

# Preface

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This issue presents three papers and three special contributions on software reuse, a paper on standardized (reference) designs for distributed systems applications, and two papers on advances in software systems for printing. The three special contributions introduce a new feature of the *IBM Systems Journal*, called Technical Forum. We are indebted to W. Tracz of the IBM Federal Systems Company in Owego, New York, for his solicitation and coordination of the reuse set, and to R. K. deBry of Pennant, the IBM Printing Systems Company, in Boulder, Colorado, for his involvement in and support of the papers on printing technology.

The subject of software reuse and its implications and ramifications for software development is introduced in an essay by Griss on the concept of a software factory and its realization at Hewlett-Packard Company. This essay explores domain-specific software reuse, covering such topics as business issues, lessons learned, getting started, becoming effective, obtaining results, and avoiding confusion and lack of support along the way. The software factory is shown as relying on capabilities such as domain-specific reuse kits, models of the enterprise, and organizational and technical infrastructures.

One of the difficulties facing implementation of reuse in software organizations has been the need to create a business case strong enough to overcome the inertia that inhibits significant organizational and technical change. Although the goals of reuse are clear and easily understood, the connection between those goals and reuse technologies needs to be argued convincingly. Poulin, Caruso, and Hancock explore the costs and benefits of reuse, describe the metrics used by IBM to differentiate changes due to reuse from other unrelated changes, and present a model for showing return on investment for reuse.

The paper by Wasmund demonstrates how software reuse can be successfully introduced into an existing business environment through the capabilities of the Critical Success Factors method. The technique is first described briefly and then made understandable through an extended case study of its successful application to software reuse at a major IBM programming laboratory.

The next three contributions to the discussion of reuse are contained in a new section of the *Journal* called Technical Forum. The intent of the Forum is to provide a means, from time to time, for the publication of short, refereed discussions of topics of interest to our readers. In some cases, such as this issue, the contributions will relate directly to a theme within the issue; in other cases they may be independent of the rest of the issue. The Editor would appreciate any comments or suggestions you might have on the Technical Forum, its value to you, and its usefulness as a new feature of the *Journal*. The three Technical Forum contributions in this issue are on management of reuse technology by Tirso and Gregorius, the application of information reuse by Yglesias, and the successes achieved in a center for reusable parts by Bauer.

In a recent study of technical strategies for client/server computing, it was found that many, if not most, designs for distributed systems applications were of relatively few types. The authors, Shedletsky and Rofrano, present those standardized (or reference) designs as a means to show what types of applications are being built and aid those who have not yet started building such applications. It is clear from the intent and results of this effort that reuse of such designs is not only possible but very helpful.

The set of printing technology papers presents the most recent work on software architectures and

capabilities within the technical umbrella of IBM's Advanced Function Printing\* (AFP\*). In the paper by deBry and Munger, the architectural strengths of AFP are demonstrated through their support for new printing requirements related to creation, viewing, editing, storing, and retrieving of printable materials. There is also a discussion of what can be expected in the future from software systems for printing.

Howarth and Platte discuss the successful evolution of AFP from its beginnings within the print community, through its current manifestation as both a print and print image management approach, to its future usage as a general architecture for presentation management. Along the way, AFP has also evolved from a host-based printing system to an enterprise-wide presentation environment. The authors trace these changes and attempt to forecast their effects on printing in the 1990s.

*The next issue of the Journal* will be a special issue on advances in software quality and its impact on products and product developers.

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Editor

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