

# Technology Review

## Introduction

Our main topic is technology and its influence throughout history. How did it change computers, from the first computer to what we have today?

We chose data storage as our topic for this assignment, because of its use to almost anything. We will mainly discuss HDDs and SSDs, and their influence throughout history. You must have something to store the data you collect, and we see it every day, from your pc to your phone to even your calculator. Storing data is necessary for all computers and getting the right drive for your exact computer isn't always an easy choice. But what is better than the other? In terms economy, and storage?

## History of the HDD

The first commercial hard drive ever created was in 1953 by some engineers at the then relatively small company IBM and was named Ramic. They were looking for a way to store a lot of data and improve how data was handled cause of the very bad and large tape drives that were prior to the HDD. They started off leasing the Ramic for what in 2019 is about 30,000 US dollars and that's about the same to lease an iPhone for 20 million per month but then again comparing an object that can fit in a pocket to an object that is the size of a fridge isn't fair.

## History of the SSD

The Solid-State Drive or SSD is another option for storing your valuable data. The first SSD versions of SSDs were made, even though they were using another technology (CCROS) it still goes under as a Solid-State Drive. After all that they weren't developed on for a few years and all the sudden in 1983 was made called The Sharp p-5000, It had 128 kb comparing it to our now 1tb SSDs that's not a lot of data. 3 years past and Clara Systems then released Batram which was a form of expandable storage unit which could go up to 20 Mb with 4 Mb smaller cartridges And then the bigger companies wanted in on the market so EMC Corp. went into the market and produced SSDs for the "Mini pc's." and here we are today with 2.5 inch SSDs that hold up to a whole 16Gb's but they're insanely expensive though.

## SSD and HDD explained

HDDs are based on a lot of platters that are divided into billions of tiny areas that can be magnetized to either store a 1 when its magnetized or a 0 when it isn't. But that system has many limitations like how fast the arm can move and how fast the platters can spin, and it also makes noise which isn't good in something like a mac that you want to keep totally silent and that's where the SSD comes in with its totally silent operation.

SSDs use NAND-flash memory which are made of almost the same transistors as DRAM except NAND-flash is designed to hold its charge even after the SSD is powered off, which means that it can hold its information without the computer being turned off. Also comparing an SSD to an HDD, SSDs doesn't store data in a 1. In SSD's a 1 means it isn't charged and 0 means it's charged. The transistors are made up in pages and most common pages are 2k, 4k,8k and 16k, each block has about 128 or 256 pages and that means one block varies between 256k and 4 Mb of data.

## **M.2 Explained**

The M.2 drive was born out of the need of having a small form factor and fast speeds cause of the mSATA speed is limited by the port at 6 GB/s with 1 TB which isn't so great when you need more than 1 TB. While M.2 NVMe is much faster.

So, the step from the HDD to the SSD was a big step for us, but even if the step from the SSD to the M.2 SSD was very pricey in the start it's going to make our computers run far faster than with the SSD and HDD and live longer.

## **SSD contra HDD**

So why would you ever choose an HDD over an SSD? Well SSDs are great and all, but HDDs generally have much more GB's per price compared to SSDs even though SSD prices have dropped a lot since they became popular among enthusiasts they still are more expensive. SSDs are also totally silent so they are perfect for people looking to have a completely silent computer without hearing the platter spin or the arm moving. Consumers who are looking to store more data, and make heavy downloads, the HDD is way better than the SSD. So, it's up to the consumer to choose, what type of usage the given computer should be used for.

### **SSD pros**

The SSD is a non-volatile drive, which means it doesn't have any moving parts, so it has a longer life-time and it also means if you have it in a bag and move around a lot it doesn't break quite as easily and as a bonus to all this it's also completely silent.

SSDs are also generally a lot faster than the average HDD so if you are prone to have one game or application that you want to load up fast then an SSD is a must have.

### **HDD pros**

HDDs are maybe the cheapest way of storage a lot of data so a person who has a lot of media files and movies and generally stores a lot of stuff or games HDDs are a must.

It's also good for a media server for mass storage

## **Conclusion**

In terms of storage HDD are the obvious better choice. So, if you're looking to make bigger downloads, we would recommend the HDD. But if you're like many others, and you use your computer, more times a day, browse the internet a lot, and hate to wait, the SSD is your go to buy.

The thing is, technology is constantly evolving and getting better. All this is done to make everything easier for the consumer. The step from HDDs to SSDs were huge. The SSD are way faster than the HDD and doesn't make a single noise due to its construction. The SSDs are becoming more and more popular than the HDDs, and there's a lot of developing going on atm.

SSDs seems to be the future for computer drives, but that doesn't change the fact that HDDs beat SSDs in storage and cheapness by a lot.

### **Price/storage**

The average price of an SSD bought on Amazon:

128 GB = 26\$

250 GB = 58\$

256 GB = 88\$

500 GB = 80\$

1 TB = 148\$

The average price of an HDD bought on Amazon:

500 GB = 49\$

1 TB = 49\$

2 TB = 62\$

So, you can clearly see that price per GB is much greater with HDDs than SSDs.

### **Source**

- <https://uk.pcmag.com/ssd/8061/ssd-vs-hdd-whats-the-difference>
- <https://www.youtube.com/watch?v=YQEjGKYXjw8>
- <https://www.semiconductorstore.com/blog/2014/The-Development-and-History-of-Solid-State-Drives-SSDs/854/>
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