like repeatable processes where agreed standard methods are followed systematically in project quality planning, defect management and correction, as well as in maintenance and future upgrades.

The QA & Software Testing Guide assumes that the Supplier and the Customer are from different organizations. If the project in question is internal, it is advisable to use the same methodology, but at discretion in an applied form.

2.3 Benefits of Using the Methodology

The methodology described in the QA & Software Testing Guide is applicable to initiatives of all sizes, using a 'light' version for small projects. The methodology presented in is used in feasibility study, change survey, specification and design projects, as well as in implementation and deployment projects. The methodology is not limited to software development and delivery projects, but may also be utilized in an applied form in any product development or subcontracting projects, for example.

Each project will go through the same phases, some projects more systematically than others.

The use of the methods promotes systematization and repeatability and saves time in the long run. Some time will be spent on and must be reserved for the study of the methodology in the first project. With each of the subsequent projects, the use of the methodology will become easier and more professional.

Project team members and Quality Assurance personnel should use the QA & Software Testing Guide as a checklist from time to time, even after they have become familiar with the methodology.

3 Commitment to Quality

Increasing complexity of today's enterprise solutions, combined with growing competitive pressures and increasing costs of solution failure and downtime are emphasizing the strategic value of systematic Quality Assurance and software testing.

While the pressures to deliver high-quality solutions in time continue to mount, shortening development and deployment schedules, geographically distributed organizations, limited resources and high turnover rates for professional employees make Quality Assurance the ultimate challenge.

Understanding the reality of having to achieve more with less, coordinate multiple simultaneous projects and manage diverse and distributed project teams, Neoxen® Modus has adopted re-defined Quality Assurance methodologies and is committed to continuous improvement of standardized and automated test processes to help centralize, organize, prioritize and document the Quality Assurance efforts.

Too often in the world of solution development, quality planning and testing is not seriously considered until programming has been almost completed. Naturally this approach to testing is inadequate in light of the increasingly high demands for software quality and short delivery cycles. As a result, the place of testing in the application lifecycle has begun to change. This shift in the role of quality planning represents a paradigm change in the entire software industry.

Within Neoxen® Modus Quality Assurance is not perceived as an unglamorous or boring activity that unnecessarily delays project deliveries. Instead, fueled by competitive pressures and the high costs of downtime, quality planning and testing are evolving into a professional discipline, with its own methodology, structure, organization and documentation.

According to Neoxen® Modus, Quality Assurance takes place in parallel with solution development, starting as soon as the project commences. Similarly with the development process, the quality planning and testing process needs a methodical building-block approach to ensure consistency and reusability of testing assets.

Neoxen® Modus subscribes to the theory that having files compiled, linked and combined into a standardized build reduces quality risks and helps deliver better solutions faster. Given the quantity and frequency of changes, especially in the modern multi-layered software environment, testing standardized builds becomes the way to ensure quality and stability of the customized solution throughout the development process.

From time to time organizational pressures, such as limited resource availability, force organizations to scramble to find qualified QA personnel. These pressures together with a growing trend of utilizing dedicated and specialized QA contractors give us additional challenges. In order to efficiently manage the testing of many builds with multiple testing teams Neoxen® Modus has implemented a quality management process in order to prioritize, consolidate and centralize the entire quality management and testing efforts.

The aim of the quality management process is to create one central point of control that is accessible to all members of the project teams, houses all testing assets and provides a clear foundation for the entire testing process - from deciding what needs to be tested, to building tests, running scenarios and tracking defects. The quality management methodology also supports the analysis of test data and coverage statistics, to provide a clear picture of the solution's accuracy and quality at each point in its lifecycle.

4 Key Advantages

4.1 Improved Quality and Customer Satisfaction

The sum of improved quality methodology, procedures and testing productivity is a substantial improvement in software quality. Systematic and repeatable processes address functional and performance issues more efficiently, allowing QA personnel to focus on quality in areas such as documentation, installation, hardware compatibility, etc and therefore adding more customer value to the deliverables.

4.2 Improved Productivity

The systematic and well-documented quality management and testing procedures described in the QA & Software Testing Guide lower the learning curve and allow the QA personnel to get efficiently up-to-speed with projects, thus improving the overall productivity. This allows more consistent testing with higher coverage over the course of a project development cycle. By testing earlier and more often defects are detected and corrected earlier and at much reduced schedule impact.

4.3 Reduced Costs

Improved quality and improved productivity together have a direct impact to project costs. However, in some cases test automation may have upfront expenses to develop, but over the delivery cycles of the solutions it typically offers significant savings. In extreme cases development of automation processes is several times the expenses of a complete manual test cycle. Over multiple project deliveries with multiple cycles per delivery, this cost is quickly recouped.

4.4 Reduced Time

QA & Software Testing Guide endorses repeatability and automation as time saving productivity assets. For instance a typical automated test suite will run in less than 24 hours, even without any human intervention required. This significantly reduces the time spent in tedious project quality assurance tasks. For a sophisticated software solution, manual testing may require multitude of staff months to perform the same coverage.

4.5 Consistent Procedures

Traditional quality management and manual testing often leads to inconsistent coverage and results depending on the staff and schedule employed. Especially in a complex testing process relating to systems integration and modern multi-layered management platforms automated test procedures together with globally consistent Quality Assurance Methodology ensures that the same scope and process is used repeatedly each time testing is performed.

4.6 Process Automation

Automated procedures are key elements in the methodology described in the QA & Software Testing Guide. Whenever possible, automation is offered to supplement or even replace manual testing with appropriate suite of tailored test programs. Benefits to solution developers include increased software quality, improved time to delivery, repeatable test procedures, and reduced costs.

Appendix I: ISO Compliance

Neoxen Modus Methodology conforms to following standards:

Standards and Guidelines	Purpose
ISO 9000:2000, Quality management systems - Fundamentals and vocabulary	ISO 9000:2000, Quality management systems - Fundamentals and vocabulary.
ISO 9001:2000, Quality management systems - Requirements	This is the requirement standard you use to assess your ability to meet customer and applicable regulatory requirements and thereby address customer satisfaction. It is now the only standard in the ISO 9000 family against which third-party certification can be carried.
ISO 9004:2000, Quality management systems - Guidelines for performance improvements	This guideline standard provides guidance for continual improvement of your quality management system to benefit all parties through sustained customer satisfaction.
ISO 19011, Guidelines on Quality and/or Environmental Management Systems Auditing (currently under development)	Provides you with guidelines for verifying the system's ability to achieve defined quality objectives. You can use this standard internally or for auditing your suppliers.
ISO 10005:1995, Quality management - Guidelines for quality plans	Provides guidelines to assist in the preparation, review, acceptance and revision of quality plans.
ISO 10006:1997, Quality management - Guidelines to quality in project management	Guidelines to help you ensure the quality of both the project processes and the project products.
ISO 10007:1995, Quality management - Guidelines for configuration management	Gives you guidelines to ensure that a complex product continues to function when components are changed individually.
ISO 10011-1:2002, Guidelines for quality and/or environmental management systems auditing - Part 1: Auditing	Gives you guidelines on the main requirements for auditing a quality system.
ISO 2382-1:1993, Information technology - Vocabulary - Part 1: Fundamental terms	Provides the standardized terminology.
ISO 10013:1995, Guidelines for developing quality manuals	Provides guidelines for the development, and maintenance of quality manuals, tailored to your specific needs.
ISO/TR 10014:1998, Guidelines for managing the economics of quality	Provides guidance on how to achieve economic benefits from the application of quality management.
ISO 10015:1999, Quality management - Guidelines for training	Provides guidance on the development, implementation, maintenance and improvement of strategies and systems for training that affects the quality of products.

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Completeness (enough information)	[ ]	[ ]	[ ]	[ ]
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