

History of Database Management Systems

Burton Grad

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Database management systems (DBMSs) have played an *outsize* role in the history of software development and in the creation and growth of the software products industry. Recognizing the major role played by these products, the *Annals* is publishing two special issues on the subject. These two issues will be the fourth and fifth sponsored by the Software Industry Special Interest Group of the Computer History Museum (formerly the Software History Center). This issue (the first) is focused on the products, companies, and people who designed, programmed, and sold mainframe DBMS software products beginning in the 1960s and 1970s. The second issue will be devoted to the relational DBMS products, which were developed during the 1970s and came to prominence (and some say dominance) during the 1980s and 1990s.

What was so important about these DBMS products? Why did they have such a major impact on the growth of the software products industry and, more importantly, on the way that almost all major commercial applications were built from the 1970s on? It is a complex story, part of which is told in this issue. Thomas Haigh begins this issue by describing the world prior to DBMSs and some of the early DBMS products. Tim Bergin and Thomas Haigh then examine the database management products that dominated the IBM environment and other major computer platforms in the 1970s and 1980s.

This issue tells the rest of the story through a series of pioneer recollections, principally from people who founded the major DBMS companies or were heavily involved in the growth and development of these products and companies. These eight recollections cover the principal DBMS software products for IBM mainframe computers.¹ IBM itself was a significant player in this marketplace with its IMS product, but all the other

products were produced and marketed by independent software companies. Many historians and industry analysts believe that these products and these companies formed the foundation on which the mainframe software products industry was built.

The significance of DBMSs

In some sense, these DBMSs, with their accompanying data communications (or on-line transaction processing) systems, enabled users in all industries to construct both on-line and batch applications in a far more timely and cost-effective manner. These database and data communications systems became the foundation for building many (some say most) of the core applications in every industry and government agency, and they became the engines that drove the sale of mainframe computers during the 1970s and afterward.

The following list supplies just some of the reasons why industry analysts and historians consider DBMS software products so important from both a technological and business standpoint:

- They provided an efficient way to program complex applications without the cost of rewriting the data access and retrieval functions for each application.
- They provided a relatively simple, standard way to share data among multiple applications and multiple users.
- They created specialized user-oriented languages.
- They provided standard interfaces for the data communications programs so that the on-line transaction processing applications could be efficiently built, tested, and maintained (both in time and cost).
- They managed the databases on various random- and sequential-access devices

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