

The History of Computing

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History of the Computing Industry - 1985

1985 was quite a year for the computing industry. The IBM PC was four years old, Microsoft came out with Windows 1.0 and Intel launched the 80386 chip, among other breakthroughs. But while innovation is nothing new to the computing industry – neither are the difficulties prevalent in the industry around 1985. All the same old issues that we whine about to this day were just as frequently the ram of jokes back then – integration, compatibility, usability, scalability – even Microsoft, not even a member of the “Datamation 100” at the time, was already taking flack for MS/DOS. The cast of characters, while partially surprisingly familiar – is also surprisingly unfamiliar, with companies such as Sperry, Burroughs, Wang and Prime hogging headlines. If anything strikes one as truly odd, though, it is how much things have stayed the same.

This survey of the history of computing in 1985 will begin by exploring the state of the PC at the time. I will then focus on minis, databases, networks, peripherals, and applications in that order, ending with a cursory glance at operating systems.

1985 – The Personal Computer

1985 was quite a year for the personal computer, then referred to more frequently as the microcomputer. While the PC continued the growth spurt begun several years earlier, the sector was not growing quite as fast. For example, growth in new PC users was 65% from 1983 to 1984 but only 22% from 1984 to 1985. In other words, the PC market had begun to mature, and estimates were for single-digit growth going forward.

Without a doubt, IBM ruled the fledgling PC segment, gaining 63.3% of new users in 1985, vs. Apple’s mere 4.6%. This was the first year in which the IBM PC ranked ahead of

Apple in terms of software availability. However, then as now, Apple was widely claimed to be superior both in terms of ease of use as well as in the quality of their displays.

1985 – The Minicomputer

Minicomputer penetration also slowed during 1985, from 25% growth the previous year to only 13.3% in terms of dollar volume. The decline in Minicomputer sales was attributed largely to the growth in the IBM PC platform. The most popular minicomputers were utilized as workstations and intelligent terminals, while other applications included small business systems, traditional minis for engineering and scientific use, as well as data entry and office systems.

The most innovative minicomputer vendors of the day included Data General, Hewlett Packard and Apollo Computer. Average minicomputer prices were mostly on the up and up, with prices for Data General machines rising from an average of \$35,000 in 1980-81 to an average \$101,000 for the period 1984-1985. Few of the systems supplied were fault-tolerant and there was little willingness in the market to pay for such systems.

The leading minicomputer system companies included IBM, with 23.7% market share, DEC, with 22.9% share, Wang, with 11.9% share and Data General with 10.6% share.

1985 – Databases

By 1985, SQL was becoming the dominant database language, and relational databases were all the rage – although industry pundits did not believe relational databases would prevail, and Oracle was but a bit player. Pure relational systems were thought to be of interest to academics, and perhaps to managers of minor database applications, but indexed databases were viewed as superior in both performance and scalability. Experts believed that databases would evolve toward a three-schema architecture, with fundamental distinctions made between the

internal, the external, and the conceptual schemas. Distributed database architectures, as well as “database machines,” were not expected to play a major role.

In contrast, data dictionaries, which had been around for some time, were expected to play a major role in the integration of disparate data sources, and to become the driving force behind most information system tools such as end-user inquiry and report generators, design and management aids, host language interfaces and prototype facilities.

Integration was dominated by IBM’s CICS product, adopted by most other vendors then active in the market as their transaction processor of choice. The only major product not using IBM’s integrated transaction processor was Cullinet’s IDMS/DC, which was fully compatible with the IBM product. Other leading database products included Cincom’s TIS-XA and Wang’s PACESYSTEM.

End-user features were being driven aggressively by market-side demand. The leading natural inquiry system was the Intellect system from Artificial Intelligence Corp. However, this system was not tightly integrated with any existing DBMS or dictionary facilities and experts predicted that successful future systems would need to do so. Query-by-forms systems were popular, with IBM’s Query-By-Example system leading the market. Oracle and Ingres offered similar features and were pioneers in this space.

Another database feature gaining popularity in 1985 was the PC-mainframe link, but few vendors managed to maintain compatibility across time. The spreadsheet, though, was definitely emerging as the primary paradigm for data manipulation, and the PC-mainframe link was critical to downloading mainframe data to the PC.

In terms of performance, mainframe database packages were fully multithreaded and capable of supporting 20 to 30 transactions per second on IBM 3084 class processors.

1985 - Local Area Networks

In March of 1985, Datamation magazine defined LANs as *“a package of media, transmission devices, interface units, network-management hardware and software, end-user devices, and applications software for the provision of communication between dissimilar nodes in an intrabuilding or intracampus environment.”* Quite a mouthful, that...

Four different media were in use for LANs at the time – twisted pair, baseband coaxial cable, broadband coaxial cable and optical fiber – with optical fiber leading the pack.

Topologies included bus, ring and star, with 60% of the products on the market being bus oriented. Access methods were either centralized or distributed, and distributed access was dominant among the baseband, broadband and tokenring LANs.

The lack of standardization among LAN protocols was a major hurdle preventing rapid user adoption. Seven different technologies shared the market in 1985. Baseband bus was based on the Ethernet standard and was supplied by Digital, Datapoint, Xerox, Interlan and 3Com. Broadband bus held a significant installed base and was offered by Wang as well as by a host of lesser-known vendors. Centralized LAN was based on PBX-type technology and was promoted strongly by AT&T. Token ring was gaining acceptance as a standard, pushed forward aggressively by IEEE and IBM's endorsement – it also offered a valid solution for Wide Area Networks. Token bus had higher throughput and was gaining ground in factory- implementations; token bus was supported by GM. The standards wars were rounded out by third and fourth generation PBX standards.

1985 – Peripherals

The big rage in peripherals during 1985 was tape backup. Of course, a standards war was in full force between the QIC-24 – Quarter Inch Compatible Committee-24 – and the PC/T.

IBM was backing the QIC-24, and so it was expected to prevail. Quantum was about to launch 50Mb and 80Mb tape backup devices to support AT-class PCs.

Sheet-fed dot-matrix printers were also new, with IBM debuting a dot-matrix printer retailing for \$500. Toshiba introduced a printer that could handle seven different type faces (fonts), also considered to be quite an innovation.

2,400-baud modems were new, with 300 to 1,200 baud modems heavily discounted as the “speedy” new modems came to market. And the terminal market was badly fragmented, with offerings ranging from the lowest quality ASCII terminals retailing for under \$400 to high-end sophisticated voice/data terminals going for over \$2,000.

1985 – Applications

In 1985, out-of-the-box products in the data processing industry were uncommon – 85% of software applications required some modification by in-house data processing professionals. However, on the PC end of the business shrink-wrapped products were becoming more common, and companies began to spend more on software than they were spending for hardware.

In the PC segment, Lotus 1-2-3 and Wordstar were the undisputed market leaders, with runner-ups including such products as Lotus Symphony and IBM’s DisplayWrite and Topview (a “windows” package). Compatibility was the key issue, and Lotus 1-2-3 was wildly successful as more and more corporate users standardized on the package – about 40% in 1985.

In the mini and mainframe markets leading software packages included Disc Inc.’s ARP and MSA’s General Ledger for general accounting, MSA’s Human Resource System and Cyborg’s Payroll/Personnel for payroll and personnel management and Cognos’ Powerhouse for business management and forecasting.

1985 – Operating Systems

The operating system scene circa 1985 was far more fragmented than it is today. 70% of mainframes and minicomputers ran under IBM operating systems, with Digital Equipment a distant second at 6%, HP at 4%, Wang at 3% and several other vendors averaging about 1% each – including Burroughs, Honeywell, Sperry, Texas Instruments and Prime.

As far as operating systems “flavors” went, Unix ranked quite low, with 7.8% market share but expected to climb to 12.2% share within 18 months. Unix systems were supplied mostly by Sun, Altos and AT&T. The most popular UNIX variant was AT&T’s System V, followed by Berkeley’s version 4.2 and Microsoft’s Xenix. The prevalent operating system for the PC platform was Microsoft’s PC/DOS platform, which already had little competition. A notable fact is that Windows 1.0 was released during November of that year.

In conclusion, much has happened since 1985 that now renders the advances then achieved almost trivial in nature. But consider that when these revolutionary products and technologies came to market back then, they had much the same impact as new innovations have on us today. If anything, so much of the world computing technology was still a new thing in 1985 – innovations were received with far more awe and wonder than they are today. The evolution of computing continues to be an amazing phenomenon, and walks down technology’s memory lane such as this will always evoke nostalgic feelings among many.

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