

Project BA - Archive Storage

By Alex and Mikhel

Objective

- We were trying to discover different methods of storage that will hold the information of life on Earth.
- This information must be preserved for billions of years, for future discovery.

Computer Storage

- Compact disc = 700MB
- Blu-ray disc = 50GB
- BDXL = 100 – 128GB
- SD Card = up to 258GB
- Hard Drive = up to 2TB

Kilobyte	(KB)
Megabyte	(MB)
Gigabyte	(GB)
Terabyte	(TB)
Petabyte	(PB)

Over time storage sizes and capacity increase due to advancing technology. So in the future more data will be available on the same size storage device.

A major problem with Hard Drives is that they have a high chance of being damaged in freezing temperature and because the moon can drop below -180°C there is a very high possibility data saved onto a Hard Drive could get corrupted, as most modern hard drives can not survive below -40°C .

Size of the Archives Files

- 1000 character page of writing has an average file size of 12.4KB.
- 1 minute video has an average file size of 12MB but this can vary due to video quality.
- 1 minute audio clip at 28KB/S is around 1.7MB.
- The entire human genome is around 750MB, and this is similar to many other animal species.
- The average size of a photo is 3MB.

Memory Needed

- Total data storage space needed for the entire database is estimated at around 77TB.
- Digitised DNA and species Genomes totals around 2TB. 750GB for the genomes of approximately 1,000 species, and 1TB for the public digitised DNA.
- Space needed for information archive is 50TB. This includes a similar encyclopaedia to Wikipedia, and includes photos and videos. The actual text is roughly 1TB or less.
- Total storage space for public purchasing options such as audio, video and text files is around 5TB. This has been estimated with 35 million customers (0.5% of the worlds population) buying a product for storage.
- Google Earth is around 20TB excluding street view, and only including satellite photos.

Total Possible Storage Size

- 10m of customised BDXL discs stacked on top of each other would provide approximately 1000TB (about 1PB) in total.
- This is more than enough space to hold everything we need.

Storage information

- The information must be placed in a hole being drilled with a diameter of 2.7cm.
- SD cards are very small and you can fit a large number of them into a small space. Storage space on the largest SD card is 168MB/mm³
- Blu-ray discs are very thin (1.2mm), and could be stacked one on top of the other. Storage on a Blu-ray disc is 186MB/mm³
- The radius of a normal Blu-ray disc is too large but custom Blu-ray disc sizes could be possible.
- A typical Hard Drive has much larger dimensions, so will not be able to fit.

Solution

- We have decided the best option is to use Blu-ray style discs that will be customised to fit into the capsules because:
 - they can hold the most data per unit volume
 - are the easiest and cheapest to write data onto and extract the data off.
 - they use technology which a future race could easily use or work out

FLS (File Location System)

- System designed to locate which disk has the information you are looking for. Software will be placed onto the first disc and needs to be installed. Example: if you want to find human genome, you can search through folders and once found, will show which cd it is located on. For example, I file can be searched by its type or by family name.

Thanks for listening

○ Any Questions?

