

rely upon Microsoft's native methods to the exclusion of any other methods. Such agreements were also prohibited by the November 1998 injunction.

403. Microsoft anticipated that the Java language would become a popular medium in the multimedia arena. It thus wanted to ensure that the Java software created to deliver multimedia content would not rely on Java implementations that fostered portability. RealNetworks developed the most popular software for the creation and play-back of streaming multimedia content. Therefore, Microsoft sought to ensure that, to the extent Java developers relied on RealNetworks' technologies, they would not be relying on a Java implementation that complied with Sun's standards. So, in the July 18, 1997 agreement that it entered with RealNetworks, Microsoft conditioned its agreement to distribute RealNetworks' media player with Internet Explorer on RealNetworks' agreement to exert its best efforts to ensure that its player primarily use Windows-specific technology, rather than any analogous interfaces that Sun or Netscape might develop, to display multimedia content. Absent this obligation, there would have been no technical reason why RealNetworks could not have designed its media player to support both Microsoft's technologies and ones developed by Sun or Netscape. Although RealNetworks subsequently announced that it planned to continue developing its own fundamental streaming software, the July 18 agreement limited the extent to which that software would include Java technologies that complied with Sun's standards.

C. Thwarting the Expansion of the Java Class Libraries

404. As discussed above, Microsoft's effort to lock developers into its Windows-specific Java implementation included actions designed to discourage developers from taking advantage of Java class libraries such as RMI. Microsoft went further than that, however. In pursuit of its goal of

minimizing the portability of Java applications, Microsoft took steps to thwart the very creation of cross-platform Java interfaces. The incorporation of greater functionality into the Java class libraries would have increased the portability of the applications that relied on them, while simultaneously encouraging developers to use Sun-compliant implementations of Java. In one instance of this effort to stunt the growth of the Java class libraries, Microsoft used threats to withhold Windows operating-system support from Intel's microprocessors and offers to include Intel technology in Windows in order to induce Intel to stop aiding Sun in the development of Java classes that would support innovative multimedia functionality.

405. In November 1995, Microsoft's Paul Maritz told a senior Intel executive that Intel's optimization of its multimedia software for Sun's Java standards was as inimical to Microsoft as Microsoft's support for non-Intel microprocessors would be to Intel. It was not until 1997, though, that Microsoft prevailed upon Intel to not support Sun's development of Java classes that would have allowed developers to include certain multimedia features in their Java applications without sacrificing portability.

406. In February 1997, one of Intel's competitors, called AMD, solicited support from Microsoft for its "3DX" technology, which provided sophisticated multimedia support for games. Microsoft's Allchin asked Gates whether Microsoft should support 3DX, despite the fact that Intel would oppose it. Gates responded: "If Intel has a real problem with us supporting this then they will have to stop supporting Java Multimedia the way they are. I would gladly give up supporting this if they would back off from their work on JAVA which is terrible for Intel." Near the end of March, Allchin sent another message to Gates and Maritz. In it he wrote, "I am positive that we must do a direct

attack on Sun (and probably Oracle). . . . Between ourselves and our partners, we can certainly hurt their (certainly Sun's) revenue base. . . . We need to get Intel to help us. Today, they are not." Two months later, Eric Engstrom, a Microsoft executive with responsibility for multimedia development, wrote to his superiors that one of Microsoft's goals was getting "Intel to stop helping Sun create Java Multimedia APIs, especially ones that run well (ie native implementations) on Windows." Engstrom proposed achieving this goal by offering Intel the following deal: Microsoft would incorporate into the Windows API set any multimedia interfaces that Intel agreed to not help Sun incorporate into the Java class libraries. Engstrom's efforts apparently bore fruit, for he testified at trial that Intel's IAL subsequently stopped helping Sun to develop class libraries that offered cutting-edge multimedia support.

D. The Effect of Microsoft's Efforts to Prevent Java from Diminishing the Applications Barrier to Entry

407. Had Microsoft not been committed to protecting and enhancing the applications barrier to entry, it might still have developed a high-performance JVM and enabled Java developers to call upon Windows APIs. Absent this commitment, though, Microsoft would not have taken efforts to maximize the difficulty of porting Java applications written to its implementation and to drastically limit the ability of developers to write Java applications that would run in both Microsoft's version of the Windows runtime environment and versions complying with Sun's standards. Nor would Microsoft have endeavored to limit Navigator's usage share, to induce ISVs to neither use nor distribute non-Microsoft Java technologies, and to impede the expansion of the Java class libraries, had it not been determined to discourage developers from writing applications that would be easy to port between