

**CMMI**

### **About the Author**



**Ralf Kneuper** has a degree in Mathematics from the University of Bonn (Germany) and a PhD in Computing Science from the University of Manchester (England). He worked in the quality assurance group of Software AG, and at the systems house of the Deutsche Bahn AG as a senior consultant for process models, quality management and project management, as well as a project manager. In 2003, Ralf began working as a freelance consultant for CMMI and related subjects. He started working with CMM (the predecessor of CMMI) in 1996 and was a CMM (CBA-IP) Lead Assessor. Ralf Kneuper is an SEI-authorized CMMI (SCAMPI) Lead Appraiser and a SCAMPI B&C Team Lead and Observer, an iNTACS-certified Principal Assessor for ISO/IEC 15504 (SPICE), the coordinator of the German CMMI Lead Appraiser and Instructor Board (CLIB), and was a long-standing spokesperson of the SIG Software Process Models in the German Informatics Society (GI).

Ralf Kneuper

# CMMI

**Improving Software and  
Systems Development Processes Using  
Capability Maturity Model Integration  
(CMMI-DEV)**

rockynook

Ralf Kneuper, ralf@kneuper.de

Editor: Michael Barabas  
Translator: Ralf Kneuper  
Copyeditor: Carey Feldstein  
Proofreader: Jimi DeRouen  
Type Setting: Josef Hegele, Verlagsservice Hegele  
Cover Design: Helmut Kraus, www.exclam.de  
Printed in the United States of America

ISBN: 978-1-933952-28-4

1st Edition  
© 2009 by Ralf Kneuper

Published by:  
Rocky Nook Inc.  
26 West Mission Street Ste 3  
Santa Barbara, CA 93101-2432

www.rockynook.com

This 1<sup>st</sup> English book edition conforms to the 3rd German edition  
original published by dpunkt.verlag GmbH, Heidelberg.  
© 2008 by dpunkt.verlag GmbH. All rights reserved.  
www.dpunkt.de

Library of Congress Cataloging-in-Publication Data

Kneuper, Ralf, 1959-  
[CMMI Verbesserung von Software- und Systementwicklungsprozessen mit Capability Maturity Model Integration  
(CMMI-DEV). English]  
CMMI capability maturity model integration : a process improvement approach / Ralf Kneuper. -- 1st ed.  
p. cm.  
Includes bibliographical references and index.  
ISBN 978-1-933952-28-4 (alk. paper)  
1. Capability maturity model (Computer software) 2. Computer software--Development--Computer programs.  
I. Title.  
QA76.758.K6413 2008  
005.1--dc22

2008044810

Distributed by O'Reilly Media  
1005 Gravenstein Highway North  
Sebastopol, CA 95472-2811

All product names and services identified throughout this book are trademarks or registered trademarks of their respective companies. They are used throughout this book in editorial fashion only and for the benefit of such companies. No such uses, or the use of any trade name, is intended to convey endorsement or other affiliation with the book. Especially, "Capability Maturity Model", "CMM", and "CMMI" are registered in the U.S. Patent and Trademark Office by Carnegie Mellon University; "CMM Integration" is a service mark of Carnegie Mellon University. No part of the material protected by this copyright notice may be reproduced or utilized in any form, electronic or mechanical, including photocopying, recording, or bay any information storage and retrieval system, without written permission from the copyright owner.

This book is printed on acid-free paper.

---

## Foreword

If you are new to CMMI-DEV, you will confront the wealth and complexity of the model's concepts, and the density of its technical content. Once you understand what CMMI-DEV is, you'll want to know how it relates to other quality management standards and what you should do first to achieve the model's business benefits. Later, as a professional in model-based process improvement, you will need a single, concise reference source that covers important concepts. After all, your colleagues may be curious about CMMI-DEV and they may want to learn more about "the model".

To meet these information needs, Ralf Kneuper has compiled his years of professional consulting experience in process improvement and as a CMMI lead appraiser into a well balanced and perfectly manageable book. The topics range from an introduction to process-oriented quality management to an overview of CMMI-DEV's structure. Throughout the book, you will find how-to information for successfully implementing CMMI-DEV and additional background information on specific aspects.

Since publication of the first edition in 2002, the original German version of the book has been reprinted three times. This English translation preserves the German version's main achievement: it provides a handy, all-in-one source to help you put model-based process improvement into practice and succeed as a process improvement professional.

This book provides you with enough understanding of all the important process improvement topics to successfully start your own improvement journey. If you need to know more about a specific topic, you will find many sources using the book's up-to-date bibliographical references.

We know this book will be a valuable resource for everyone who wants to succeed in process improvement with CMMI-DEV.

**Jay Douglass**

The Software Engineering Institute  
Carnegie Mellon University  
Pittsburgh, USA

November 2008



---

# Preface

Since its release in 2002, CMMI has become a widely used tool for improving development, acquisition, and service processes. Originally developed for the United States defense industry, CMMI has now become popular with software companies in India and China, the European automotive industry, and many other software and systems development organizations worldwide.

This book provides an overview of the CMMI model and the principles behind it, which will help readers understand the CMMI model and introduce it into their organizations. In writing this book, I applied more than ten years of practical experience using and introducing CMMI and its predecessor SW-CMM: working as leader of a CMM introduction project at a large user organization, and later as an independent consultant and CMMI / SCAMPI lead appraiser. This book was originally published in German in 2002, soon after the initial release of CMMI v1.1, and is now available in its third edition. For this book, the German version was translated into English and adapted to an international audience.

Although the book was written by me, many people have helped in its preparation and I would like to take this opportunity to thank them: Jay Pickerill for introducing me to the foundations of CMM, and for reviewing an earlier version of the book; Prof. Heidi Heilmann and Günther Etz for their thorough reviews of all three editions of the German version; Jill Rabenau for finding so many misused prepositions and other mistakes in the English text; the members of the German CMMI Lead Appraiser and Instructor Board (CLIB) for many valuable discussions that helped me to better understand some of the more difficult concepts of CMMI; Christa Preisendanz from the publisher dpunkt.verlag for getting me started writing this book, and for her support over all these years; and last but not least, my family, for their patience and support when I was using the little spare time I had to work on this book.

Darmstadt, Germany, October 2008

**Ralf Kneuper**