

The Challenge Is... To Not Only SURVIVE



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3-D architecture promises new type of PLD

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SAN FRANCISCO—Startup Tabula Inc. Monday (March 1) made public details about its three-dimensional programmable logic architecture, which the company says will enable a new class of devices, 3PLDs, that offer the capability of an ASIC, ease of use of an FPGA and price points suitable for volume production.

According to Tabula executives, the company's Spacetime architecture rapidly reconfigures to execute portions of a design in a series of steps. Compared with a 40-nm FPGAs, Tabula's 40-nm devices will offer more than twice the logic density, twice the memory density, nearly three times as many memory ports and four times higher DSP performance, they claim.

"No one comes close to the kind of advantages that this technology brings," said Dennis Segers, Tabula's CEO.



Dennis Segers
Tabula Inc.

Segers and Steve Tieg, Tabula's president and chief technology officer (CTO), said 3PLDs use time as a third dimension, reconfiguring on the fly at multi-gigahertz rates, executing each portion of a design in an automatically defined sequence of steps. Tabula's devices include multiple layers, which the company calls "folds," in which computation and signal transmission occurs. By rapidly reconfiguring to execute different portions of each function, a 3-D Spacetime device can implement a complex design using only a small fraction of the resources that would be required by an FPGA, according to [Tabula](#) (Santa Clara, Calif.).

"Assuming it works as they say, it's impressive. It's very impressive," said Rich Wawrzyniak, an analyst with Semico Research Corp. Wawrzyniak said Tabula would still face the issues common to all programmable logic startups, including lack of an established track record and the performance and ease-of-use of its development tools.

Startups in the programmable logic business have [historically faced an uphill climb](#). More than 50 companies have attempted to play in the space since it was established in the early 80s. Most of them essentially failed. Since the late 80s the market has been dominated by two suppliers—Xilinx Inc. and Altera Corp.

Veterans of the industry—including the executives at Tabula—acknowledge that many startups failed because they offered technology and development tools that were so fundamentally different from what users were accustomed to that they failed to gain traction. Tabula is offering a radically different technology—but Segers and Tieg say the dramatic differences in the architecture are transparent to the user. The user experience of Tabula's development tools is also consistent with what designers have grown used to, they said.



Steve Tieg
Tabula Inc.

"We don't ask customers to do anything fundamentally different than they've done before," said Tieg. He added that a common saying around Tabula is "hide the revolution." The company believes it is offering a technology that will revolutionize programmable logic without requiring a steep learning curve of users, he said.

In addition to offering a compelling technology, Tabula also boasts an experienced management team. Tieg, who founded the company, is considered a pioneer in EDA and was the CTO at Cadence Design Systems Inc. and three other firms. Segers is 33-year veteran of the semiconductor industry who was CEO of Matrix Semiconductor Inc. and a long-time executive and later board member at Xilinx. Several

other Tabula executives, including Vice President of Hardware Development Matt Crowley, Vice President of Manufacturing Technology Daniel Griffin, Vice President of Software Development Rajeev Jayaramen, Vice President of Marketing Alain Bismith and Vice President of Sales Steven Haynes, also have impressive resumes, many with Xilinx or Altera.

Given the experience of Tabula's management team, Wawrzyniak said the company could have the direction to steer clear of the traps that have befallen many of its predecessors. "They know those pitfalls very well," he said. "I expect them to be able to navigate around them."

Tabula plans to initially target the market for high-end programmable logic devices (PLDs). But the company foresees broader applications for its technology and thinks it could eventually be a market leader in programmable logic. "We think we have what it takes to make that happen," Segers said. He added, "I think we can take PLDs into markets that FPGAs can't penetrate."

"We have every intention of penetrating a wide variety of markets," Tieg said.

Tieg founded Tabula in 2003. The company has more than 100 employees and has raised some \$106 million in venture capital backing. The company has filed for some 150 patents, more than 80 of which have been granted, according to company executives.

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