

Preface

This issue contains five papers on a variety of subjects: medical image processing using object technology, monitoring of computer network topology through events, IBM's Information FrameWork and its architecture, generation of applications for manufacturing, and access control in host-centric computing.

The first paper, by Elliott et al., describes and illustrates how object technology is being used to create an easily modified system for image analysis of medical scans in three dimensions. Such systems are important for precise targeting of radiation treatments. The flexibility provided here allows production and testing of alternate approaches for analyzing the images. The authors show how their system is constructed, explain alternate analysis systems and associated algorithms that have been successfully incorporated for clinical testing, and provide insights into the practical aspects of image analysis for clinicians.

One of the challenges of network management is to closely monitor and adjust the network configuration, or topology, without significant loss of network bandwidth and performance to the monitoring functions themselves. Chao and Tsun explore an event-driven approach for monitoring point-to-point networks that requires nodes to keep information only about neighboring nodes. Their approach uses polling and event monitoring, saves bandwidth over approaches that only use polling, and maintains a map and history of the network's topology. The existence of a map, and its continuous updating, greatly eases the tasks of the network operators.

In a paper by Evernden, the framework and architectural concepts built around John Zachman's information systems architecture (ISA) are broadened and deepened to provide a more comprehensive Information FrameWork (IFW). In particular, the focus is shifted to information and its management as

a vital business asset. The IFW contains three views of information: organization, business, and technical. IFW also has six dimensions: information types, levels of constraint, content, transformation over time, ownership, and methodology chains, which the author refers to as routemaps. Considerable information is provided that relates IFW to ISA and compares their characteristics.

Automation of manufacturing engineering can be largely automated itself, according to Hazony. He has developed a problem-solving platform for engineering that is intended to allow rapid and easy conceptualization, design, and implementation of manufacturing systems. This system generator runs on commercially available personal computers. The author presents the mathematical and technical foundations, the generator design, and examples of its use. The key design point of the Application System Generator on the personal computer (ASG/pc) is the complete integration of the seamless-design-to-manufacture (SDTM) process.

Over the years, sophisticated mechanisms have been developed for controlling access in host-centric systems. The authors of the next paper, Benantar, Guski, and Troidle, provide a review of the key theoretical models for such access control. Then they use IBM's Multiple Virtual Storage (MVS) operating system and the Resource Access Control Facility (RACF*) as examples, showing how the models can be applied to host-centric and network-centric computing environments. The authors describe administration, security contexts, resource access, and auditing and reporting.

As the *Journal* begins its 35th year, we would like to acknowledge the support of readers, authors, and referees that makes such a long history possible. We thank you and encourage you to continue your interest and participation in this publication. We point out that in 1995 we published 37 papers and one Technical Forum, and we offered the work of a

record 177 authors in the third largest volume ever, at 760 pages. It also seems appropriate at such a time to state a few facts that sometimes escape us as we focus on a single paper, theme, or special issue. First, this publication is a quarterly refereed technical journal, which means that the integrity of each paper is ensured by a process that depends upon peer reviews of content, currency, and value by recognized experts within and outside IBM. Second, it is intended for the software and systems professional and applied research community worldwide. The papers are written for a technically aware readership, and we welcome submissions by knowledgeable authors around the globe, within and outside IBM. Third, the *Journal* has over 60 000 subscribers worldwide. Of those, approximately, two-thirds are technical professionals and researchers outside IBM; one-third are IBM employees; two-thirds are in the United States; and one-third are in other countries.

*The next issue of the **Journal*** will be a special issue on object technology.

Gene F. Hoffnagle
Editor

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