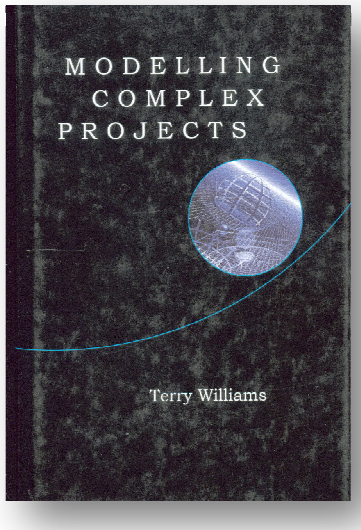
Modelling Complex Projects, by Terry Williams

A Book Review by Ian Jay



Capturing lessons and building them into later projects has always been hard. This book provides some insight into methods of doing this. By using models, the context of lessons is fully appreciated, and the real systematic lessons are discovered. By using a dedicated model builder for all projects the lessons of one can be transferred to the next. The lessons may only become apparent during the process of claims. By using models to support claims realistic costs can be arrived at. In addition the root cause of the claim can be identified and avoided in later projects.

The author, Terry Williams, is a Professor at Strathclyde University. He is a specialist in project modelling. This is supported by a background in operations research and risk model development. He uses project models to support claims in large civil and defence contracts.

The project model can support a claim

The problem Terry concentrates on, is dealing with estimates in the project model. He mainly covers cost and duration problems, though the aspect of quality is also mentioned. The problems are not trivial, and Terry provides some insight, relating to the pitfalls of estimating techniques. Well built models of the project make it possible to forecast the impact of changes and risks. Post event models can be used to establish the precise value of a claim.

The main problem faced by the modeller is deciding what constitutes a realistic estimate. A variety of approaches from basic single estimates are discussed. Most of these revolve around PERT. Terry explains some of the main drawbacks to the PERT approach, and gives insight into other methods of getting the same results.

The third problem area discussed is the relationship between System Dynamics (SD), and normal network models. Project managers have not adopted SD as a common tool and Terry gives some of the reasons for this. He then explains the use that SD can be put to in a project.

Simulation helps

Terry explains the role that models play in the planning process. For instance he shows how the classification of risk events impacts the model design. In particular the impact of risk is examined with simulations. These are based on Monte Carlo tools, these run in spreadsheets or on network models. Such models help separate critical and crucial activities. They also show how likely a crucial activity is to become critical.

The role of the model builder

As a professional 'model builder' Terry offers some interesting views about the role. He explains how the model builder needs to interact with the project team. He also provides some advice about how to obtain estimates from the team. The organisation context of the role is discussed. Terry suggests that the model builder should be part of the Project Office staff. From this position lessons can be examined and transferred from one project to the next.

The book provides a lot of useful information about model building in general. It also gives insight into accepted project modelling practices. It has a substantial bibliography that draws on the field of operations research, as well as the various project journals. It is not 'light' reading, but gives practical advice to project planners. Aerospace and civil engineering projects are used as examples in the text, but the techniques can be used anywhere.

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