

Software Engineering Standards: A User's Road Map

by James B. Moore

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I was truly happy to see that someone had the courage and perseverance of entering the thick woods of software engineering standards and clearing the way for all of us who practiced in the domain. It is James B. Moore who took the pains to carry out such a cumbersome task, which if possibly unrewarding for him was fully rewarding for us, his readers. It is his praiseworthy efforts materialized in the book titled above which we would like to remark.

The prolificacy of the software engineering standards seems to take users astray the more so as those developing such standards number quite a lot by now. What is an user (organisation, government, company) going to do to escape misdirection in the standards application and to avoid superficial choice among their multitude? How to realise efficiency and adaptability with a standard at the expence of another there where are so many which might not differ at all but look like different?

How to keep faithful to your own software engineering standards when the quality of your activities and products would enter fierce competition and when overwhelmed with the pace of developments in Information Technology and the commercial rules versatility? Actually, which is the best selection an user can make?

All these are questions which the author helps be suitably answered. Presentation of indispensable standards and their applicability, which the book mainly does, is based on the data supplied by the Software Engineering Standards Committee (SESC) of the Computer Society IEEE and of ISO/IEC JTC1/SC 7, which develop and maintain a collection of essential standards and support guided implementation.

The description of standards is an insight one, as it considers solutions at their back and their possible interaction. Although concentration is on the standards produced by the two above-mentioned bodies, the software engineering standards which are the creation of other organisations are not at all unfavoured.

The book is an essential reading for high level software systems developers and highly qualified maintenance personnel, for technical professionals and managers largely familiarised with software development, standards writers-they can get helpful ideas about the existing standards' valuable chapters and about their coverage-, for students in software engineering who usually are hungry of information about software.

All of them are also invited to do extra reading on the subject and the invitation is well-documented.

An attraction for the reader consists in the viewpoints expressed on the existing standards.

15 Chapters and 5 Appendices, 37 Figures and 98 Tables compose the book and let readership easily turn to software engineering standards of specific interest for them.

The **Introduction** defines software engineering and puts it in relation with such disciplines as Computer Science and Technology, Project Management, Systems Engineering, Quality Management, Application Domains, Dependability, Safety, marks the software engineering standardization phases (Process, Technique or Tool, Applicability), explains the importance of software engineering standards in quality assurance, goodwill and business protection, higher professional dedication, technology acquisition, refers the first standardization actions undertaken in the field and those who started this activity, mentions the role of software engineering standards and which they are good for and gives hints at their further development

Chapter 2 introduces concepts and diagramming conventions which the book currently makes use of. There are two diagramming conventions. They show how various standards interrelate and provide guidance to the reader in acquiring the standard which is the most suitable to his intention:

- a layer diagram. Here is presented a collection of standards which one organization may have. Each layer is characterized by the nature of the direction given by a standard at that level and its relationships to standards on other levels.
- the road map. Here are shown the external relationships among selected standards, even if belonging to different collections. The road map diagram helps guide readers in approaching a subject without the scope of software engineering to the area which the software engineering standards apply to.

The two diagrams are top-down represented: from general subject to effective standards. If the layer diagram insists on one standard superiority to another in meeting the objective, the road map lets several selection possibilities: to include only standards of which relationship to software engineering can be traced; to define only significant relationships; no integration of all subjects into one vast web of relationships is forced.

In this chapter software engineering is abstracted into some simple objects. Formally, software engineering is realized by a project in which several agents, each with its specified tasks, will participate. Customers are contacted and resources are employed by these agents in order to make processes yielding products optimally run. The standards apply to these abstracted objects.

Chapter 3 and Chapter 4 are about the work done by standards development organisations in the USA and especially by IEEE Software Engineering Standards Committee and the Joint Technical Committee 1/Subcommittee 7 of the International Organization for Standardization and the International Electrotechnical Commission (generally known as ISO/IEC JTC1/SC7). The presentation of these main bodies responsible for standards development is made in such minute aspects as: their organisation, their current collections of standards falling under several classifications, the standards under development, the layer diagram, the strategy for promoting and improving the standards categories. The Chapters also discuss the way the standards categories interrelate.

Chapters 5 through 10 deal with the relationships among the standards collections oriented on different contexts of software

engineering: Computer Science, Quality Management, Project Management, Systems Engineering, Dependability, Safety. Each of these Chapters (except Chapter 5 which starts with the base of computing terminology drawn from computer science) enters context essentials, and guides the reader in selecting the software engineering standards enabling the attainment of goals relevant to that context.

The next Chapters (11 through 14) play the guide role for the reader in selecting IEEE SESC and SC7 - created and maintained standards. They associate with one of the objects of software engineering: resources (Terminology and Taxonomy, Notations, Techniques, Process Information Products, Reuse Libraries, Tools, Software Engineering Data Definition and Representation), products (Product Evaluation, Product Characteristic, Software Product Packaging), processes and customers (purchaser, system engineer and shareholder). These standards are effective in making specific information readily accessible to all those preoccupied with increased performances as to resources, products and processes.

Chapter 13 briefly discusses the evolution of software life cycle process standards and provides a framework within which the relationships among various types of process standards would be better understood.

Alternatives to the standards collections referred in the book are given in **Chapter 15** where sector-dependent standards, which an user might resort to, are described.

Appendix A provides reference information for all of the standards mentioned elsewhere in the book. **Appendix B** tells where the standards can be purchased and provides contact information for each standards-related organizations described in the book. **Appendix C** is a glossary, **Appendix D** is a list of references, and **Appendix E** is an index.

By its concise, consistent and to-day information, extremely good organization of the material, the reviewed book is highly recommended and very useful for all categories of readers interested in software engineering standards.

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