

Foreword

Progress of Information Record Technology - From Macro- to Nano-World -

Director

Hideroh Takahashi



The beautiful mural painting of a bison in the Lascaux cave from B.C. 20,000, which is full of the feeling of a lively motion, can be called the human-beings' oldest information record. With the invention of characters in B.C. 6,000~4,000, the invention of paper, and the invention of the printing technology by Gutenberg during the Renaissance age brought about the recording of information with characters on paper, and the transmission beyond time and space, has supported the development of modern civilization over several centuries thereafter. Printing technology has revolutionized human history.

The present age is a time of electronic information. The information of a large dictionary can be recorded on recording media, such as a CD or DVD with a diameter of about 12cm by light, and is reproduced by opto-electronic conversion. It is going to change into the time of an electronic information medium from a paper culture time.

Former U.S. President Clinton has stated the possibilities of NNI (National Nanotechnology Initiative) to record all the information housed at the Library of Congress on a chip the size of a sugar cube as the ultimate materialization of nanotechnology.

Although over 20,000 years have passed since the mural painting ($<1 \text{ bit/inch}^2$) in the Lascaux cave to the invention of printing technology (100 bit/inch^2), only hundreds of years were needed for the invention of the CD with the record density of 400 Mbit/inch^2 since the invention of printing technology.

The information record density has exponentially progressed on a time scale.

The Challenge of President Clinton can be called a "human beings' dream". A "human beings' dream" should be realized. We also would like to make our best effort with passion and dedication to leave a footprint towards the realization of this "dream".