organization must try to achieve coordination in just the same way. That is, he does not offer the one right theory of coordination, but rather three theories: hierarchical, market, and network. Similarly, he offers three approaches to planning: top-down, organic, and exchange.

In those cases where he lists several alternatives, he notes some of the strengths and weaknesses of each, describes the utility of each, and suggests how to determine which may best fit a particular organization. For example, strongly centralized, hierarchically focused organizations may choose to employ a top-down approach – creating an all-inclusive enterprise model at some level of abstraction, then asking various projects to fill in the details over time. A more networked organization may choose to have the projects create the models, and depend on informal collaboration among staff member to discover commonalities. Then they can deliberately create interconnections after-the-fact. "The adaptive view is more pragmatic. Instead of trying to get the best possible consistency between the models, it contents itself with good enough consistency. This is what decision-theorists call satisficing, in other words making do with a less than perfect solution. . . . The advantage of this approach . . . is that is allows for some degree of organizational learning. New strategies and concepts can emerge and can be encouraged to emerge. However, there is still a feeling implicit in this view that the inconsistency is a regrettable imperfection." (p 124-125)

Regardless of the techniques used to create the models or the scheme used to coordinate them, the organization clearly has an interest in achieving coherence among those models. The models exist in order to help achieve business goals. Veryard writes: "In most development programmes today, this vision of coherence is at best only partly achieved. . . . The best we can achieve allows the whole to grow in many steps, over many years. Its final form cannot be predicted, except perhaps in ambiguous generalities, partly because the form is sensitive to details that cannot (and should not) be worked out in advance, but partly (and more importantly) because the organization itself learns during the development: systems do not merely support the organization but transform it, or rather allow it to transform itself. . . . The success of a project should not be measured in the amount of activity of information technologists, nor by whether they are following this or that way of satisfying the business requirements, but by the satisfaction of the business requirements themselves." (p 48-50)

In this context, then, an organization must strive to ensure that its models and its systems remain somehow connected – that is, the organization wants the capability to trace upwards from physically implemented computer code to the more abstract representations of the business. Veryard points out that this connection becomes even more important as the organization comes to greater dependence on computer systems. "Computerized information systems have the power to change the way the members of the organization think about their work. The more the organizations relies on computers, the more power the systems have. This is one of the reason

why the conceptual structure of the systems deserves serious attention from the management of the organization." (p 77)

Veryard closes his book with these summary comments: "As we have seen in this book, the mission of centrally coordinated information systems, based on a single corporate data model, is not appropriate for all organizations. . . . The important thing is to fit the style of information coordination to the requirements of the enterprise, and not to a fixed ideology. Sensitivity and flexibility are crucial. Coordination may be complex and difficult to achieve, but it is not necessarily made easier by being made over-simple." (p 189)

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Pattern Languages of Program Design

J.O. Coplien and D.C. Schmidt (eds)

Pattern Languages of Program Design is edited by J.O. Coplien and D.C. Schmidt, and published by Addison-Wesley publishing Company, 1995 (paperback) ISBN 0-201-60734-4, 562 pp., $39.76.

The book is based on papers presented at PLoP, the First Annual Conference of Pattern Languages of Programs. Contents and form of the patterns presented are much more diverse than are the patterns presented in the Gamma et al book [1]. Where the Gamma et al book contains basic (concrete) design patterns only, the patterns in the Coplien/Schmidt book vary very much in size, abstraction level, application domain, and presentation form, i.e., the book is not a pattern catalogue. Fortunately the editors added an extensive index, which makes it easy to hit information fast.

The contents of the book is grouped into 8 parts. Each part is preceded by a very well-written and informative introduction relating the contents of the chapters in each part.

The book is not, as the title might suggest, a book on pattern languages describing solutions to design problems. It is much more than that. About half of the chapters describe single more or less concrete design patterns in the spirit of the Gamma et al book. The rest of the book deals with pattern languages, catalogs, or systems if you like. These chapters describe sets of patterns together with their interrelationships. I got the most value out of sections 4 and 5.

Section four (Process and Organization) does not contain common sense pattern languages, i.e., solutions for design problems. Section four contains cookbook approaches to model your organizational set-up and software development process. These patterns do not only contain the recipes, but also descriptions of rationales and deliverables. Chapter 15 describes the object-oriented requirements engineering process and can be highly recommended.

Section five (Design Patterns & Catalogs) summarizes, classi-

fies, and relates concrete design patterns. Chapters 17 and 18 can be seen as a "front-end" to the Patterns book by Gamma et al. Here the reader can find condensed descriptions of essentially the same design patterns, accompanied with a classification and relationships between them.

I can strongly recommend reading this book. More information on the book and links to 11 of its 30 chapters are available via WWW using the following URL: 'http://www.research.att.com:80/orgs/ssr/book/PLoP94/index.html'

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Metrics and Models in Software Quality Engineering

Stephen H. Kan

Metrics and Models in Software Quality Engineering is written by Stephen H. Kan, and published by Addison-Wesley Publishing Company, 1995, ISBN 0-201-63339-6, 368 pp., $39.75.

The intent of this book is to provide readers with methods and processes to measure and improve the quality of the software development process. It discusses: software quality, development process models, software quality metrics, defect removal, the Raleigh Reliability Model, reliability growth models, management models, complexity metrics and analyzing customer satisfaction.

This book begins by discussing the definition of software quality, measurement theory, quality control and defect removal. It concludes with a discussion of the measurement and analysis of customer satisfaction data.

Overall, this book brought together a lot of varied information on metrics and I especially like its discussion of customer satisfaction.

Reviewed by Ronald B. Finkbine, PhD., finkbine@babbage sosu.edu.

Calendar of Future Events

('* ⟹' SIGSOFT sponsored event;
'⟹' SIGSOFT in cooperation event)

* ⟹ 8-10 Jan 1996, ISSTA 1996 - Int'l Symp. on SW Testing and Analysis, San Diego, CA. Contact: Laura Dillon, CS Dept., UCSB, Santa Barbara, CA 93106; (805) 893-3411, (dillon@cs.ucsb.edu).

8-10 Jan 1996, 4th Int. Wrksp on AI in Economics and Management, Dan Panorama Hotel & Conf. Center, Tel-Aviv, Israel. Contact: Phillip Ein-Dor, Faculty of Management, Tel-Aviv Univ., Tel-Aviv, 69978 Israel; +972-3-6408071 (eindor@aiem96.tau.ac.il).

* ⟹ 11 Jan 1996, 1st Wrksp on Formal Methods in SW Practice, San Diego, CA. Contact: Sriram Sankar, Sun Microsystems Labs, 2550 Garcia Ave., UMTV29-112 Mountain View, CA 94043-1100. (415) 336-6230 (sriram.sankar@sun.com).

22-26 Jan 1996, USENIX 1996 Technical Conf., San Diego, CA. Contact: USENIX Conf. Office, 22672 Lambert St., Suite 613, Lake Forest, CA USA 92630; (714) 588 8649, (conference@usenix.org).

24-26 Jan 1996, 4th EUROMICRO Wrksp on Parallel and Dist. Processing, Braga, Portugal. Contact: Rui Ralha, Universidade do Minho, Dept. de Matematica, Campus de Gualtar, P-4700 Braga, Portugal. tel. 351 - 53 - 604350/+ 351 - 53 - 604356, fax 351 - 53 - 604359, (r_ralha@math.uminho.pt).

5-7 Feb 1996, Wrksps on Network Security, Firewalls, and Internet Services, San Jose, CA. Contact: Cynthia Deno, Info. Works, Inc., 408-335-9445, (cynthia@iwi.com).

14-15 Feb 1996, Computers and the Quality of Life, Philadelphia, PA. Contact: C. Dianne Martin, CS&E Dept. GWU, Academic Center, Room T624C, 801 22nd St. N.W., Wash., DC 20052; (202) 994-8238, (diannem@seas.gwu.edu).

15-17 Feb 1996 SIGCSE '96: 27th SIGCSE Technical Symp. on CS Ed., Philadelphia, PA. Contact: John Impagliazzo, CS Dept., 103 Hofstra Univ., Hempstead, NY 11550-1090; (516) 463-6774 (cscjzi@vaxc.hofstra.edu).

17-19 Feb 1996 SAC '96: 1996 Symp. on Applied Computing, Philadelphia, PA. Contact: Jim Hightower, California State University-Fullerton, Fullerton, CA 92634-9480; 714-773-2221, (hightower@acm.org).

23-24 Feb 1996 1st Annual Wksp on Compiler Support for Sys. SW, Tuscon, AZ. Contact: Sean O'Malley, Dept. of CS, University of Arizona, Tucson, AZ 85721; 520-621-3498, (sean@cs.arizona.edu).

11-13 Mar 1996, Wrksps on Network Security, Firewalls, and Internet Services, NY, NY. Contact: Cynthia Deno, Info. Works, Inc., 408-335-9445, (cynthia@iwi.com).

⟹ **11-15 March 1996**, ISOTAS'96 - 2nd Int'l. Symp. on Object Tech. for Adv. SW, Kanazawa, Japan. Contact:Prof. Tatsuo Nakajima School of Inf. Sci,, Japan Advanced Inst. of Science and Tech. (JAIST), 15 Asahidai, Tatsunokuchi, Ishikawa 923-12, Japan; +81-761-51-1303, fax: -1149 (isotas96@jaist.ac.jp).