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Global data storage calculated at 295 exabytes

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Mankind's capacity to store the colossal amount of information in the world has been measured by scientists.

The study, published in the journal Science, calculates the amount of data stored in the world by 2007 as 295 exabytes.

That is the equivalent of 1.2 billion average hard drives.

The researchers calculated the figure by estimating the amount of data held on 60 technologies from PCs and and DVDs to paper adverts and books.

"If we were to take all that information and store it in books, we could cover the entire area of the US or China in 13 layers of books," Dr Martin Hilbert of the University of Southern California told the BBC's Science in Action.

Information revolution

Computer storage has traditionally been measured in kilobytes, then megabytes, and now usually gigabytes. After that comes terabytes, petabytes, then exabytes. One exabyte is a billion gigabytes.

The same information stored digitally on CDs would create a stack of discs that would reach beyond the moon, according to the researchers.

Scientists calculated the figure by estimating the amount of data held on 60 analogue and digital technologies during the period from 1986 to 2007. They considered everything from computer hard drives to obsolete floppy discs, and x-ray films to microchips on credit cards.

The survey covers a period known as the "information revolution" as human societies transition to a digital age. It shows that in 2000 75% of stored information was in an analogue format such as video cassettes, but that by 2007, 94% of it was digital.

"There have been other revolutions before." Dr Hilbert told the BBC's Science in Action programme.

"The car changed society completely, or electricity. Every 40, 50 or 60 years something grows faster than anything else, and right now it's information.

"Basically what you can do with information is transmit it through space, and we call that communication. You can transmit it through time; we call that storage. Or you can transform it, manipulate it, change the meaning of it, and we call that computation."

Other results from the global survey show that we broadcast around two zettabytes of data (a zettabyte is 1000 exabytes). That's the equivalent of 175 newspapers per person, per day.

The fastest growing area of information manipulation has been computation. During the two decades the survey covers, global

computing capacity increased by 58% per year.

These numbers may sound large, but they are still dwarfed by the information processing and storage capacity of nature.

"The Human DNA in one single body can store around 300 times more information than we store in all our technological devices" according to Dr Hilbert.

This study looked at the world as a whole, but the scientists say that it does show that the "digital divide" between rich and poor countries is growing. Despite the spread of computers and mobile phones, the capacity to process information is becoming more unequal.

In 2002 people in the developed world could communicate eight times more information than people in the developing world. Just five years later, in 2007, that gap has nearly doubled, and people in richer countries have 15 times more information carrying capacity.

The study also pinpoints the arrival of the digital age as 2002, the first year worldwide digital storage capacity overtook analogue capacity.

Hear more about the study on **Science in Action on the BBC World Service**.

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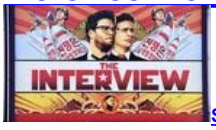

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