



Features:



## Innovation Through Evolutionary Concepts and Opportunities

by Robert Schnyder  
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If one looks at the development of Internet commerce in terms of generational growth, from the initial World Wide Web to the current Web 2.0, one sees that successful Internet-based companies not only are innovating to match the current generation, but also are executing at light speed in order to gain market advantage.

In the early days of the Internet, we pushed the limits to tighten supply chains with quicker response and availability. In the evolving Web 2.0 Internet, we are working on creating a new medium of interaction to promote creativity and expand the user's capabilities. The second generation users (Web 2.0) — the here-and-now customers — are recognizing that an Internet advantage that gets them to market faster and drives supported, online communities created for and by its customers is the next business and marketing advantage.



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At Sunstone, we are not simply incorporating supply chain advantages and actively utilizing the Web 2.0 to create a community environment for printed circuit board (PCB) designers. Sunstone also is leading the drive and development of a subculture of innovation and creativity in what is a specialized commodity market.

### Innovation in a Commodity Market

In 1997, we wholly embraced the Internet and its ability to shorten supply chains, resulting in one of the first Web sites specifically for PCB designers, [pcbexpress.com](http://pcbexpress.com). The site provided engineers with the ability to order prototype quickturn circuit boards online, which dramatically reduced the turnaround of their boards and increased efficiency within the supply chain.

The success of our initial site propelled us to expand customer online options with [PCBpro.com](http://PCBpro.com), which provided designers with a more in-depth system that would enable real-time quoting and ordering of PCBs. Both sites catered to specific user needs and streamlined the PCB channel, making it quicker and more efficient to source quickturn prototype circuit boards.

Last year, as we, and the abilities of the Internet, continued to grow, Sunstone and our customers realized that our sites were only one point of entry into the Sunstone environment: customers send us their design, and we manufacture it. Taking customer feedback, we identified that to stay on the cutting edge we had to look at expanding to be a "marketing" company, providing access

to the full Sunstone environment, and including the development of a PCB designer community that dynamically supported a PCB designer's process from the manufacturing point of view: knowledge, tools, libraries, and parts and manufacturing.

### **Reaching 2.0 by 1, 2, 3**

In 2003, we developed and released free PCB design software, PCB123, which provided engineers with the complete Sunstone circuit board solution from design through manufacturing. Not only have we created a new solution for users, but we also have developed a PCB123 design community that allows users to connect and solve problems, collaborate on ideas, and work in a design environment completely autonomous from our support methods. We learned that the sharing of information among users builds confidence, but also reduces a designer's dependency on our support, truly enabling the customer to source support solutions 24 hours a day.

We continually update our online sites and products based on user feedback. Our PCB design product/tool is growing the Sunstone PCB environment, and forming multiple entry points beyond the manufacturing stage. Users can enter in the design stage for their own units, collaborate with other users, and even influence the development of the design tool itself, embodying the Web 2.0 concept.

The ongoing opportunity we have with the Internet is continuous innovation, especially with design files that engineers send to us for manufacturing. This design- for-manufacture (DFM) both saves time and provides a sense of confidence since DFM check helps to eliminate potential problems with files. For us, receiving DFM checked files eliminates manufacturing steps to increase our turnarounds.

Our customers' needs are continually changing and we are implementing a multi-faceted approach in helping PCB designers and engineers design and build better boards. On the application side, we are working on an open source SDK (software development kit) that will unlock unlimited potential for PCB designers and engineers and empower users to create what they need based on their specific requirements. Innovation from within and from our partners can create a subculture of innovation, leading to more new ideas.

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