

## APPLIED INTELLIGENCE

## Lotus' Future Contingent on Reaction to New Products



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This is the sixth in a series of articles on the strategic directions that Lotus is pursuing, and the significance of those strategies to organizations planning for the 1990s.

Lotus Development Corp. has become synonymous with its 1-

2-3 spreadsheet, whose success has dwarfed other Lotus products. 1-2-3 was well-designed and has proven to be highly durable.

Today, with significant changes occurring in the industry, 1-2-3 is at a crossroad. Two long-overdue upgrades have finally been shipped, and to a large extent the reaction of the installed base to these new products will define the future for Lotus.

The momentum of 5 million users and millions of 1-2-3 applications dictate that change will take place slowly; but even slow movements of this large base produce big numbers in sales. For example, upgrading to release 3.0 or release 2.2 by 20 percent of the installed base would represent almost 1 million sales.

The strategy devised by Lotus for its spreadsheet products takes advantage of its installed base and positions the company to respond to both technological and market dynamics.

Lotus' strategy with respect to spreadsheets appears to be concentrated in the following areas:

- Protecting and extending the market base.
  - Responding to the needs of character-based users with larger and more complicated spreadsheets, faster execution and better output.
  - Solving the "islands of computing" problem by offering highly compatible spreadsheet products on most major platforms under all popular operating systems, including mainframes and minicomputers.
  - Offering several levels of data sharing, ranging from simple file compatibility to dynamic exchange of data.
  - Providing seamless data sharing and application interaction under OS/2 for both Lotus and other software products.
  - Integrating other Lotus products such as GraphWriter II and Manuscript to make them more valuable when working with 1-2-3.
  - Continuing to extend spreadsheet products with add-ins developed using a new programming facility called Lotus Add-In Toolkit for release 3.0.
- This strategy won't be easy to implement and is unlikely to be totally successful, but there are indications that during this highly dynamic period of change, Lotus has positioned itself to successfully meet the challenges and opportunities of the 1990s.
- The introduction of the Intel 286 microprocessor created the opportunity to build microcomputers that had the potential of handling very large spread-

sheets. Unfortunately, an enhanced operating system for this processor, OS/2, was not yet available, making it impossible to take full advantage of the microprocessor's power. Under OS/2, as much as 16M bytes of memory can be accessed. Until OS/2 is commonly in use, the majority of users will expect software products to operate in the limited DOS environment.

For the vendor, this discontinuity in hardware/software capabilities creates a difficult marketing problem. Does the vendor develop highly functional software products (requiring the capabilities of OS/2) and sell them to a small but growing market? Or does the vendor

- Apple Computer Inc.'s Macintosh has achieved a market share of about 15 percent.
- Approximately 25 percent of PCs are currently networked. Expectations are that within two years approximately 50 percent of PCs will be networked.
- OS/2 is at least one year behind initial projections for market penetration.
- The Unix operating system is continuing to gain acceptance as an environment for business computing.

Lotus resolved the problem of discontinuity between hardware and software by incorporating a DOS extender from Rational Software in release 3.0. DOS extenders (otherwise known as

strategy that have affected the delivery of its new spreadsheet products. As software has become more feature-laden, limitations on memory size have forced as much as 40 percent of the development process to be consumed with optimization of code.

Along with code, a reasonably sized spreadsheet must fit within 640K bytes in the DOS environment. This is a technical problem shared by all software developers and is one of the primary reasons that applications developers seek alternative operating systems.

Exacerbating this problem is an element of Lotus' strategy that places 1-2-3 on multiple platforms. Maintenance and enhancements on a software product this size, running on multiple platforms, are almost impossible if the core code modules are not in a platform-independent common language.

To implement the multiplatform strategy, it was necessary to develop the new product in the C language. The resulting increase in code size (vs. the more compact Assembler implementation) along with the addition of new features caused release 3.0 to exceed the targeted memory limits and miss the announced delivery dates.

During the lengthy development process of release 3.0, the microcomputer industry was not static. Despite the fact that the operating system for the 286 chip is lagging far behind the hardware, corporate purchasers have moved quickly to the 286 with 1M byte of memory as a standard for all new purchases.

Fewer than 20 percent of new sales are of the older 8088 and 8086 machines. It is estimated that by 1991, 286 or 386 machines will represent close to 75 percent of the total installed base of personal computers.

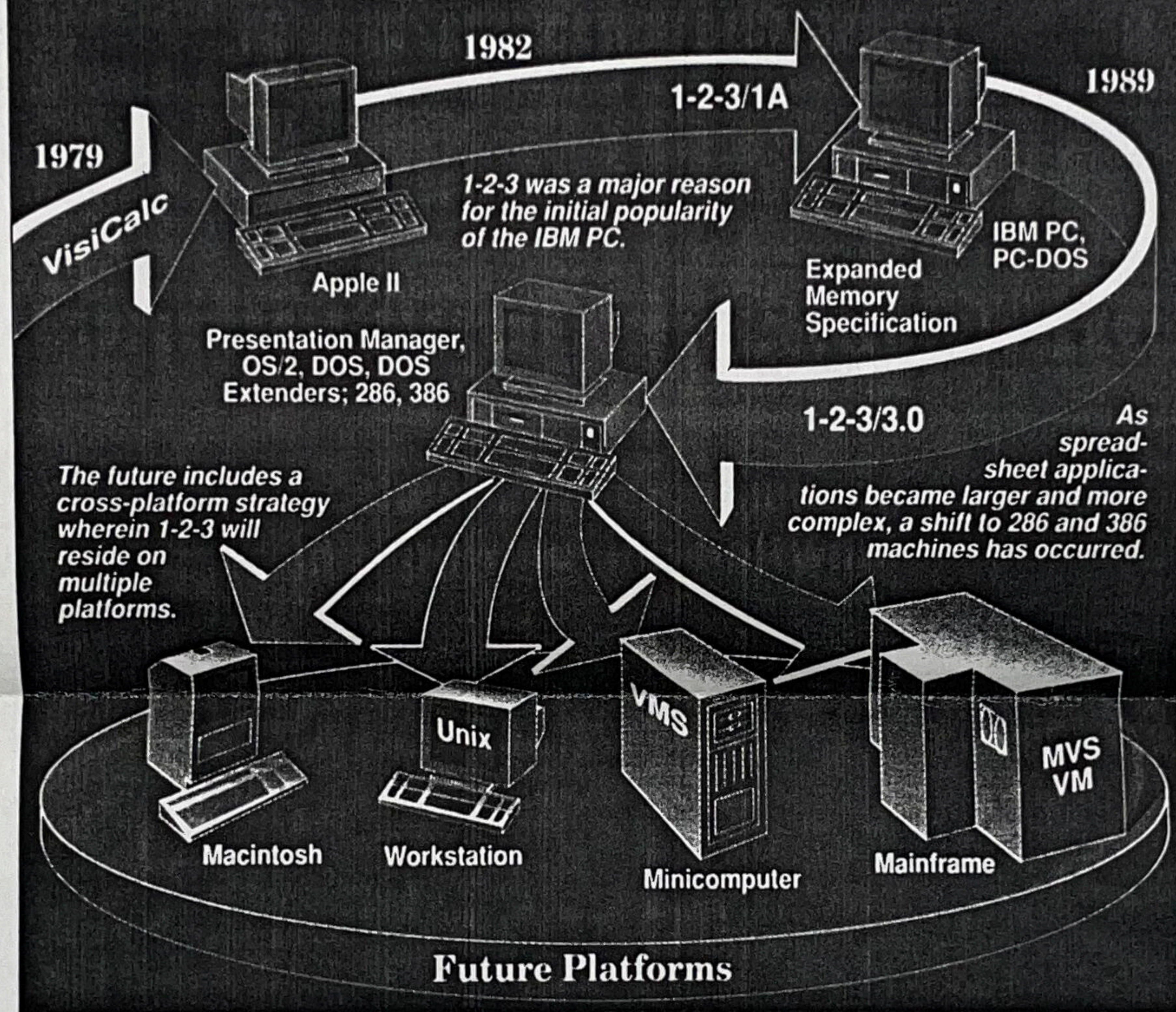
### Challenges to 1-2-3

Even with the product delays, competitive threats, changing hardware environments and delayed operating system availability, 1-2-3 continues to be the best-selling spreadsheet in the world. There are currently more individuals who use 1-2-3 than any other software product.

Lotus will continue to face tough marketing challenges and strong competitive threats, but the company is now better equipped to exploit more advanced computing platforms, use improved operating systems and serve the future needs of its huge customer base.

In the final article in this series next week, I'll discuss personal information managers, a new software category pioneered by the Lotus Agenda product, that are used to manipulate text and ideas. ■

## How Spreadsheets Have Influenced Changes In Hardware and Software



John Avakian

**There are indications that during this highly dynamic period of change, Lotus has positioned itself to successfully meet the challenges and opportunities of the 1990s.**

constrain the functionality of the product so that it will operate in the popular DOS environment?

Lotus did not anticipate facing this dilemma during the development of release 3.0, but it was quickly discovered.

Lotus first announced release 3.0 on April 27, 1987. The personal computer market has always been unpredictable, and long-range projections have rarely been very accurate.

Changes that have occurred since 1-2-3 release 3.0 was announced include the following:

- The large base of 8088 and 8086 machines is expected to be eclipsed by 286 and 386 machines in 1989.

protected-mode technology) can provide access to 16M bytes of memory while still operating under the DOS environment.

The figure outlines the major shifts in hardware and operating systems, driven to a large extent by the need to work with spreadsheets.

As these shifts occurred, investments in spreadsheet products, applications and training grew so large that solutions unable to protect these investments were unpalatable. In short, 1-2-3 had woven itself so successfully and so thoroughly into corporate computing cultures that few people wanted to change.

There are two elements of Lotus'

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