

Moore's Law

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In 1970, Gordon E. Moore observed that the microchip density double the size in two years, keeping the cost of the microchip almost the same.

His prediction ruled the computer market for long time with an incredible accuracy. And showed us how fast the industry was focused in research and results about microchips.

That industries behavior permit much more people to buy computers and expand the market all over the world.

However, the Moore's law begins to decline when the microchips starts to get really small and more powerful, because the heat began to be a problem. That happens because, to increase power, it has to increase voltage; and when increase voltage, the temperature grow dramatically. Forcing companies to spend lots of money in tools to refrigeration the cpus.

Other physics limitation is Dennard Scaling it says that, as chips goes smaller, the voltage can decrease too. With that, controlling the temperature. The problem is that the chips can make the voltage too low, it is limited to the threshold voltage. And produce the noise problem too.

Noise mean lost information and be more incapable do separate low to high. Another problem is the Leakage Current, which is the lost of electricity getting high when chips keeping smaller.