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[3-Dimensional Chips From IBM Extend Moore's Law](#)

Beyond any limits Intel could have taken it to

In the game of baseball, after three strikes, you are out; IBM though had managed to hit a fifth major breakthrough and they're here to stay, no home run for them yet. They announced the first 45nm chips which used immersion lithography and ultra-low-K interconnect dielectrics, then they had the "high-k metal gate" technology, soon after it was the time of eDRAM, then a new prototype of optical transceiver chipset and now they have the "through-silicon vias" technology. This new technology takes your imagination from the paper and puts it in the real, 3-D world. In a normal component manufacturing process, the chips are placed side by side on a printed circuit board (PCB), and from each individual chip wires are being routed throughout the circuit in order to establish communications and power supply. The lines would intersect in different parts of the circuit that serve the same purpose, such as the ground for a die termination. Their idea was to take chips that are normally placed side by side and put them together in a 3-D format. By doing so the chips can be packaged closer together to form faster, smaller and lower-power systems. The chips communicate with one another faster because the information doesn't travel the same distance via the wires, being able to offer travel times up to 1000 times smaller and also allow for the addition of 100 times more channels in this array. Chips using this technology are already being manufactured by IBM, although these are only samples, but they hope in a mass production of these chips in 2008. Lisa Su, vice president, Semiconductor Research and Development Center, IBM said in a statement: "This breakthrough is a result of more than a decade of pioneering research at IBM. This allows us to move 3-D chips from the 'lab to the fab' across a range of applications." One of the first uses for these chips, as they will become available, will be in the wireless communications industry, they will go into power amplifiers for wireless LAN and cellular applications. But those are not all the applications for these products, their integration could take them anywhere from processors to very very small computers and so on. And another thing, remember the beginning of the Internet, it all started as a large network which was intended for military use, and the founders behind the project were the guys over at the Advanced Research Projects Agency, which soon changed their name to fit their true defensive purposes into the Defense Advanced Research Projects Agency (DARPA). Well, you'll never guess who was offering their support in this domain, of course, DARPA.