

Preface

This issue contains five papers and a technical note on a variety of subjects, including box-structured methods, disk I/O wait time savings, project management, the Retail Application Architecture* (RAA*), computerized recognition of faces, and attacks on cryptographic control vectors. It also contains an index for 1989 through 1992.

The first paper, by Hevner and Mills, demonstrates how the advantages of object orientation and structured development can be combined into a single development methodology. The two approaches and their combination are discussed, along with an extended example of the combination in use. Box structures are shown to be an effective integration vehicle for this object-based structured approach.

The Enterprise Systems Architecture (ESA) provides an opportunity for software management of the disk subsystem, allowing improved transaction response time and system throughput. The author of the second paper in this issue, McNutt, utilizes a case study to show how these improvements can be accomplished through software control of the time spent waiting for disk rotation. Guidelines are provided for achieving these improvements in other situations. Two frequent disk I/O assumptions are shown to be invalid under ESA, and their removal from software design under ESA is encouraged.

The introduction of project management disciplines and goals into an existing software development milieu can be an organized and effective long-term effort that yields positive results with minimal disruption. There are five elements that need to be considered and implemented over time: education, project model development, initial use of the model, analysis of initial resource utilization and projection of estimates, and inte-

gration of model-based information across the project. Raz, the author of the paper on this work, shows how this progression can be accomplished, with a resulting improvement in project productivity.

The Retail Application Architecture (RAA) is introduced by Stecher in the next paper. The RAA, like other industry application architectures, allows for the re-engineering of an enterprise while integrating its applications and databases. Specifically, the RAA is targeted for use within the retail and wholesale distribution industry and provides enterprise models for business and information systems use in that context.

Faces represent a significant challenge to the capabilities of systems for computer recognition, despite the ease with which humans perform the task under varying and sometimes extreme conditions. In the final paper, by Kamel et al., a system is described for performing facial recognition through the use of expert systems, specialized image databases, pattern-matching techniques, and attributed graphs. Such systems could be of use for applications such as security and teleconferencing, among others.

In a technical note, Longley presents a potential flaw in cryptographic approaches that utilize the Data Encryption Algorithm (DEA), and Matyas shows how the IBM implementation counters that flaw and any attacks that could be based on it.

Also included in this issue is an index for the *Journal*, covering 1989 through 1992. The index has three parts: an author index for quick reference, a subject index for research, and the complete abstracts by issue for detail on each paper. We thank R. M. Johnson for her effort, diligence, and care in preparing this index.

The next issue of the Journal will contain a set of papers on software reuse, a set on application development methodology, and individual papers on other topics.

Gene F. Hoffnagle
Editor

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Announcement

The complete *IBM Systems Journal* 1962-1992 Cumulative Index, with sections for authors, subjects, and abstracts, is available for the same price as a single issue.

The order number is G321-0112.