

.NET Enterprise Solutions

"Best Practices" for the connoisseur

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1



Simplicity - The art of maximising the amount of work not done

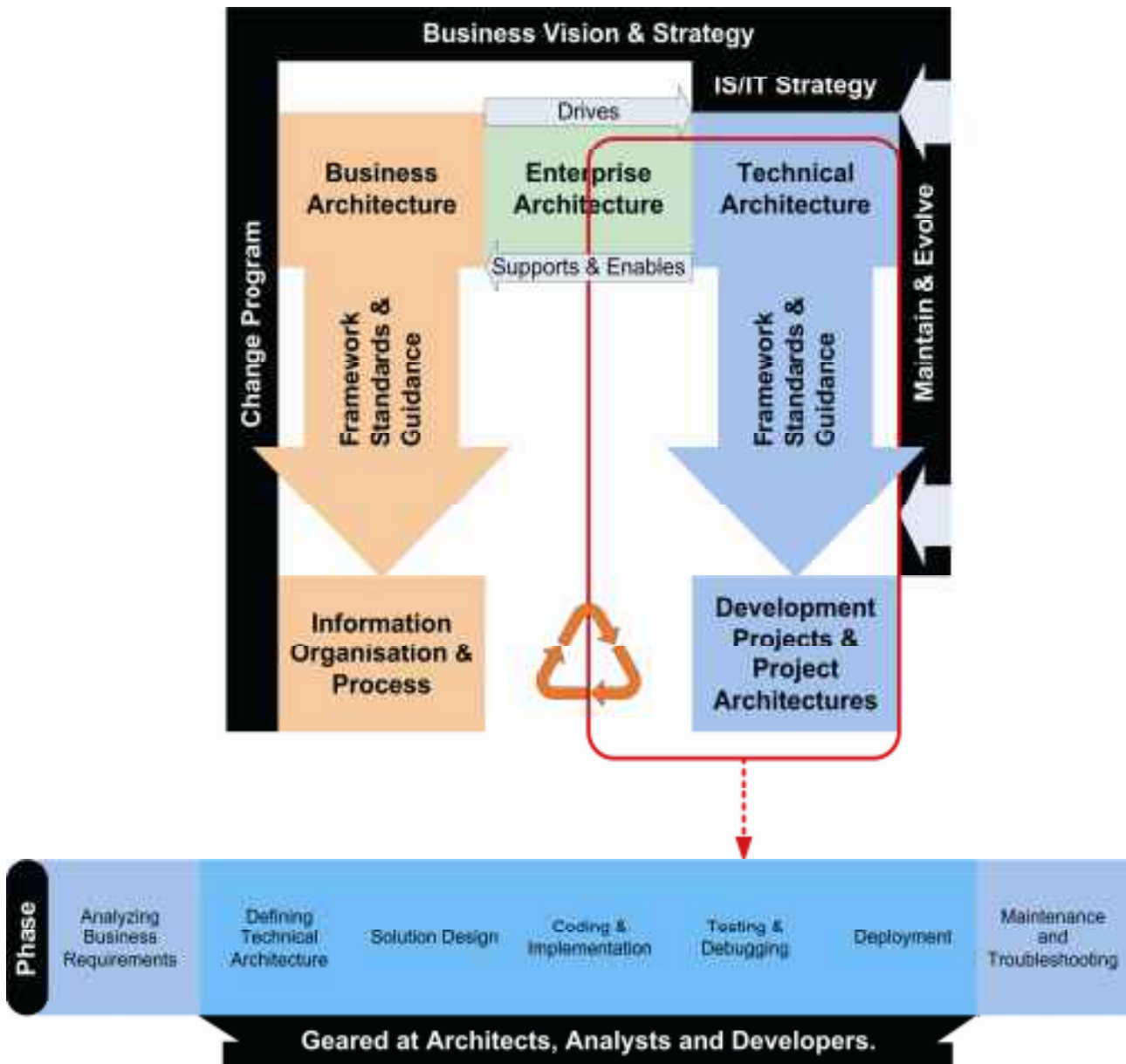
Introduction

Objectives

- ✓ ... Introduce the team that created this handbook.
- ✓ ... Introduce the system requirements to complete the solution described in this handbook.
- ✓ ... Introduce the companion utilities and the solution described in this handbook.
- ✓ ... Introduce the structure and contents of this handbook.

Prerequisites

This book is intended for information transfers by developers for developers, primarily covering the terrain of Technical Architecture and Solution Development through the core phases as shown and touching on the world of Enterprise Architecture to some extent.



You should have at least one year of programming experience in VB, C#, C++ or Java and be familiar with traditional and object-oriented programming concepts such as user-defined structures, classes, inheritance and interfaces. Experience with COM, Win32 and ASP is a benefit, but is not required. Sample code and labs will be in C#, so preliminary experience with C# is an advantage.

Foreword

It is often said that experience is like a toothpick; it's for personal use only. I often deplore the sad fact that a highly experienced professional cannot create a simple web services interface to the invaluable store of human experience that has been gained over millennia. This book is a small step towards making the toothpick of experience a reusable commodity.

Although this book is focused on Microsoft-specific technologies, the collective experience of the authors has been gained during the evolution of the micro computer, from the first stand alone personal computers to current network-centric systems. This means that, although we can expect the technological relevance of this book to decay in as little as the next three years, the experience shared will retain its relevance for decades to come.

The group of authors who have contributed their knowledge gave selflessly of their time while remaining responsible for designing systems, developing programs and managing projects. This book is a monument to their experiences, while to the reader; it is a toothpick that can be shared.

Ralf Dominick

Founding Director of Barone, Budge and Dominick



The picture shows Ralf pursuing his hobby of flying with the L29 Sasol Tigers Formation Aerobatic Team.

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- | | |
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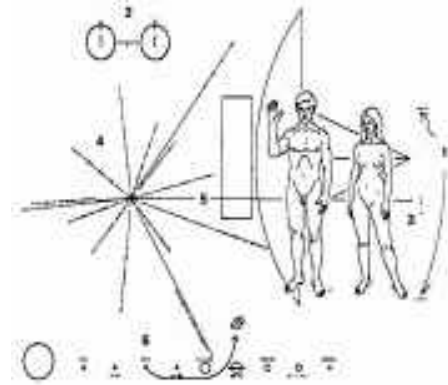


Gavin

Comments by the authors

The concept of this handbook started in the late 1980's when a few BTOS and CTOS ... that's Convergent Technology Operating System ... developers came together to create the NGen Primer, with the aim of consolidating knowledge gained in the battle trenches in a printed book, so that others might benefit. Close to a hundred copies were produced by hand and, although it never made it to the public market, it proved an invaluable asset and companion to many of us. This handbook continues the concept and the dream, in the realms of Microsoft® technology, becoming the third generation post-CTOS. Names that must be mentioned when talking about the old NGen Primer include Kris van Bogaert, George Frey, Will Roberts, Phil Over, Bob Walker and Tom Cooney ... we often wonder what happened to you all.

The space craft Pioneer 10 was launched in 1972 and is currently travelling out of our solar system. Voyager 1 & 2 left us in 1977, Galileo surprised mankind when it survived more radiation around Jupiter's moons than it was designed for and Near is currently sending spectacular pictures from the Asteroid belt. These are just a few examples of quality products, which have survived torrid conditions and, thanks to man-made intelligence, have remained on a safe and successful journey. Surely, the engineers involved in these projects all had to invest a lot of time and effort with design, quality assurance and testing, otherwise such achievements would not have been possible?



While these craft have travelled millions of kilometres with near zero defects, we tolerate numerous system crashes, dialogs asking us to "send this report to Microsoft", or in older software the infamous Dr. Watson's ... Justified? Most definitely not! Software solutions should be viewed as space craft that cannot be reached by engineers and must be self reliant resilient and of excellent quality ... anything less belongs in only one location: the Recycle Bin. A colleague put this more precisely when he stated that: *"the key aspect of why spacecrafts are useful is because they achieved the goal that they were built for. Most people are totally oblivious to what technology and design compromises where made in these craft. This is the key to software design ... making the end users unaware that it exists in the first place because it works"*.

Before we countdown and hit the launch button, we need to clarify one last thing. This handbook focuses primarily on Microsoft® .NET technology. This does not mean, however, that the principles cannot be applied to other technologies and even heterogeneous solutions.

Thanks to everyone who contributed to this handbook and a big thanks to our better (and most definitely more beautiful) halves, for believing in us and our vision and continuously encouraging us when our spirits were low, for continuously depositing food and coffee/tea near our keyboards and for making sure that we remembered that there is actually life outside of computer chassis.

Alexander, Jacques and Thorsten ... when you pick up this handbook in 10 years or more, please don't laugh about the "then" archaic and dinosaur style content ... instead venture beyond the unknown with tenacity and commitment and you will be rewarded as we have been in our excursions through CTOS, Windows™, Java and beyond ...

Willy-Peter Schaub
Systems Analyst

First and foremost I would like to thank my wife Lynda and my children Kate, Hannah and Jay for the sacrifices they have put up with due to my selfish passion for learning and always aspiring to doing things better. Hopefully this book will allow us to share with you, the reader, some of our best practises as well as approaches to various development related topics in general. I dedicate this book to all the professionals that I have had the privilege of learning from, as well as all those who aspire and go on to become mentors to the development community at large.

James Pereira
Technical Architect

Introduction

This handbook is predominantly intended for Developer Readiness Program (DRP) engagements and IT professionals who read and research alone. It is therefore organized as a self-study guide, with objectives, guidelines and introductions to advanced material and topics.

“What is the DRP?” You are probably asking yourself. Well, it is an initiative we started together with Microsoft South-Africa to get developers together for a few days of information sharing and experimenting with new technologies. While it was initially intended to focus on the area of training, it has fortunately dominated the proof of concept environments, where rapid technology skills acquisition and information/experience sharing are crucial.

We are herewith inviting you to a journey through a .NET Enterprise solution, starting at ground zero (the business requirement) and ending with a successful deployment of the solution, code named New Horizon¹.

The core objectives of this handbook are:

- ☞ To replace the smartHandbook² and complement the DRP material.
- ☞ To introduce the best practices and guidelines needed to understand and develop an enterprise solution.
- ☞ To introduce and implement the Microsoft® .NET Framework.
- ☞ To offer a quick reference guide, useful to analysts and developers alike.
- ☞ To offer a wealth of practical experience.

System Requirements

You will need the following minimum hardware and software to complete the solution described in this handbook:

- ☞ Microsoft® Visual Studio .NET Professional edition. We recommend the Architect edition.
- ☞ A computer capable of running Microsoft® Visual Studio.NET.
 - Computer:
 - PC with a Pentium II 450MHz processor
 - Operating System:
 - Windows™ 2000 Server or Professional
 - or-
 - Windows™ XP Home or Professional (recommended)
 - or-
 - Windows™ 2003 Server
 - Memory:
 - 256MB
 - Hard Disk:
 - 5GB free disk space
 - Other Drives:
 - CD-ROM
 - Video:
 - VGA or higher resolution monitor
 - Input Device:
 - Keyboard and Mouse
- ☞ See <http://msdn.microsoft.com/vstudio> for more information.

¹ See <http://pluto.jhuapl.edu> for more information.

² smartHandbook is a handbook created by Objectronics and MSSA, containing best practices in areas of SDLC, COM, C++ and Microsoft environments in general, and is superseded by this handbook.

Installing and Using Companion Files

The handbook companion CD contains the New Horizon solution, quick reference posters, DRP utilities and 3rd party utilities.



The CD is not shipped (“shrink-wrapped”) together with this book primarily to break the dependency between the book and the CD, allowing us to continuously update the CD. The companion CD can be obtained from BB&D using the contact details as outlined on page 12.

The content as documented in this book may change on the actual CD as revisions are released and therefore you should use this information with a “*pinch of caution*”. Areas marked as “*DRP issue only*” will only appear on CD’s distributed as part of Microsoft® Developer Readiness Programs.

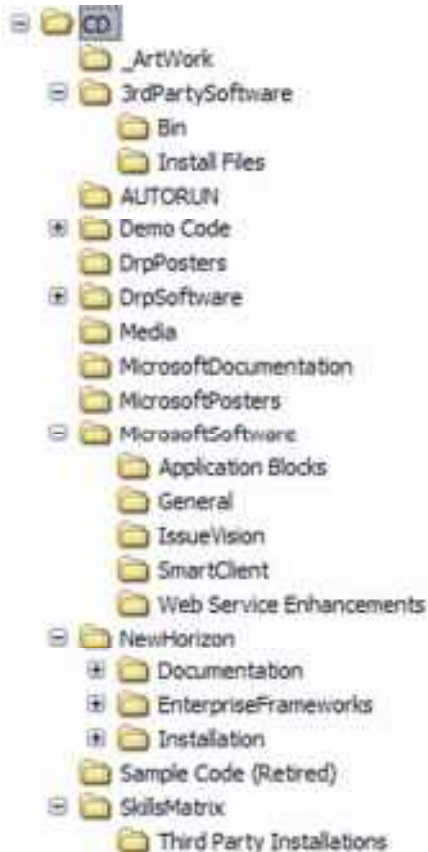


Figure 1 - Companion CD Layout

Installing the New Horizon solution

- ☞ Insert the companion CD in your CD-ROM drive.
- ☞ Double-click the “My Computer” icon on the desktop or locate the CD-ROM in Windows™ Explorer.
- ☞ Double-click the icon for your CD-ROM drive.
- ☞ Double-click CDRom\NewHorizon\Setup.exe.
- ☞ Follow the instructions given.

Using the DRP Quick Reference Posters

- ☞ The **DrpPosters** directory on the companion CD contains JPG files of all currently available DRP posters.
- ☞ These should be printed preferably on A3 and in colour.

Using the Microsoft Documentation, Posters and Software (DRP issue only)

- ☞ The **MicrosoftSoftware** directory on the companion CD contains a range of documentation, reference posters and utilities developed by Microsoft®.

- ☞ Install the software using MSI files and refer to the online documentation.
- ☞ The **SmartClient** sub-directory on the companion CD contains a range of mobile / smart client documentation and SDKs.

Using the DRP tools

- ☞ The **DrpSoftware** directory on the companion CD contains a range of utilities developed during or for the DRP, which are made available “as is” and “without support”.
- ☞ Refer to the relevant README files for further instructions.

Using the 3rd party tools (DRP issue only)

- ☞ The **3rdPartySoftware** directory on the companion CD contains a range of 3rd party utilities, which are made available “as is” and “without support”.
- ☞ Refer to the relevant README files for further instructions.

Using the Sample Code (DRP issue only)

- ☞ The **Sample Code** directory on the companion CD contains a range of sample code from previous DRP information dumps and boot camps.

Structure of this handbook

- ✎ Introduction
 - Introduces some of the terminology and the general structure for the rest of this book.
- ✎ Fundamentals
 - The fundamentals chapter reviews the concept of application architecture and why we need one and the technologies used and considered for the companion New Horizon solution. It ends with suggested coding and naming conventions.
- ✎ Envisioning
 - The envisioning chapter explores the process of envisioning solutions, defining the vision for the New Horizon companion solution.
- ✎ Design
 - The design chapter explores the process of analyzing and designing solutions.
- ✎ Construction
 - The construction chapter explores the process of constructing solutions, covering DBMS, Data Access, Business Objects, Services and a range of user interface variations.
- ✎ Testing
 - The testing chapter explores the process of testing solutions, focusing primarily on stress and integration testing.
- ✎ Deployment
 - The deployment chapter completes the cycle of life by focusing on the process of deploying solutions.
- ✎ Office Integration Add-On
 - Explores using Office integration to enhance the companion solution.
- ✎ Java Integration Add-On
 - Explores the world of interoperability, connecting the companion solution with a Java based service.
- ✎ Mobile Device Add-On
 - Explores using mobile devices to enhance the companion solution.
- ✎ Share Point Add-On
 - Explores using Share Point Services to enhance the companion solution.
- ✎ Appendices
 - Bibliography
 - Reference Diagrams
 - Reference Checklists
 - Glossary

Handbook Design Overview

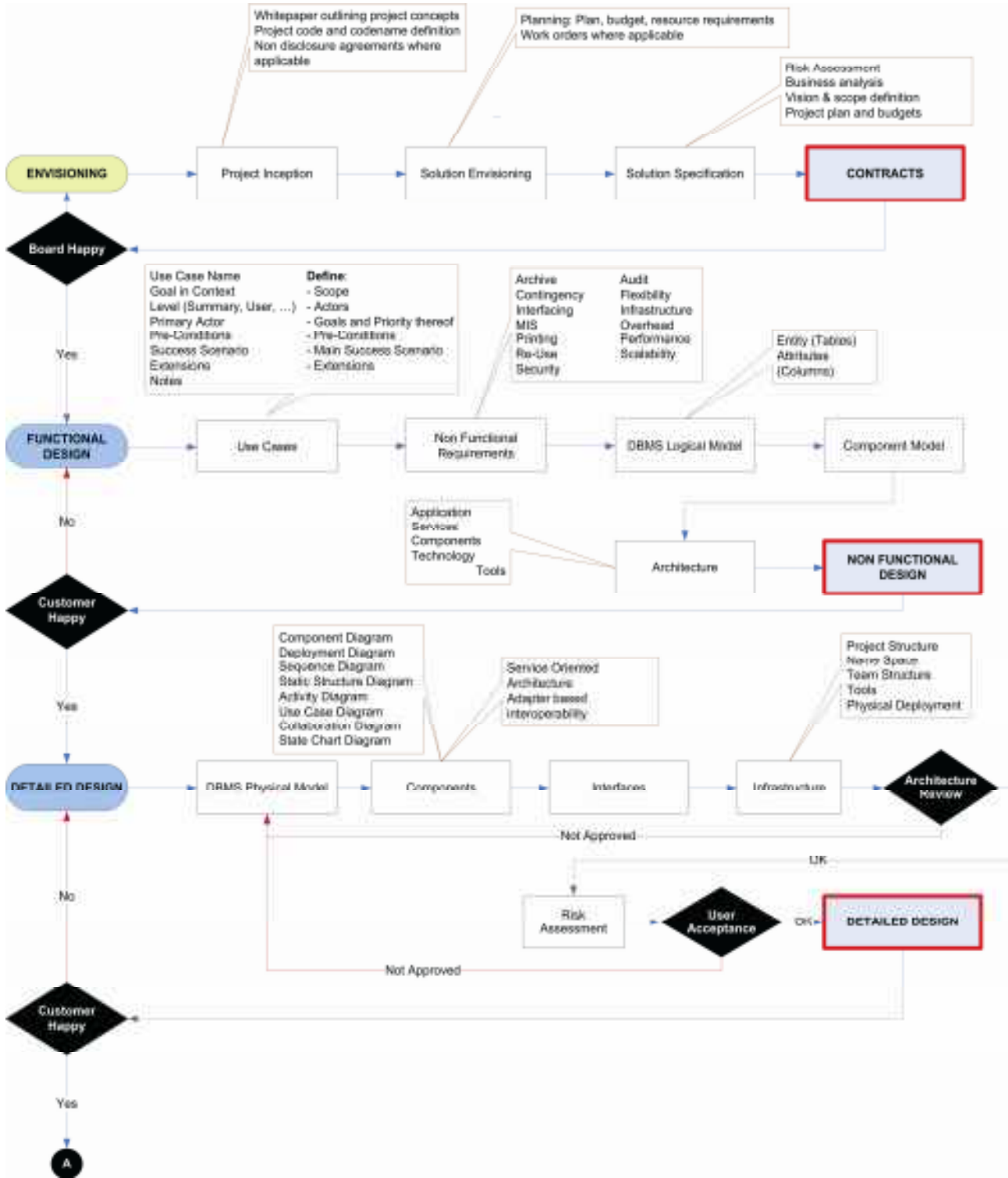


Figure 2 - Handbook Design Overview

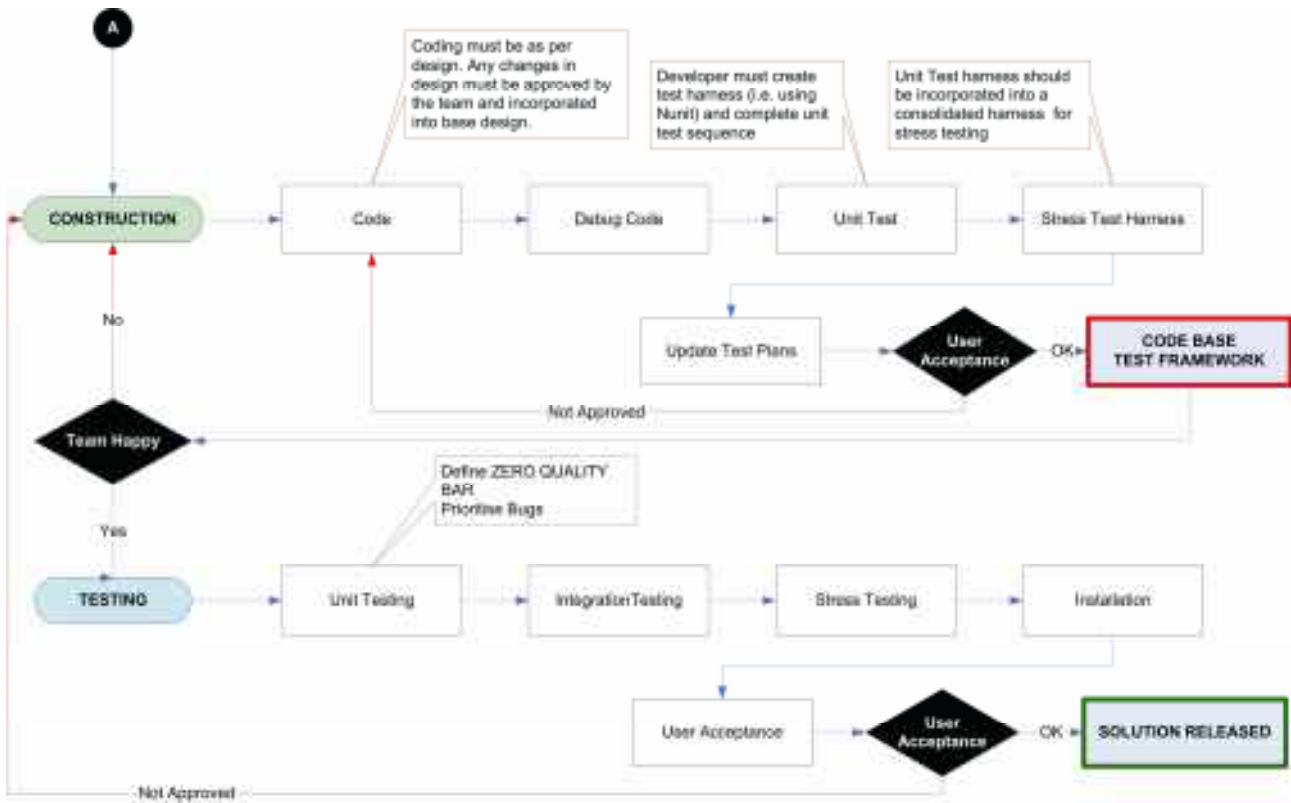


Figure 3 - Handbook Design Overview (Continued)

Conventions in this handbook



This symbol is used to highlight recommendations and guidelines.



This symbol is used to highlight reference material.



This symbol is used to highlight alerts.



This symbol is used to highlight concepts.



This symbol is used to highlight design decisions specific to the New Horizon solution.



This symbol is used to highlight possible exercises.

The coding and naming guidelines used throughout this handbook and the New Horizon³ solution are documented in the “Solution A-Z Design” chapter.

Each chapter begins with a list of objectives and a quick reference summary of recommendations and ends with a brief review of the information covered in the chapter.

DRP Web Site

You are also invited to visit us on <http://www.drp.co.za> and <http://www.bbd.co.za>.

Corrections and Comments

Every effort has been made to ensure the accuracy of this book and the New Horizon solution on the companion CD.

If you have issues, comments or recommendations regarding this handbook or the companion CD, please email them to:

drpsupport@bbd.co.za

-or- mail them to:

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Support for Microsoft® .NET technologies is not offered through the preceding address. For such support please refer to <http://support.microsoft.com>.

³ See **Error! Reference source not found.** for a reference to the background of this codename.