Preface

INTRODUCTION

Software Engineering (SE) is a disciplined and engineering approach to software development and management of software projects and complexity. Currently, software exists in each and every product from toys, powered tooth brushes, electric shavers (have 10,000 lines of embedded software code), TV and entertainment systems, mobile, computers, portable devices, medical systems, and home appliances, and to large scale software such as aircraft, communication systems, weather forecasts, grid computing, and many more. Today, the software business is a global economy which has contributed to a better lifestyle across the world. Therefore a book of this nature can bring industry and academia together to address the need for the growing applications and to support a global software development.

Global Software development and productivity related technologies are the key to today’s globalisation which would not have occurred without this productivity. New technologies and concepts are being developed, prompting researchers to find continuously new ways of utilizing both old and new technologies. In such an ever-evolving environment, teachers, researchers and professionals of the discipline need access to the most current information about the concepts, issues, trends and technologies in this emerging field.

Global Software Development Challenges

Global software development (GSD) is the new business paradigm that organisations are adopting to meet their business challenges and derive competitive advantage. Global software development efforts have increased in recent years, and such developments seem to become a business requirement for various reasons, including cost, availability of resources, and the need to locate developments closer to customers, speeding time-to-market, obtaining extra knowledge, and increasing operational efficiency. Increased globalisation of software development creates software engineering challenges due to the impact of time zones, diversity of culture, communication, or distance. However, there is still much to know about global software development before the discipline becomes mature. Some of the challenges are identified in our framework as shown in Figure 1. Existing studies (Dedrick and Kraemer 2006, and Herbsleb 2007) have proposed several solutions that can make GSD more effectively. It is not just the time and distance which are the major issues in managing GSD challenges, but also software tools and best practices. This handbook is concerned about current enterprise software development practices including productivity technologies impacted on a global software industries. Most important of all, lessons are learned from successful experiences and drawbacks.
The diversity of culture has significant effects in terms of project delivery due to education and experience levels, cultural events, festivals, and government regulations.

Research Issues

Interplay between Software Engineering and Enterprise Information Systems will dominate the current and further research in the areas such as Software Services, Productivity, and Globalisation. Some of the specific areas of research are:

- Empirical evaluations of effectiveness of global software projects
- SE methodologies and processes for global software development
- Infrastructure required for global software development
- Effectiveness of agile methods in global software development
- Methods and tools for global software development: requirements engineering, architecture, design, coding, verification, testing and maintenance
- Quality, process and configuration management for global software development
- Management of risks such as organisational and cultural differences
- Methods and practices for effective project performance in a distributed environment
- Task allocation in global software development
- Organisational and business views
• Strategic issues in distributed development
• Knowledge transfer, knowledge management strategies and informal sharing in global software development
• Cognitive issues in global software development
• Communication and collaboration in globally distributed teams
• Impact of cultural and geographical differences on global software development
• Collaboration technologies such as multimedia, presence awareness, and web technologies
• Socialisation process required to manage global software development
• Managing offshore collaboration and global software outsourcing
• Global emergency response systems and natural disaster management

BOOK ORGANISATION

Software productivity and related technologies are the key to today’s globalisation which would not have occurred without this productivity. New technologies and concepts are being developed, prompting researchers to find continuously new ways of utilizing both older and new technologies. In such an ever-evolving environment, teachers, researchers and professionals of the discipline need access to the most current information about the concepts, issues, trends and technologies in this emerging field. The *Handbook of Software Engineering and Productivity Technologies: Implications of Globalization* will be most helpful as it provides comprehensive coverage and definitions of the most important issues, concepts, trends and technologies in Software Engineering and Software Technology. This important new publication will be distributed worldwide among academic and professional institutions and will be instrumental in providing researchers, scholars, students and professionals access to the latest knowledge related to information science and technology. Contributions to this important publication will be made by scholars throughout the world with notable research portfolios and expertise. This handbook is aimed to provide five parts:

**Section 1: Integrated Requirements Engineering and Software Engineering: Process and Frameworks.** This part provides chapters on Agile Software Engineering, Requirements Engineering, Software Metrics, Testing, and Productivity.

**Section 2: Productivity Technologies.** This part consists of chapters on software tools and methods that support productivity. Chapters include model-driven systems, combinatorial testing, distributed software development, QoS for distributed database applications, software components, software product line engineering, and global disaster recovery management systems.

**Section 3: Enterprise Systems and Globalisation.** This part consists of chapters on ERP systems, QoS, Open source software development, and Emergency Response Systems.

REFERENCES

