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From Visicalc to Cybernetic Babylon

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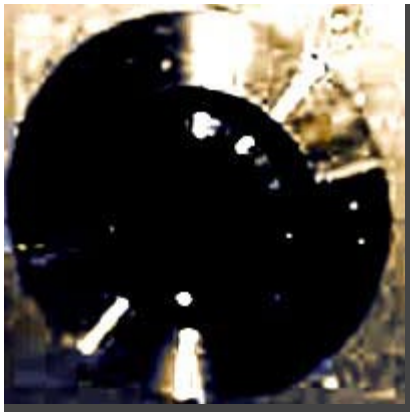

From Visicalc to Cybernetic Babylon

Dan Tanner on Jan 20 2000 **issue 13**

History of Database in Computing

In the beginning there was data - raw, unorganized, free floating, out there, meaningless, without value, simple and disconnected. Intelligence found ways to organize the data into bits of human comprehension and meaning. A little while later, well lots later, an electronic intelligence was developed and it was a direct extension of human linear logic. Then came records and files. Add on an index or multiple indexes, and then index the index, organize the data into arrays, n-dimensional arrays, add query methods/languages, a manipulation method and you have a DATABASE. Now, why are databases so important to us? Well, we are all, personally entered in them, use them, rely on them, and we are probably at the point at which human life as we know it may not be able to exist (at least in these numbers) without them. So, how did databases get this important? One of the true milestones in the use and development of databases as well as of computing was the development of a seemingly simple and insignificant program named VisiCalc. Before VisiCalc there was only Data Processing.

VisiCalc was the original "killer AP" (application). What was there before VisiCalc? There was data processing, the high priests of information. People had to beg and plead to get their programming requests done. Programming was all written from scratch using compiled languages like ASSEMBLER, COBOL and FORTRAN. Applications programming development backlogs were literally measured in years, sometimes 3 or 4 years. Individual careers in corporations could rise and fall on the way information was manipulated and presented. So data processing was at the center of the information universe, a corporate political Machiavellian melodrama. Computer manufacturing companies' sales forces, like IBM, played high level, high stakes internal company politics to make sales and capture market share. IBM sales used the fear of information system failures to convince upper management to buy their products. It was called the FUD factor (fear, uncertainty, and doubt). The glass house computer center was in ascendancy. Computers were enormous, filling large rooms and costing multi-millions. It took a cast of thousands to run and maintain a database, IMS (IBM's DBMS, database management system) was the corporate king, and it required a sophisticated data processing or MIS (management information system) organization. Then came VisiCalc.

Deep in the heart of Silicon Valley, microprocessors were created. This led to the development of the small or personal computer, which was both novel and very non-commercial. The Altaire, the Heathkit, and later the Star and the Apple were the early focus of those interested in small computers. These machines were for nerd hobbyists and engineers. You had to put them together and program them yourself. Some of those nerds were Steve Jobs, Steve Wozniak, and Bill Gates. Alan Kay was coming out of Xerox Parc to create Atari and the computer game industry. Another, out of MIT was Dan Bricklin. His personal computer hobby and interest lead to the invention, creation, and the inspired development of the software program that both revolutionized the way computing was done and the way databases were used. Bricklin was just trying to build a tool that he could use to manipulate data. He attempted to automate a manual system of listing, in matrix form on a blackboard, data and the results of operations on the data. He created a glorified calculator with data presentation capabilities. Bricklin

probably didn't know the significance of his development, but the glass house of the big mainframe centralized data processing was cracked, never to recover. Accounting and manufacturing built large MIS (Management Information Systems) departments, engineering had specialized mini-computer systems, but other departments had little support and mostly manual procedures, while they waited for MIS to work their information requests into the backlog. VisiCalc gave them a way to get at their data. Individual workers could build their own database, manipulate it, format and print their own reports. Well funded groups like marketing, who had great information needs, jumped into the soon to be computer revolution. They could stand up to the political power of the MIS group. They also had lots of money to spend on new computers. VisiCalc was by itself the reason and the justification to buy a personal computer. This money made Apple computer grow and prosper. IBM saw and copied. Personal computers grew into the first LANs (local area networks) to consolidate data, share disk space and printers. The Corvus shared disk system over AppleTalk made the LAN data consolidated and created data integrity. I remember, while implementing one of these early Corvus/Apple "LANs", visiting the Corvus factory, tucked away in a warehouse like space, seeing beer on tap in the employee lunch area. This was really Silicon Valley. Fueled by these early corporate personal computer purchases, the personal computer revolution was on. So was a change in the way we did things and also really in the way we live.

Spreadsheets are very sophisticated now, they have lots of bells and whistles and interfaces to large formal database management systems, but they are still basically VisiCalc. It was the database accessible to the masses. It made the individual use and control of a database possible. In a lot of ways it changed the nature of databases. It allowed the instantaneous transformation of the data, to manipulate it and to create new data from the manipulations. And without a programmer! Personal finance software, as well as a number of business and other software packages, emerged as commercially viable from this pioneering software. A database explosion was happening. New forms, new uses, and even new businesses were being born. Programs like "Mailing List" appeared. It started small, for personal information, but the technology made it explode into giant commercial enterprise, "Junk Mail", but the personal version could never really be depended on to print on an envelope right. Many people use spreadsheets in many ways, for many reasons. Computing can't live without them. Nether can people. They are the databases of the masses.

The next leap forward in both databases and in computing was hypertext. It helped the leap forward of personal computers as communication devices and lead to the development of the World Wide Web. The development of hypertext by Ted Nelson from AutoDesk, turned ordinary text into a highly interactive database. Text is now searchable and index able. It made documents into databases. Then engineering drawings and documentation followed in the same kind of database organization and led to modern CAD (Computer Aided Design). Hypertext was the forerunner of mosaic, the first web browser. Database has come a long way from VSAM (Virtual Sequential Access Method) files tied together with higher-level tables as indexes, (IMS). It is now attempting to encompass the world's total knowledge, the WWW (World Wide Web). What other kinds of phenomena or changes might the rapid and seeming uncontrolled growth and development of the Internet bring to the notion of database. An Internet as a database is both large and complex; it can't be measured or controlled. New kinds or classes of data are and will be emerging. Network searches, search engines, and other Internet tools create both databases themselves, and "metabases" (databases about databases) about information. This computer paradigm shift began with VisiCalc. What will come next? With new software able to classify and index images and video able to be compressed, stored, streamed and played on computers, new kinds of multimedia databases are on their way. Is there a multimedia or visual database VisiCalc about to emerge? Cybernetics is about communication and control. The management of information is about measuring and controlling things, lots of different things, from hardware to people and societies. Personal computers have become tools to apply communication and control to everyday life. VisiCalc was the single application that help start this. Database is here to stay.

URLs:

Microsoft museum
http://members.xoom.com/prostoalex/msmuseum.html

Heathkit Virtual Museum
http://www.heathkit-museum.com/hkcomp.html

A PC-DOS version of the program
http://www.bricklin.com/history/vcexecutable.htm

The VisiCalc Reference Card
http://www.bricklin.com/history/refcard1.htm

Dan Bricklin's Web Site
http://www.bricklin.com/

::CrossReference

last 5 articles posted by Tanner

:: From Visicalc to Cybernetic Babylon - Jan 20 2000

:: SIGGRAPH 96 - Aug 9 1996