IDF 2011: More details on Intel's solar-powered processor

By Darien Graham-Smith in San Francisco
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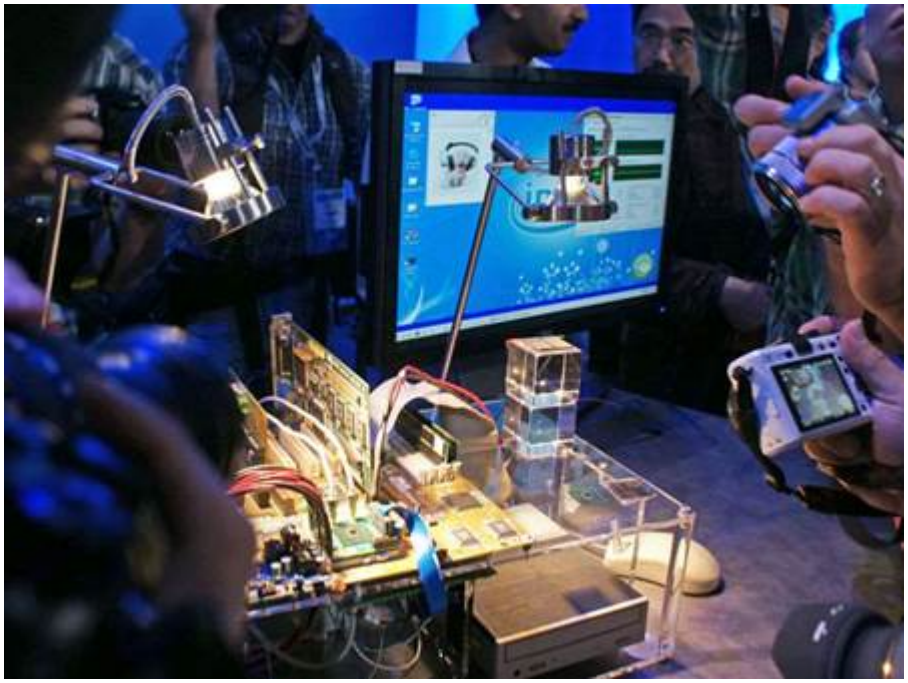
Intel CTO Justin Rattner has revealed more details of Intel's solar powered processor – a technical project unveiled by chief executive Paul Otellini in his IDF opening address on Monday.

The solar CPU, codenamed Claremont, is based on a regular Pentium core, but its power consumption has been pared back to approach the lowest voltages that permit the internal transistors to operate.

Intel Fellow Shekhar Borkar, joining Rattner on stage at IDF, estimated that reducing voltages in this way could cut power demands by a factor of eight – though the limitations of the old Pentium design permitted "only" a five-fold reduction.



Nevertheless, the approach enables the Claremont processor to operate on a few milliwatts of power.

"When that processor is active it's dissipating less power than an Atom processor in standby," Rattner pointed out.

New techniques with old technology

Though the Pentium architecture provides – by today's standards – very limited processing power, Intel foresees designs in which the operating power can be dynamically ramped up when high performance is demanded.

However, engineers were unable to demonstrate that capability with this experimental sample, as the ageing Pentium technology doesn't support dynamic power and frequency slewing.

"The design is so old, we had a hard time finding a Pentium motherboard," explained Rattner.

"We actually went out on eBay looking for one. [...] We're at the frontiers of computing, and we were looking in dumpsters for motherboards. Fantastic."

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