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ACORN RECEIVES PATENT FOR QUANTUM ELECTRONIC DEVICE
Technology May Help Create Faster, Cheaper Computer Chips

Los Angeles, Calif. -- The U.S. Patent Office has granted Patent No. 6,198,113 to Acorn Technologies, Inc., for an electronic device, based on quantum physics, that would add more functionality to computer chips. The expected result: a "super-scalable" device to make chips run faster and better with lower power consumption. Cost per transistor would also be lower.

Acorn acquired the "Xistor" technology from physicist Daniel Grupp, Ph.D. in January 2000, and is funding his R&D efforts at Stanford University's chip fabrication facility, where he serves as a visiting scholar. Grupp, who specializes in semiconductor device physics, developed his novel idea using principles from quantum physics. Thus, he is outwitting limitations imposed by traditional chip-making methods. Yet, Grupp emphasizes, though his device is new, the same fabrication facilities in which industry has invested heavily can still be used to manufacture chips based on the Xistor technology.

The need for such device innovations can be attributed to a principle known as Moore's Law. While first simply an observation uttered in 1964 by semiconductor engineer Gordon Moore (who co-founded Intel four years later), it has become a dictum of management in the computer industry. The law states that the amount of information storable on a silicon chip doubles every year for the same cost. Moore's law also covers the number of transistors on a chip, which is getting much smaller. "With our new structure, we can make them so small that 10 million will fit on the end of a hair," says Grupp.

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The traditional method of making transistors uses semiconductor materials called *p*-type and *n*-type. When these make contact, the structure is known as a *pn* junction. The Acorn method replaces a silicon junction with a junction that uses a quantum physics idea called "tunneling." This is where an electron can actually pass through a solid barrier made of a material that does not conduct electricity. This can be likened to a ping-pong ball going right through the paddle. The Acorn team has devised a way of making a transistor using a tunnel barrier. In fact, the name "Xistor" comes from the "X" used to indicate a tunnel junction when drawing a circuit. Therefore, instead of trans-istor, it's the X-istor.

"Obtaining this patent is a milestone for us," said Acorn CEO Tom Horgan. "The industry in recent times has recognized the forthcoming limitations in developing transistors with minimum feature sizes below 0.1 microns. We are working on continuing Moore's law for many years to come."

About Acorn Technologies, Inc.

Incorporated in Los Angeles in 1998, Acorn Technologies assists companies, academic and research institutions, and individuals in commercializing their technology. There is often a gap between the current state of a technology and where it needs to be, both from a technological and business perspective, before it is ready for use in existing companies or funded as a startup. Acorn addresses and fills this gap. Acorn invests its own R&D and business development resources in developing and bringing to the market technologies with commercial potential. It undertakes the necessary technology and business development to lead to licensing, partnering, or, when appropriate, spinout into startups. For further information, visit Acorn:

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