Dr. Allen Dutoit works in the aerospace industry in the area of avionics software development. He received his M.S. and Ph.D. from Carnegie Mellon University and his Diplôme d'Ingénieur from the Swiss Federal Institute of Technology in Lausanne. He has taught software engineering project courses with Professor Bruegge since 1993, both at Carnegie Mellon University and the Technische Universität München, where they used and refined the methods described in this book. Dutoit's research covered several areas of software engineering and object-oriented systems, including requirements engineering, rationale management, distributed development, and prototype-based systems. He was previously affiliated with the Software Engineering Institute and the Institute for Complex Engineered Systems at Carnegie Mellon University.

Opener Pictures

The pictures at the beginning of each chapter are from an Alpine-style ascent of the West Rib of Denali (6,193 m) made by one of the authors before starting to work on this book. During this trip, the analogy between software development and mountaineering became more than obvious. The pictures chronicle the climb, showing our expedition car on the Alaskan Canadian Highway, a view of Mt. Robson with the Kain Face (Chapter 1), a view of Denali from the plane (Chapters 2 and 4), the beginning of the West Rib (Chapter 3), a look 1000 meters down from the top of the West Rib showing our foot tracks on the East Kahiltna Glacier (Chapter 5), Mt. Foraker from Camp 5 (Chapter 6), a beautiful but difficult edge around 5,000m (Chapter 7), the Base Camp of the normal route where we reused the remains of an igloo (Chapter 8), the landing area for Doug Geeting's plane (Chapter 9), a bivouac place at the top of the West Rib named "Hotel Crux," because one cannot dig an area big enough for a tent (Chapter 10), crossing the Bergschrund (Chapter 11), a fresh avalanche area (Chapter 12), Denali with the Cassin Ridge (Chapter 13), plans for different routes to the summit (Chapter 14), a "horizontal" sunrise at the start of the Cassin Ridge (Chapter 15), and the summit of Denali (Chapter 16).

The cover picture shows the summit of K2.

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Acknowledgments

This book has witnessed much complexity and change during its development. In 1989, the first author (B.B.) originally set out to teach software engineering in a single-project course format. The goal was to expose students to the important issues in software engineering by solving real problems described by real clients with real tools under real constraints. The first course, listed as 15-413 in the Carnegie Mellon catalog of courses, had 19 students, used SA/SD, and produced 4,000 lines of code. Heavily influenced by the book by James Rumbaugh and his colleagues on object-oriented modeling and design, we have used object-oriented methods since then. We taught several distributed versions of the course involving up to 100 students from Carnegie Mellon and Technische Universität München, resulting in systems with up to 500 pages of documentation and 50,000 lines of code. We currently are teaching a distributed course involving students from University of Otago in New Zealand and Technische Universität München.

The drawback of project courses is that instructors do not escape the complexity and change that their students experience. Instructors quickly become participants in the development themselves, often acting as project managers. We hope that this book will help both instructors and students conquer this level of complexity and change.

Somehow, in spite of much energy spent on the course, we found time to write and complete this textbook and its subsequent revision, thanks to the help and patience of numerous students, clients, teaching assistants, support staff, coinstructors, reviewers, Prentice Hall staff, and most of all, our families. Some have contributed to improving the course, others have provided constructive feedback on successive drafts, and yet others were simply there when the going got tough. Over the past 20 years, we have indebted ourselves to many people whom we acknowledge here.

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