

Moore's law

Moore's law is the observation, made in 1965 by Gordon Earle Moore, co-founder of Intel, that the number of transistors in a dense integrated circuit would double about every two years. And this exponential increase in density would lead to exponential increase in speed.

Some of the reasons of why Moore's law isn't true anymore are:

1. Power wall: With more transistors, more power will be consumed.
2. Temperature wall: High power leads to high temperature and that's a really big problem, once cooling down the transistors consume a big amount of power.
3. As the transistors are getting smaller, it gets more and more difficult to accommodate them physically on the chip.

To mitigate the power and temperature issues, it could be used dynamic power. Reducing the voltage interpreted as 0 and 1, but it would lead to another issues:

4. Noise accommodation: We got to a point where threshold and operating voltage can't be scaled anymore. Voltage can't go too low or the transistor won't work.
5. Power leakage: As the transistor became more compact and are accommodated closer to each other, the possibility of power leakage would increase.