Written by Marco Attard
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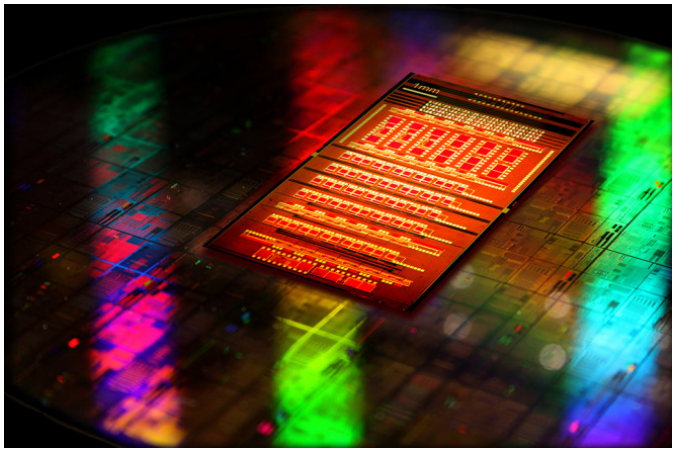
IBM believes current semiconductors will soon be unable to handle the demands of big data and the cloud-- and thus will invest $3 billion over the next five years to research potential replacements.



The first research program is in "7 nanometer and beyond" silicon technologies, and addresses the physical challenges faced by current semiconductor scaling techniques. Current semiconductors scale at 22nm, and while 14 and 10nm scaling projects "show promise" IBM says significant investment and research is required to scale down to 7nm and below.

"The question is not if we will introduce 7 nanometer technology into manufacturing, but rather how, when, and at what cost?" Big Blue says. "This new investment will ensure that we produce the necessary innovations to meet these challenges."

The second research program is broader in scope, and deals with the "post-silicon" technologies. This involves an array of futuristic-sounding technologies such as quantum computing, neurosynaptic computing, silicon photonics, III-V technologies, carbon nanotubes, graphene and next-generation low power transistors.

"In the next 10 years computing hardware systems will be fundamentally different as our scientists and engineers push the limits of semiconductor innovations to explore the post-silicon future," the company claims. "IBM Research and Development teams are creating breakthrough innovations that will fuel the next era of computing systems."

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