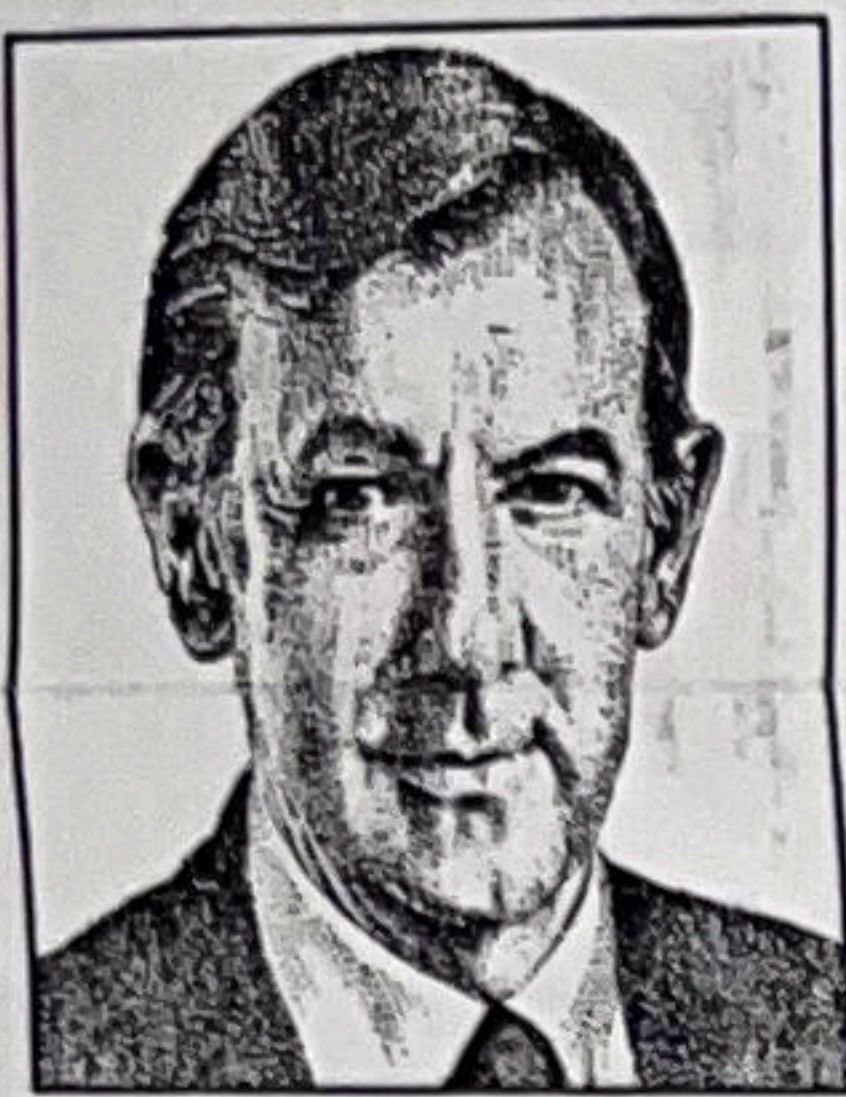


## APPLIED INTELLIGENCE

## Lower Cost, Improved Capability Spur Move to AS/400


**JAMES  
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This is the third part of a series on IBM's AS/400, which examines the strengths and limitations of this midrange family of computers.

For years, IBM's S/370 mainframe architecture has offered an advanced, sophisticated environment for developing and running commercial applications. Many users remain convinced that the only real alternative to IBM S/370 systems is plug-compatible computers from vendors such as Amdahl.

If S/370 systems are so advanced and so dominant, why are so many of their users rushing to buy AS/400 systems? The answer: It's not always easy or cost-effective to take advantage of the capability of S/370 computers.

S/370 systems have evolved over 20 years. As hardware capability improved, it was necessary to create a series of new operating systems to take advantage of larger memories, new devices and new functional requirements. It was also necessary to create a complex set of systems-software products to supplement the operating-system functions.

Each product, including VTAM/NCP, CICS, DB2, IMS, CMS and TSO, added an important functional element not included in the original operating systems.

### Support Costs Are High

An S/370 installation usually has a number of these software products installed on one or more computers. Frequently, a number of different operating systems (or versions of the same one) run on S/370 systems in a network. The cost of supporting a sophisticated S/370 environment can be very high because full-time experts are needed to support each software product.

Large organizations can absorb the high cost. However, if smaller S/370 users want the full functional capability that the larger users have, they must incur similar support costs and often pay a great deal for the machine capacity to run the more sophisticated products. They cannot spread these costs over as wide a base as the larger users. As a result, usually only the largest and most advanced organizations can take full advantage of the S/370 environment.

Frequently, S/370 users also face a conversion dilemma. IBM regularly develops innovative systems software products that overcome the shortcomings of earlier products. But taking advantage of these new products can be expensive and time-consuming.

The AS/400 offers an alternative for many S/370 users, especially for small and medium-sized applications. Users of smaller S/370 systems such as 9370 or 4300 series computers tend to be most frustrated with the costs, trade-offs and conversions that are normal in the S/370 environment.

A number of users of 9370, 4341, 4381, and even small 308x and 3090 systems have begun replacing these machines with AS/400 computers. In most cases, these users were unable to keep up with the most advanced S/370 systems-software products. Many use the DOS/VSE operating system. In the S/370 environment, either they pay for expensive conversions and the hardware to support them, or they live without the desired functional capability.

The AS/400 offers these users some significant advantages:

- no future operating-system conversions;
- lower support costs;

of both its customers and itself.

Complete replacement of midrange S/370 systems with AS/400-based solutions is rapidly becoming more popular, but it is not always appropriate. For example, S/370 systems used for technical applications such as engineering graphics are not candidates for replacement by AS/400 computers. And AS/400 systems are not practical for very high availability applications, too-large applications, large networks or the attachment of unusual devices.

Also, it seldom makes sense to replace S/370 applications that do not need changes, especially if they're based on an application package in which there is

- The cost of support functions such as systems programming, communications management, database administration and operations has grown to represent a high percentage of total spending on information systems (25 percent or more).
- A new application must be developed rapidly.

- Programming resources are limited.
- Management is unwilling to spend the resources needed to support an effective S/370 environment.

- Users are unhappy with the time required to create new systems and are looking increasingly to PC network-based solutions to meet their needs.

Moving an application from an S/370 to an AS/400 usually involves completely replacing the S/370 application. Ideally, the new application will be package-based, thus avoiding a complete redesign. Retraining users, along with creating a new set of interfaces with other applications, is usually necessary.

Many S/370-oriented organizations are concerned about the prospect of completely replacing applications. The original applications usually take years to develop and enhance, and there is a feeling that a large investment will be lost in a complete replacement. There is also a concern that replacement will be as lengthy as the original development.

### Faster than Expected

Companies that have moved applications to the AS/400 have shown, however, that it can be accomplished more rapidly than most S/370 organizations would believe possible, especially if packaged applications are used. In addition, it's often possible to significantly improve the applications during the replacement process, partly because older and less sophisticated applications are the best candidates for replacement.

It is also possible to improve applications as they are moved to the AS/400 because it is easier to develop applications that are fully interactive and use a relational DBMS on the AS/400.

Moving applications from an S/370 environment to an AS/400 environment is not a simple task. Terms used to describe the process include "conversion," "migration" and "downsizing."

The implementation of integrated computing environments, such as IBM's Systems Application Architecture, will accelerate the migration of applications from S/370 central computers to networks of AS/400s and desktop workstations. The conversion from centralized to distributed applications will be a major challenge of the 1990s.

Next week, I'll review the advanced architectural concepts incorporated in the AS/400. ■

The James Martin Productivity Series, an information service updated quarterly, is available through High Productivity Software Inc., of Marblehead, Mass. (800) 242-1240. For information on seminars, please contact (in the United States and Canada) Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402 (213) 394-8305. In Europe, contact Savant, 2 New St., Carnforth, Lancs., LA5 9BX United Kingdom (0524) 734 505.

## Switching to the IBM AS/400 Architecture

### Why Do Many Firms Want To Trade In Their S/370 Mainframes?

System/370

- Large
- Processing power centralized
- Software expensive and complex
- Extensive specialized support required

1990s

AS/400

- Downsized
- Networked with PS/2s for distributed processing power
- Simple, consolidated software
- Limited support requirements

John Avakian

**Complete replacement of midrange S/370 systems with AS/400-based solutions is rapidly becoming more popular, but it is not the appropriate solution for all applications.**

- higher programming productivity;
- affordable relational database processing;
- lower operations costs;
- simpler, less expensive systems software;
- cheaper application packages; and
- field upgrades to hardware and software.

By replacing S/370 systems with AS/400 computers, most of these users expect to reduce costs by 30 percent to 50 percent while improving capability.

Although IBM is not encouraging these conversions, its attitude will likely change after it realizes that these conversions are usually in the best interests

no comparable AS/400 package.

In general, replacing S/370 applications with AS/400 applications is most sensible when one or more of the following conditions exists:

- Conversion to a new operating system is necessary, especially if the conversion is to one of the MVS operating systems from another operating system.
- Redesign of the application is necessary, especially if the redesign will include use of a relational database-management system (DBMS).
- A corporate policy is in place to downsize applications to smaller systems and move toward support of cooperative processing and distributed data.