

PREFACE

I never imagined that writing a book would be such an exhausting but exciting experience. Originally I only had a mental picture of how the book would evolve, with certain key aspects of software estimation I intended to write down. But as the chapters unfolded one after another, the thoughts poured out more freely. The difficult part was organizing the thoughts into a structured way of presentation, adding tables and diagrams to enhance the enumeration, and tying up other loose ends to make the whole discussion complete in all respects (almost all). I hope I have been successful in doing this.

Although I had fairly deep knowledge and experience in software estimation techniques from my early years as an IT professional, it was at Infosys that I had the extraordinary experience of doing a deep dive into a huge variety of estimation-related interactions. Having personally trained more than 500 software professionals at Infosys on Function Points and other estimations methods, the amount of knowledge I acquired during these sessions was huge. Added to this was the visibility I gained as an estimation expert, which brought another storehouse of enriched knowledge. This enrichment happened through a regular stream of queries and issues that the project managers, programmers, and architects brought to me. Analyzing and solving these issues was exciting, although challenging. But the biggest benefit was to me, that of improving my estimation skills. Every situation was unique and needed interpretation and application of a variant of standard estimation methods.

IT professionals who have been working with large outsourcing organizations similar to Infosys across the globe have likely experienced a fairly wide variety of project execution situations during their service. The experience takes various forms, including project execution, technical challenges, customer interactions, testing and debugging issues, and to

some extent estimation-related challenges. I have been quite fortunate to have received the maximum experience of estimation-related challenges across a wide variety of projects, either directly or through issues and challenges posed to me by project teams. It is this experience that I have hoped to put together in the form of this book and share with a global community of IT professionals.

Quite frequently I have seen IT professionals in need of assistance to arrive at a good estimation figure for a complex or unique project. I have tried to provide that assistance, realistically and practically, throughout this book. I would receive the ultimate satisfaction from knowing that IT professionals have been able to resolve the majority of estimation-related issues through the examples and instruction in this book!

Layout of Chapters

Having been actively involved in software project management and software estimation-related activities for a long time, direct interaction with software project managers, architects, and programmers was among the many benefits I received. The layout of the chapters of this book has been designed to start with general software estimation topics, including an introduction to basic estimation concepts, followed by a discussion of the function point estimation method and, finally, in later chapters, coverage of a variety of other software project estimation needs.

Chapter 1, "Introduction," has been written as an introduction to estimation concepts for project managers and programmers who have had very little exposure to estimation principles and the ingredients that constitute estimation. This chapter broadly covers basic aspects of how estimations are done in different project execution situations and how these estimates can be refined through continuous improvement cycles.

Chapter 2, "Role of Estimation in Software Projects," takes you forward toward establishing a link between estimation and software project execution. The intention is to explain various complexities of software projects and show how estimates also need to be customized accordingly. Complexities include project execution lifecycle models, technology platform variations, and project size. Project managers with previous project execution and basic estimation related exposure can skip this chapter.

Chapter 3, “A Study of Function Point Analysis,” takes you through the various aspects of the IFPUG Function Point Analysis (FPA) method. The FPA method is discussed in full detail here, including discussion on how to identify attributes of the various components of the FPA method. IT professionals who do not have a good knowledge of IFPUG FPA method should definitely read this chapter in detail.

Chapters 4 and 5 cover “Data Functions” and “Transactional Functions” extensively. For IT practitioners, it is essential that a mapping of the FPA estimation method is provided to the actual software project execution process. These chapters provide the detailed mapping along with extensive examples from real software project situations. If you have gone through Chapter 3, it is advisable to read Chapters 4 and 5 also.

Chapter 6, “General System Characteristics,” has been especially written to delve into the most critical and complex part of the IFPUG FPA method. Estimators have often experienced difficulty in making the right judgment of the correct level of impact (degree of influence) of each of the 14 general system characteristic (GSC) parameters. An effort to map the GSCs to the software architecture and its performance parameters have been made here. This chapter should be very interesting to serious estimators.

Chapter 7, “Size, Effort, and Scheduling of Projects,” has been put together to help understand the process of converting the software size, as discovered in earlier chapters, to effort and schedule. Criticality of certain software project execution environment including productivity of the team, resource loading, and use of tools has been used as important input to derive project effort and schedule. All estimators, managers, and even programmers should definitely go through this chapter.

Chapter 8, “Estimation Flavors,” exposes you to some of the practical estimation-related problems encountered during actual project execution. Typical estimation methods provide us with basic estimation processes that are usable in software development projects and sometimes in maintenance projects. But this is not the total reality in an IT organization environment. There are a host of other project execution varieties including migration, reengineering, porting, and more. This chapter picks up a few such popular software projects and maps the standard estimation method (IFPUG FPA) to the situations.

Chapter 9, “A Sense of Where You Are,” addresses the dynamic project execution situations and how estimates are required to be revisited at every milestone stage. It explains how the information about the

executed part of the project can be effectively analyzed and utilized to predict the remaining project execution effort and duration.

Chapter 10, “Tips, Tricks, and Traps,” brings to you a variety of complexities that occur during project execution situations and provides possible solutions on how to tackle these situations. This chapter will be very handy to estimators who face many complex project execution scenarios.

Chapter 11, “Insourcing versus Outsourcing,” discusses various aspects of project execution that are unique to situations when the project is executed through insourcing as against the situation when the project is executed through an outsourcing vendor. The focus is on the way estimates are impacted by insourcing and outsourcing situations.

Chapter 12, “Key Factors in Software Contracts,” will be of great interest to managers and software professionals involved in preparing software contracts. Popular contracting models involving fixed price, time, and material are discussed with respect to impact on estimation process. Also discussed are certain project execution lifecycle models that have a direct impact on estimations.

Chapter 13, “Project Estimation and Costing,” takes you further from project sizing and effort estimations to converting them into actual costs. Discussions on aspects of resource loading based on project execution phases, technical complexities, and its impact on overall costs will help you understand some of the flavors of project costing.

Chapter 14, “Other Estimation Methods,” is an important chapter for estimators and managers who are keen to know more about additional popular estimation methods (other than the function point method). This chapter discusses aspects of how various estimation methods are modeled based on heuristic and parametric approaches. Brief discussions on a few estimation methods, including Delphi method, COCOMO II, and COSMIC-FFP, are covered.

Chapter 15, “Estimation Tools,” gives you key tips on features you should look for while selecting estimating tools for procurement. A comprehensive list of popular tools available in the market, along with a brief discussion on each tool’s features, is provided.

Chapter 16, “Estimation Case Study,” is perhaps one of the most important chapters for all serious software professionals, estimators, and managers. The first case study in this chapter extensively covers details of the estimation process for typical development projects. Also provided is a

case study on estimation for executing an enhancement request in a maintenance project.

With the intention of providing ready-to-use formats for easy and quick counting of Function Point parameters like data and transaction functions, I have provided sample tables in Appendixes A and B.

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