UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT LLC
Petitioner

v.
BOT M8, LLC
Patent Owner

Case No. IPR2020-01288
U.S. Patent No. 7,664,988

REPLY DECLARATION OF ANDREW WOLFE, PH.D.

I, Andrew Wolfe, hereby declare the following:

I. INTRODUCTION

1. I have been asked to respond to certain selected arguments made by Patent Owner in Patent Owner's Response and to certain selected opinions provided by Dr. Long Yang in his declaration (Ex. 2041) that accompanied Patent Owner's Response.

2. My opinions in my original declaration (Ex. 1003) remain the same. As such, I incorporate by reference those opinions in their entirety.

3. In addition to the materials reviewed in preparing my original Declaration in this matter (Ex. 1003), I have reviewed the following additional materials in this matter subsequent to submitting my original Declaration:

- Institution Decision (Paper 11)
- Patent Owner's Response (Paper 15)
- Declaration of Dr. Long Yang in Support of Patent Owner's Response (Exhibit 2041)
- Exhibit 1053 - Silberschatz, Abraham, et al., Operating System Concepts, 7th Ed., 2005, John Wiley & Sons, Inc. ("Silberschatz")

4. I have set forth my additional responsive opinions on selected issues below.

II. OPINION

"Boot Program"

5. I understand that Dr. Yang and Patent Owner have argued that the term "boot program" as used in the claims of the '988 patent means "a program that initializes various devices including the extended BIOS and the operating system." Yang Decl. (Ex. 2041), ¶46; Patent Owner Response, 27. In my opinion, this definition is unduly narrow and is not consistent with the plain and ordinary meaning of the term "boot program" as would have been understood by a PHOSITA. As I explained in my original declaration, this term would have generally been understood by a PHOSITA in a manner consistent with usage of the term "boot" as describing the process of loading into memory a small start-up program that enables a computer to load larger programs. Wolfe Decl. (Ex. 1003), ¶¶74-75 (citing Ex. 1028 & Ex. 1029).

6. Importantly, a boot program may load other boot programs during the boot process such that a given individual boot program need not itself execute the operating system for a computer. Ex. 1053 (Silberschatz) at 71-72. As an example, computers may use a multi-step process in which a boot program, such as a simple bootstrap loader may fetch a more complex boot program from disk, which may in turn load the kernel for the computer. *Id*. at 71. The simple bootstrap loader may be in firmware and may be relatively simple code that does not itself execute the

operating system but instead retrieves a more complex boot program from disk. *Id.* at 71-72. Thus, this illustrative boot process is consistent with the plain and ordinary meaning of a boot program being a small start-up program that enables a computer to load larger programs. In some cases, a boot program might itself execute the operating system. But, in other cases, a boot program may be relatively small and may load other larger programs that are not the operating system itself. The Silberschatz textbook is among the most widely used textbooks in computer science education and particularly with respect to operating systems. Google Scholar indicates that it has been cited over 5000 times.

7. I understand Dr. Yang and Patent Owner point to column 3, lines 57-62 of the specification of the '988 patent in support of their proposed construction of a "boot program," specifically they point to the following:

> Here, the boot program is a program stored in the boot program storing area 13 a of the ROM 13, and based on the boot program, initialization of various devices including the extended BIOS (Basic Input Output System) in the hard disk 24 and the OS (Operating System) in the hard disk 24 is executed.

Ex. 1001 ('988 Patent), 3:57-62.

8. A PHOSITA would have understood the above text to be providing a description of an example of a boot program, but not a definition of the term "boot program," because the above language is merely exemplary in nature. A boot program need not itself initialize the operating system in order to be deemed a "boot

program," as discussed above. Indeed, the simple bootstrap loader boot program described above does not itself initialize the operating system but is nonetheless an example of a boot program.

9. In addition, a "boot program" need not also initialize an extended BIOS because a computer need not have an extended BIOS. If an extended BIOS is present, a separate, larger boot program may be what initializes the extended BIOS. I, therefore, also disagree with the portion of Dr. Yang and Patent Owner's construction that purports to require that a boot program must initialize both an extended BIOS and operating system in order to be deemed a "boot program."

Opinions regarding Sugiyama's OS and the combination with Gatto

10. As I explained in my original Declaration (Ex. 1003), a PHOSITA would have been readily motivated to use a motherboard in Sugiyama, in view of Gatto's teachings, in light of the ubiquitous and well-known use of motherboards for electrically connecting computer components such as a CPU, ROM, RAM, and HDD, among other components. Wolfe Decl. (Ex. 1003), ¶¶174-178. I understand that there has been some suggestion from Patent Owner and Dr. Yang that using a motherboard in Sugiyama, as inspired by Gatto's teaching of using a motherboard, would have required replacing Sugiyama's operating system (OS) with Gatto's OS. Patent Owner Response, 49-55. I disagree. A PHOSITA would have understood that merely connecting Sugiyama's computer components (including, e.g., CPU,

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