

PART IV  
DISCUSSION CASE

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## HOW SHOULD LEGO PROTECT ITS TRADEMARK, OPERATING SYSTEM, AND APPLICATIONS?

Lego Company, with headquarters in Billund, Denmark, is the world's fourth-largest toy company. It makes the studded plastic Lego blocks that snap together. Sales are over \$1.2 billion, and the CEO is the grandson of the founder, Kirk Christiansen, a carpenter who started Lego in 1932. Its name comes from "leg godt," which is Danish for "play well." The company does not publicize its toys, and it is privately held.

In 1998, Lego released Mindstorms Robotic Invention Systems. The Mindstorms kit includes hand-size programmable bricks covered with the familiar Lego "studs" and an integrated video camera so users can build robots. A robot is programmed on a computer screen by dragging and dropping virtual Lego bricks to form a list of instructions for the robot to follow, such as walk, run, throw an object, even chase something. These instructions are then transmitted to a programmable Lego brick using an infrared beam. Mindstorms costs \$199 and is aimed at 12-year-olds.

Mindstorms was an instant success, selling 100,000 kits in 1998, rather than the 12,000 planned, states Paul Keegan.<sup>1</sup> It was developed over 10 years at the Lego lab at MIT (financed by Lego) based on the artificial intelligence programming language, Logo, that Seymour Papert, an MIT computer scientist, created for

children. The toy was then named after Papert's 1980 book, *Mindstorms*, says Keegan. This 10-year development created enormous buzz among computer and robot enthusiasts; they could not wait to get their hands on the toy. So, much to Lego's surprise, it was not 12-year-olds who bought Mindstorms that first year, but twentysomethings—some 70 percent of Lego's initial customers.

The tinkerers immediately took Mindstorms apart (hacked it) to find out how it worked. They formed Mindstorms groups on the Internet and exchanged information. Less than 3 weeks after its release, part of Mindstorms' proprietary code had been hacked and posted on the Internet. The Mindstorms enthusiasts used this code to write more advanced software for their robots, says Keegan. One even created a new language, NQC, available on the Internet, that can be used to create, say, a robot that plays tic-tac-toe.

Another programmer went even further. He wrote his own operating system, which he had the chutzpah to call LegOS.

These hackers and their publicly posted extensions to Mindstorms fueled sales of the toy, making it even more versatile and fun to program. Today, 12-year-olds are the largest customer segment, accounting for 70 percent of sales, reports Keegan.

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### **Lego's Dilemma**

How should Lego management respond to these actions by hackers? On the one hand, the hackers helped market Mindstorms into being a hit. On the other hand, their software, which is offered free on the Internet, is out of Lego's control. What if some of it hurts Mindstorms' motors or infrared sensors? This might damage Lego's brand name and reputation. This third-party software infringes on Lego's intellectual property, but it makes the toy more versatile. The hackers are potentially Lego's biggest threat, and, at the same time, its biggest fans.

Should Lego sue these developers for infringement, earning their ire rather than their admiration? That is a tough question. But management faces an even more serious question: Should it sue the hacker who wrote an alternative operating system? Like the other hackers, he is not making money off his software; he offers it free on the Internet, believing that it is more powerful and flexible than the Lego software.

But, says Robert Johnston of the legal firm of Arnold and Palmer, if Lego does not control its operating system, how can it ensure that new generations of the operating system are compatible with the old ones? Furthermore, if Lego does not rein in its trademark, it will not be Lego's mark. Having an alternative operating system named LegOS is a trademark issue. If Lego doesn't offer some sort of certification program for applications, someone might go beyond the bounds. Once intellectual property is in the public domain, companies may lose the right to claim that it belongs to them. Doing nothing is not a wise move, Johnston argues.

Although the company is based in Denmark, the Mindstorms division is in California and has close ties to the

hacker community in Silicon Valley. These Mindstorms executives do not want to become "the bad guy" nor fight with the hackers, says Keegan. They would argue that the hackers are not creating competing products. In fact, none of their software can be used without the Mindstorms kit. If company management does anger them, some might help a competitor. The hackers have helped Lego not only test Mindstorms but enhance it, make it smarter, create buzz about it, and give Lego new ideas faster and cheaper than Lego could do on its own.

Lego needs to decide where its source of profit lies: in the bricks, in Mindstorms' operating system, or in Mindstorms' applications. Management has decisions to make on three fronts: its operating system, its applications, and its trademarks.

Should Lego become a software company and discourage open source development? Or should it encourage third-party development within standards it establishes to protect its valuable brand? And what should it do about the hacker who appears to infringe on Lego's logo, calling his operating system LegOS?

### **It Is a Growing Dilemma**

Lego's dilemma is not its alone. All software-based products and services potentially face the same issues.

Palm found itself in a similar situation. Management decided to give away its source code to people who wanted to create applications for its handheld devices. In doing so, Palm tapped a huge market. Over 150,000 developers created over 10,000 applications. However, Palm drew the line with its operating system; no one could touch it. That was its core business, and it licensed its operating

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system to numerous other companies, such as Handspring.

To compete in both the software and hardware markets, Palm then divided into two companies. PalmSource develops and licenses the Palm OS operating system. PalmOne designs, builds, and markets handhelds and smart phones, and it bought Handspring.

Microsoft, on the other hand, believes companies should protect their copyrights and patents, and strongly urges others to follow its lead in taking infringers to court. Microsoft's argument is that not doing so will lead to chaos and ruin, states Keegan. Microsoft does not release its source code. It and others argue that when companies do not protect their intellectual property, it will be stolen. As a result, investors will not get a return on their investment, so they will not invest in future innovative products.

#### QUESTIONS

1. What should Lego management do to protect its trademark, operating system, and applications?

Other companies, such as IBM, embrace open source Linux and presumably would counsel Lego to utilize open source principles. Open source proponents argue that software can change faster when everyone knows the secrets.

Eben Moglen of Columbia Law School suggests that Lego set up a foundation to encourage free exchange of software among Mindstorms enthusiasts. He reasons that this approach would get even more consumers involved and could mimic the open source practice of users providing technical support. Mike Dooley, former Mindstorms team member, suggests that Lego patent parts of Mindstorms, such as its Vision Command, which is used by the robot's camera to detect motion and recognize color. Perhaps Lego could make royalties a new revenue stream to, say, videocamera makers. ■

#### REFERENCES

1. Keegan, Paul, "Intellectual Property Is Not a Toy," *Business 2.0*, October 2001, pp. 90-96.