Chapter 7

Database System for the Virtual Collection:
Information Experts Merging IT and Collection Management for Real Solutions in the User Environment

ABSTRACT

Database technology is highly developed for the many uses that it is employs; although, tomorrow will hold new challenges and demands that it is ill-equipped to accomplish. The rigors and demands of the current Information Age pushes information systems to develop more universal solutions not pre-established on the proprietary demands of capitalistic conceptions. In the Information Age, the ever-increasing need for more data processing capabilities becomes inherent with the times, and with the addition of the Digital Age, it is assumed that increased data processing will continue to be conducted by discrete electronic computing systems and the many forms that they will take. The continued development of more efficient data models, and the database systems designed to leverage them, will become the chariot bringing forth the climax of the current times and the dawning of new endeavors for human curiosity and our willingness to learn and explore ever further into the beyond. Tackling these issues is the direct purpose of the LISA Universal Informationbase System (the LISA Informationbase), to effectively integrate data of diverse variations and in a semi-ubiquitous structure to increase data automation of information content for use by our patrons in a powerful database management technology. Surveyed in this chapter is a review of this driving technology and its applications, covering the NITA Methodology Stage-I, Stage-II, and Stage-III in its developmental process.

INTRODUCTION

Database technologies continue to be a cornerstone in the development of new information technologies targeting data collation and content mining

to produce consumable information for the user. No matter how sophisticated the database system maybe however, its architecture always starts with the underlying theories behind data modeling. The database system and data model acts as a sort of blueprint in how the technology uses the data for meaningful results, and all databases start

with this first step. Current information technology being digitally based, most data models are compositions of highly developed mathematical systems seeking to 'model' how we as humans handle and manipulate the information we use to inform our thoughts and eventual actions. While mathematics works extremely well for modeling discrete and quantifiable phenomenon, it fails horrible at modeling subjective phenomena, which is the foundation of our synthetic thought process. Because of these natural deficiencies in any logical system, there have been developed many database systems to inform the gamut of data dependent applications and software that play a part of our everyday lives, and while many of these database systems are extremely powerful and efficient at the narrow forms of data processing that is required of them, we have not sufficiently developed a database system, or even a data model, that can handle something as robust as the information streams on complex and ever-changing networks such as the Internet, or process non-textual data such as audio, video, or tactile content.

The Explosive Growth of Online Databases

Vast online databases become the second great stimulus to virtual collections, second only to the nature of the information artifacts themselves. Many companies augmented themselves to sell subscriptions to these online databases, mostly of a specialized research nature. Examples of such companies include Lexus Nexus, Elsevier, and Gale to name a current few, but there are many more. These online databases have become very important sources for scholars to conduct their research and support their conclusions. These databases depended heavily on the Internet technology as database portals, via Websites and mobile apps, and digitalization of mass collections of older printed scholarly journals and monographs. Also, as specialized products provided by these

companies, libraries had to pay subscription fees in order to provide access to their patrons. These well-established services have become important factors in the progress of more formal virtual collections. Although, due to their closed-collection, subscription based business models, they will never reach the size and importance of more open, though not necessarily free, virtual collections, and remain secondary to these other user environments.

Advances in data models, database systems, and management software/hardware will be the future of more sophisticated computers systems. The key to advanced complexity and comprehension in computers, though not necessarily digital technology, is leveraging the ability to collect, collate, and process large amounts of data from various sources in a fairly short period of time–data automation. Improvements in online databases will help to improve all four of these processes as it acts as a central technology in which the others are built upon, particularly the collate process which requires a solid sense of order and correlation between data sets and records. The traditional data models used in computing are powerful, but are not sophisticated enough for the next generation of information technology needing to process significantly increased amounts of data through increasingly faster network feeds. The advanced algorithms in search engine Web crawlers–the automated software programs that analyze Web content for indexing in the search database–are steps in the right direction in this field, but only the first steps, and still very primitive steps at that. A new data model is introduced here that is designed exclusively for the advancements in database development, data indexing, and collation with the above principles in mind for the next generation of information technology heavily dependent on handling more sources of data with greater demands for producing meaningful information.

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