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Software Patents, Incumbents, and Entry

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Software patents have been controversial since the days when "software" referred to the crude programs that came free with an IBM mainframe. Different perspectives have been presented in judicial, legislative, and administrative fora over the years, and the press has paid as much attention to this issue as it has to any other intellectual property topic during this time. Meanwhile, a software industry developed and has grown to a remarkable size, whether measured by revenues or profitability, number of firms or employees, or research expenditures. The scope of software innovation has become even broader, as an increasing number of devices incorporate information technology, requiring modern manufacturing firms outside the software industry to employ developers and programmers to ensure that increasingly diverse functions are performed more efficiently.

Although inventors have consistently asserted their need for patents in order to compete with industry incumbents, patent protection has not been easily or consistently available for much of this period. Rather, the legal system has responded gradually to the burgeoning software industry by broadening the scope and strength of protection for software-related inventions in fits and starts. The explosive growth of the industry is largely attributable to demand generated by the efficiency of software solutions; the expansion of the venture capital industry over the same period largely explains the lack of industry concentration.[1] The "garage" mentality can be explained by the fact that even some of the largest industry incumbents began with one or two (largely unfunded) inventors. Also, there is every reason to believe that increased patent protection has contributed to the ability of independent inventors and smaller firms to compete.[2]

Moreover, the ability to obtain patents on software always has been important to some of the industry incumbents, while others have exhibited little need for patents and, displayed in some cases, strenuous opposition to the patentability of software. The incumbents are a diverse group. Some produce only software; others have substantial hardware product lines. Some sell to other technology firms and others sell applications to end users in a broad range of markets. And some sell prepackaged software products, while others focus on services—custom programming, installation, or maintenance. Regardless of the sector in which they participate, the incumbents spend massive amounts on research and development (R&D)—about 14% of their annual revenues, more than $60,000 per employee.[3] However, there are important patterns in patenting practices that raw data on R&D investments cannot explain.

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1. The number of venture capital investments in software firms increased rapidly during this period, from 11 in 1979, to 188 in 1989, to 1,035 in 1999. NAT'L VENTURE CAPITAL ASS'N, YEARBOOK 48 (2004).

2. The question of incentives is more difficult, given the important roles played both by young entrepreneurs who have earned millions or even billions of dollars in this industry and by open-source developers driven, at least in part, by altruistic motives.

3. *Corporate R&D Scorecard*, TECH. REV., Sept. 2005, at 56, 57, *available at* http://www.technologyreview.com/articlefiles/2005_rd_scorecard.pdf.