

## DEPARTMENT: MICRO LAW

# A Review of *Wisconsin Alumni Research Foundation v. Apple*—Part II

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Part I of this series introduced the *Wisconsin Alumni Research Foundation v. Apple* cases, which the Court of Appeals for the Federal Circuit recently decided, summarized some recent large verdicts for patents asserted by academic institutions, and described the asserted patent. That article also provided several reasons why this series may be of interest to the readership of *IEEE Micro*, most notably because the inventors are well known and several well-known computer architects worked as experts on this case. Part II of this series describes the plaintiff in this lawsuit, the inventors of the asserted patent, and the complaint that was filed in these two cases.

## THE LAWSUITS

The Wisconsin Alumni Research Foundation (hereinafter “WARF”) filed its first lawsuit against Apple on 31 January 2014. WARF filed its second lawsuit against Apple on 25 September 2015. Prior to these two cases, WARF filed a lawsuit against Intel also alleging patent infringement on 8 February 2008. This series will refer to the *WARF v. Intel* case as “*Intel*” and the two *WARF v. Apple* cases as “*Apple I*” and “*Apple II*.”

All three lawsuits alleged infringement of U.S. Patent Number 5,781,752 (hereinafter ‘752 Patent). The filing date of the ‘752 Patent was 26 December 1996, its issue date was 14 July 1998, and it expired on 26 December 2016. Therefore, WARF filed *Intel* approximately 12 years after the patent was filed, and *Apple I* and *Apple II* approximately 18 and 19 years, respectively, after the patent issued. But because a patent owner like WARF cannot enforce or receive damages for a patent after it expires, the damages window was only approximately two years, i.e., between 2014–2015 to 2016, in the two *Apple* cases.

Furthermore, in light of the settlement with Intel, because the ‘752 Patent contains only apparatus claims and due to patent marking requirements, it is unlikely that WARF would be able to recover damages for Apple’s infringement of the patents prior to WARF filing the lawsuit. On the other hand, if the ‘752 Patent had method claims and if WARF only asserted those claims, then WARF may have been able to recover damages for up to six years prior to the filing of the lawsuit, i.e., from 2008–2009 to 2016, which could have significantly increased the damages WARF would have been able to recover, perhaps increasing from the \$506 million it won at the district court level to more than a billion dollars.

One key difference between the two lawsuits is that the second lawsuit accused newer products that were not accused in the first lawsuit. In particular, the first lawsuit alleged that products that used the A7, A8, and A8X processors, e.g., the iPhone 5S, iPad Air, and iPad Mini with Retina Display, infringed the ‘752 Patent. The second lawsuit alleged that products that used the A9 and A9X processors, e.g., the iPhone 6S, iPhone 6S Plus, and iPad Pro, also infringed the ‘752 Patent.

Another key difference between the two lawsuits is the level of Apple’s alleged awareness of the ‘752 Patent. In the first lawsuit, WARF alleged that Apple was aware of the ‘752 Patent because Apple filed several patent applications that cited the ‘752 Patent. In the second lawsuit, WARF alleged that Apple had a greater level of awareness due to the first lawsuit and because Apple filed two *inter partes* reviews with the Patent Trial and Appeal Board challenging the validity of the ‘752 Patent.

## THE PLAINTIFF

In a patent infringement lawsuit, the plaintiff files a complaint that describes what the lawsuit is about, e.g., that the defendant’s products infringe the plaintiff’s patent(s), and what remedies the plaintiff would like to compensate it for that infringement, e.g., monetary damages.

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Both complaints describe WARF as a “not-for-profit Wisconsin Corporation” that is the “designated patent management organization of the University of Wisconsin–Madison” (see, e.g., Paragraph 6 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

Both complaints further describe that the mission of WARF is to “support research at the University” (see, e.g., Paragraph 6 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). Both complaints further describe that “WARF carries out this mission by patenting and licensing University inventions and by returning proceeds of that licensing to fund additional research at the University” (see, e.g., Paragraph 6 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

The WARF website describes that “WARF generates revenue from licensing royalties and investment management.”<sup>2</sup> WARF distributes gross revenues received from the licensing of their intellectual property as follows: 20% is allocated to the inventors, 15% is allocated to their respective departments, and 65% of revenue is applied against WARF’s patenting, licensing, and commercialization expenses, including legal expenses.<sup>2</sup>

The WARF website describes that “[i]n 2016-17, WARF provided more than \$131 million of direct and in-kind support to the university. In-kind support includes the cost of the patenting, licensing and commercialization that WARF undertakes, and the royalty shares provided to faculty inventors.”<sup>3</sup> The WARF website further describes: “WARF has provided \$2.3 billion in cumulative direct grants, over \$400 million of in-kind support and over \$300 million to faculty inventors, all adjusted for inflation.”<sup>3</sup>

The WARF website describes that “UW-Madison faculty, staff and students are not obligated to assign their intellectual property to WARF, unless required to do so by federal law or the terms of a sponsored research agreement with a third party.”<sup>4</sup> WARF’s portfolio includes 2200-plus patented technologies.<sup>5</sup>

Since 2000, WARF has filed 39 patent lawsuits, mainly in the Western District of Wisconsin (17 cases) and Delaware (17 cases). In addition to suing Intel and Apple, WARF has sued technology companies such as Sony Corporation (2003), Infineon Technologies (2004), IBM (2004), AMD (2006), and Samsung (2007). None of these cases asserted the ‘752 Patent.

Critics refer to WARF as a “patent troll.”<sup>6</sup> The term *patent troll* analogizes a troll living under a bridge who charges passersby a fee to cross a bridge that it did not build to entities that bought a patent from its original owner and sends demand letters or files lawsuits to receive a monetary settlement. Critics may label a

patent owner a “patent troll” if it did not develop the patents it is asserting if 1) the only assets of the company are patents and the company’s business model is extracting licensing fees through the threat of litigation or by filing lawsuits; 2) its patents are low quality, overbroad, and/or vague; and 3) it uses abusive litigation tactics, and so on.<sup>7,8</sup> Because patent litigation is very expensive, many defendants may opt to settle early in a patent lawsuit to avoid litigation costs, rather than test the merits of the patent.

A term that is often incorrectly conflated with patent troll is *nonpracticing entity* (hereinafter *NPE*). *NPE* merely describes a patent owner that does not practice its own patents through its own products. One reason that a company, which obtains patents and makes its own products, may still assign its patents to an *NPE* is to avoid infringement counterclaims, i.e., claims of patent infringement that the defendant makes in response to a lawsuit. The obvious reasoning for this is that a company that does not make any products does not have any products that infringe any patents, and thus is immune to infringement counterclaims. Another reason why a company may assign its patents to an *NPE* is because the *NPE* may have more experience managing patent litigation than the company.

Although the terms *patent troll* and *NPE* may overlap, patent troll is used as a derogatory term while *NPE* only describes that the entity does not make its own products.<sup>9</sup> So, although the term *NPE* generally applies to universities, the term *patent troll* generally does not.<sup>9</sup>

## THE INVENTORS

Both complaints describe that the inventors—Andreas Moshovos, Scott Breach, Terani Vijaykumar, and Gurindar Sohi—are “leading researchers in the field of computer microprocessor architecture” (see, e.g., Paragraph 2 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). Both complaints describe that “Dr. Sohi, the leader of the lab that developed the ‘752 patent, has been elected to the National Academy of Engineering based on his work in the field of computer architecture. And in 2011 he received the computer architecture community’s most prestigious award, the Eckert-Mauchly Award[.]” (see, e.g., Paragraph 2 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). The complaints further describe that “Dr. Moshovos[] received the prestigious Maurice Wilkes award from the Association for Computing Machinery, for outstanding contribution to computer architecture by an individual in the profession 20 years or less, for his work in the

'752 patent" (see, e.g., Paragraph 2 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

## VENUE

Like other types of lawsuits, patent lawsuits must be filed in a venue, i.e., a judicial district, that is proper. In 2014 and 2015, the venue was proper if the district court could exercise personal jurisdiction over Apple. But in 2017, the Supreme Court of the United States narrowed what constituted proper venue to 1) the state where the defendant is incorporated or 2) in a judicial district where the "defendant has committed acts of infringement and has a regular and established place of business."<sup>10</sup> With respect to the former, a very large number of companies are incorporated in Delaware, so Delaware is a proper venue for those companies.<sup>11</sup> With respect to the latter, a "regular and established place of business" is not limited to a company's headquarters, but may include company locations such as its retail stores. Shortly after the Supreme Court decided *TC Heartland*, Apple closed its stores in the northern part of the Dallas–Fort Worth metroplex, which lies in the Eastern District of Texas, and is a patent hotspot due to the judges' expertise with patent law, a fast time to trial, and a deference to the Seventh Amendment, which guarantees the parties a right to a jury trial.<sup>12</sup> Apple reopened those stores 10 miles farther south, which lies in a different judicial district, the Northern District of Texas, where patent lawsuits are much less common.<sup>12</sup>

Both complaints describe that that venue is proper because Apple has committed acts of infringement in the Western District of Wisconsin and has a regular and established place of business in the district (see, e.g., Paragraph 10 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). Although the complaints did not specify what regular and established place of business Apple had in the district, it likely referred to an Apple store.

## FACTUAL AND INFRINGEMENT ALLEGATIONS, AND REQUESTED RELIEF

The factual allegations section of the complaints contains, *inter alia*, a description of the patent. The description of the '752 Patent is relatively short—just a single paragraph—which recites "[i]n general, the '752 patent discloses a 'predictor circuit [that] permits advanced execution of instructions depending for their data on previous instructions by predicting such dependencies based on previous mis-speculations . . . ." (see, e.g., Paragraph 13 of *Wisconsin Alumni Rsch.*

*Found. v. Apple, Inc.*<sup>1</sup>). The complaint asserts that "[t]he invention disclosed and claimed in the '752 patent has been recognized by those in the art as a major milestone in the field of computer microprocessing" (see, e.g., Paragraph 15 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). But the complaints do not explain why that is the case. The complaints further allege that "Apple has stated that it is the policy of the company not to accept or consider proposals regarding licensing from outside entities like WARF for any purpose, making the initiation of this lawsuit a necessity" (see, e.g., Paragraph 17 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). The complaints do not provide a source for Apple's alleged statement.

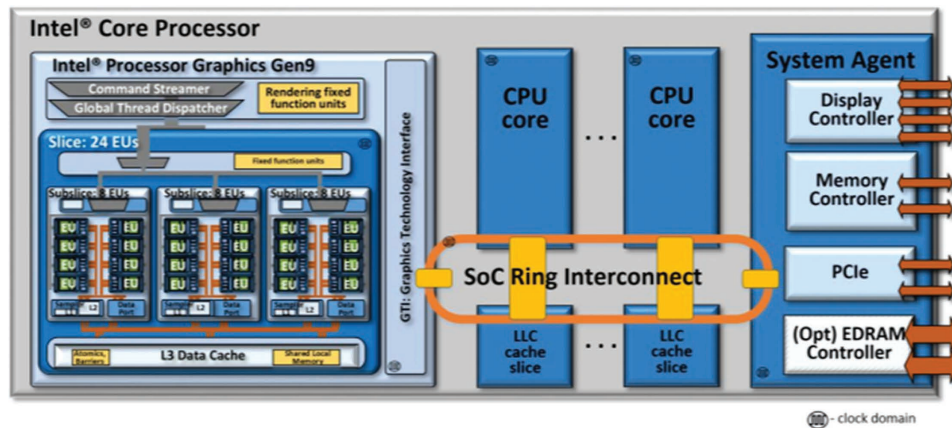
Prior to 1 December 2015, plaintiffs in patent cases often drafted their complaints in a manner proscribed by Form 18. Form 18 provided a simple way to plead direct patent infringement.<sup>a</sup> Form 18 provided an example of how to plead direct patent infringement:

"On <Date>, United States Letters Patent Number <\_\_\_\_\_> were issued to the plaintiff for an invention in an electric motor. The plaintiff owned the patent throughout the period of the defendant's infringing acts and still owns the patent. The defendant has infringed and is still infringing the Letters Patent by making, selling, and using electric motors that embody the patented invention, and the defendant will continue to do so unless enjoined by this court."

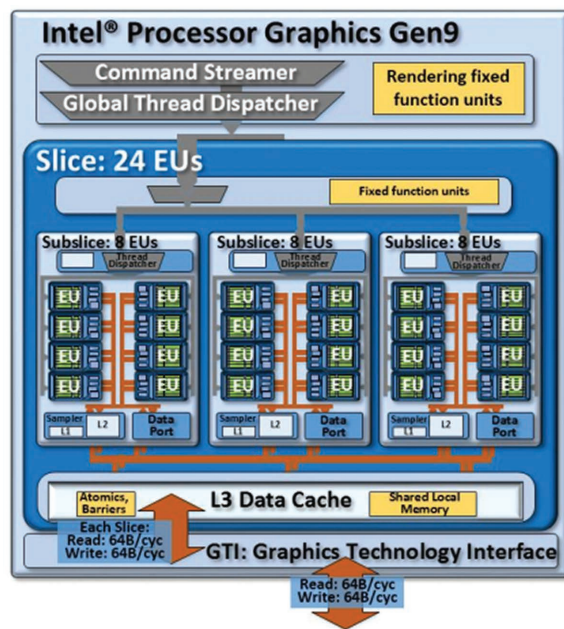
Form 18 did not require that the plaintiff allege that specific claims were infringed. Although simple, Form 18 did not provide much detail for a defendant to determine how, or even if, its accused products infringed the asserted patent.

In the two *Apple* cases, WARF allegations of Apple's direct patent infringement followed the template outlined in Form 18. More specifically, both complaints recite that "[o]n July 14, 1998, the United States Patent and Trademark Office duly and legally issued United States Patent Number 5,781,752 (hereinafter

<sup>a</sup>Direct patent infringement occurs when the defendant infringes the patent. By contrast, indirect patent infringement occurs when a third party, e.g., the defendant's customer, infringed the patent, but the defendant had knowledge of the patent and, e.g., encouraged its customer to infringe the patent. Contributory patent infringement occurs when the defendant provides a component that embodies a material part of the invention that does not have a substantial, non-infringing use.



**FIGURE 1.** The Compute Architecture of Intel Processor Graphics Gen9, Figure 2, which is entitled “An Intel Core i7 processor 6700K SoC and its ring interconnect architecture.”



**FIGURE 2.** The Compute Architecture of Intel Processor Graphics Gen9, Figure 6, which is entitled “A potential product design that instantiates the compute architecture of Intel processor graphics gen9. It is composed of a single slice with three subslices, for a total of 24 EUs. The Intel Core i7 processor 6700K with Intel HD Graphics 530 instantiates such a design.”

‘the ‘752 patent’) entitled ‘Table Based Data Speculation Circuit for Parallel Processing Computer’ to Andreas Moshovos, Scott Breach, Terani Vijaykumar, and Gurindar Sohi” (see, e.g., Paragraph 11 of *Wisconsin*

*Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). The complaints then recite that “WARF is the owner of all rights, title, and interest in the ‘752 patent by assignment and thereby is authorized and has standing to bring legal action to enforce all rights arising under the ‘752 patent” (see, e.g., Paragraph 12 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). The complaints further recite that “WARF is informed and believes, and on this basis alleges, that Defendant has been, and currently is, making, using, selling, offering to sell, importing and/or exporting processors that infringe claims of the ‘752 patent, including the Apple A7 processor” (see, e.g., Paragraph 19 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

But, in the same year as the filing of *Apple II*, the Supreme Court did away with Form 18, effective 1 December 2015. This change meant that a plaintiff now needed to provide more detail in the complaint. To illustrate how this change affects the level of detail in a complaint, in *XMTT, Inc. v. Intel Corp.*, which was filed in Delaware on 16, November 2018 by the same law firm, Irell & Manella, that represented WARF in all three cases, XMTT asserted U.S. Patent Number 8,145,879. Claim 1 of the ‘879 Patent recites

- An apparatus comprising
  - 1) A serial processor to execute instructions in a computing program primarily in serial.
  - 2) A first, private memory to store data solely for use by the serial processor in executing the instructions.
  - 3) A plurality of parallel processors to execute instructions in the computing program primarily in parallel, at least one parallel processor



of the plurality of parallel processors having a second, local read-only memory.

- 4) A plurality of shared memory modules to store data for use by the plurality of parallel processors in executing the instructions.

'879 Patent, Claim 1 (annotations added). For Limitation 1), XMTT asserted that the accused products in that case include systems on chip, which have at least one "serial processor," or CPU cores, "to execute instructions in a computing program primarily in serial."<sup>13</sup> As evidence, XMTT cited Figure 2 (see Figure 1) in The Compute Architecture of Intel Processor Graphics Gen9.<sup>14</sup>

For Limitation 2), XMTT asserted that the accused products have private L1 and L2 caches (see, e.g., Paragraph 20 of XMTT, Inc. v. Intel Corp.<sup>13</sup>). For Limitation 3), XMTT asserted that the "Gen9 Specification illustrates the components of Intel's graphics architecture, including one or more Slices, each of which is comprised of a plurality of Subslices, each of which further comprises, among other components, a plurality of Execution Units" (see, e.g., Paragraph 22 of XMTT, Inc. v. Intel Corp.<sup>13</sup>). As evidence, XMTT cited Figure 6 (see Figure 2) in The Compute Architecture of Intel Processor Graphics Gen9<sup>14</sup>.

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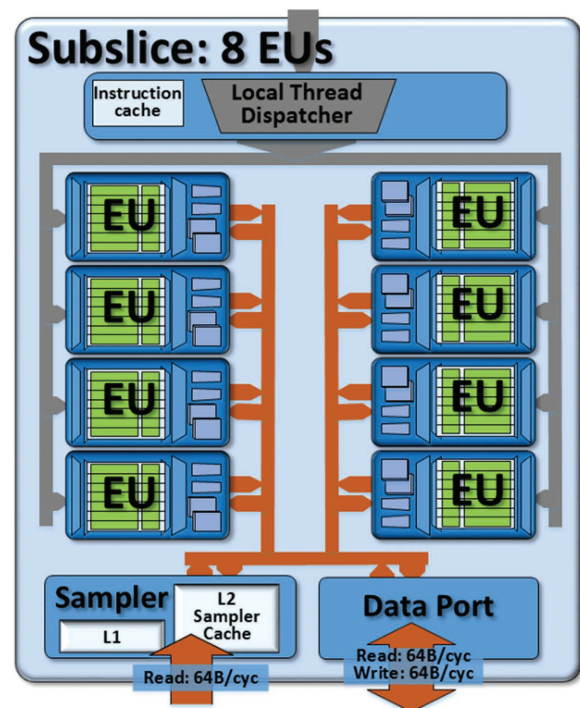
*IN OTHER WORDS, WARF ALLEGES THAT APPLE ENCOURAGED THIRD PARTIES, E.G., ITS CUSTOMERS, TO INFRINGE THE '752 PATENT DESPITE KNOWING ABOUT THE '752 PATENT.*

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XMTT further asserted that "each Subslice is also a parallel processor that executes instructions in a computing program primarily in parallel" where "each Subslice has its own local thread dispatcher, and multiple parallel execution units" (see, e.g., Paragraph 23 of XMTT, Inc. v. Intel Corp.<sup>13</sup>). XMTT asserted that "[e]ach Subslice also contains a 'sampler,' which is a 'read-only memory fetch unit'" (see, e.g., Paragraph 24 of XMTT, Inc. v. Intel Corp.<sup>13</sup>). As evidence, XMTT cited Figure 4 (see Figure 3) in The Compute Architecture of Intel Processor Graphics Gen9<sup>14</sup>.

For Limitation 4), XMTT asserted that Figure 6 (see Figure 2) in The Compute Architecture of Intel Processor Graphics Gen9 depicts a shared L3 cache shared between slice's parallel processors.

Therefore, compared to complaints that tracked Form 18, post-Form 18 complaints are significantly more detailed and specific, typically specifying one



**FIGURE 3.** The Compute Architecture of Intel Processor Graphics Gen9, Figure 4, which is entitled "The Intel processor graphics gen9 subslice, containing 8 EUs each. The subslice also instantiates sampler and data port units per subslice."

claim that is allegedly being infringed by the defendant, and providing detail as to how the accused product infringe that claim.

In addition to alleging direct infringement of the '752 Patent, in both complaints, WARF alleged that Apple is liable of two types of indirect infringement, namely, induced infringement and contributory infringement (see, e.g., Paragraphs 23, 23 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). With respect to the former, WARF alleged that Apple was aware of the '752 Patent and, despite that awareness, it "intentionally aided and encouraged third parties (including its customers) to use Accused Products in the United States and has intentionally aided and encouraged third parties (including its vendors and contractors) to make Accused Products in the United States, having known that the acts it was causing would be infringing" (see, e.g., Paragraph 23 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>). In other words, WARF alleges that Apple encouraged third parties, e.g., its customers, to infringe the '752 Patent despite knowing about the '752 Patent. As such, at least according to WARF, Apple is liable for inducing direct infringement by third parties.

With respect to the latter, WARF alleged that Apple contributorily infringed the '752 Patent by selling or offering for sale to third parties components that "embody a material part of the inventions described in the '752 patent, are known by Defendant to be especially made or especially adapted for use in infringement of the '752 patent, and are not staple articles of commodities suitable for substantial, non-infringing use, including at least the Accused Products" (see, e.g., Paragraph 23 of *Wisconsin Alumni Rsch. Found. v. Apple, Inc.*<sup>1</sup>).

The reason that WARF also alleged these two types of indirect infringement, along with direct infringement, is to allege as many types of infringement as possible to increase the likelihood that Apple is liable for at least one type of patent infringement.

Finally, at the end of both complaints, WARF asked for a judgment 1) that Apple infringed the '752 Patent, 2) that the '752 Patent is valid and enforceable, 3) that Apple's infringement is willful,<sup>b</sup> 4) for a preliminary and permanent injunction preventing Apple from continuing to infringe the '752 Patent, 5) for money damages for Apple's infringement, 6) for interest on the damages, and 7) for awarding the costs, disbursements, and fees, with interest, associated with litigating this action. All of these requests are typical.

The next article in this series will be to examine what occurred after the filing of the complaints in these two cases.

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<sup>b</sup>A finding of willfulness may result in a court increasing the damages, up to three times. 35 U.S.C. § 284.

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