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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

ELECTRONIC FRONTIER FOUNDATION, Plaintiff, v. GLOBAL EQUITY MANAGEMENT (SA) PTY LTD, Defendant.	Case No. _____ **COMPLAINT FOR DECLARATORY JUDGMENT**

Plaintiff Electronic Frontier Foundation ("EFF") alleges as follows:

INTRODUCTION

1. This action arises out of an injunction that imposes a prior restraint on the speech of an American non-profit advocacy organization based in San Francisco. The injunction, which was entered by an Australian court in a lawsuit filed against EFF there by Global Equity Management (SA) Pty Ltd ("GEMSA"), would never withstand constitutional scrutiny in the United States. It orders EFF to "immediately remove" from its website an article EFF published that discusses a matter of public concern, and it enjoins EFF from "publishing any content with respect to [GEMSA's] intellectual property." The order states that if EFF does not comply, "its assets may by [sic] seized and it directors [sic] and other officers may be liable to be imprisoned for contempt of Court."

2. The article on which the injunction is based (1) states accurate facts about a U.S. patent owned by GEMSA and litigation GEMSA has brought in the United States to enforce that patent; (2) discloses to readers, through links, the patent itself and two of GEMSA's district court complaints; (3) summarizes EFF's deep skepticism concerning GEMSA's infringement lawsuits in the United States; and (4) conveys EFF's opinion, based on these disclosed facts and public records, that GEMSA's lawsuits highlight the need for patent reform. More directly, the article calls GEMSA's patent, which claims a graphical user interface that depicts file storage as a set of filing cabinets, a "stupid" patent. An injunction issued by an American court arising from the publication of this article would undoubtedly violate the First Amendment to the United States Constitution and would be inconsistent with the common law of defamation in California.

3. The practice of bringing claims against U.S. citizens in foreign jurisdictions with lesser protections for speech - known as "libel tourism" - has the pernicious effect of chilling Americans' lawful, constitutionally protected speech. In 2010, Congress enacted the SPEECH Act, 28 U.S.C. §§ 4101-05, to protect against that chilling effect. The SPEECH Act provides that foreign judgments arising from U.S. citizens' speech are not enforceable if they do not pass muster under American legal and constitutional standards. It also permits American citizens to seek

declaratory relief from foreign judgments that offend those standards. EFF seeks such declaratory relief by this action.

PARTIES

4. Plaintiff EFF is the leading non-profit organization defending civil liberties in the digital world. Founded in 1990, EFF is a donor-funded 501(c)(3) organization that champions user privacy, free expression, and innovation through impact litigation, policy analysis, grassroots activism, and technology development. EFF uses the unique expertise of its attorneys, technologists, and activists to defend free speech online, fight illegal surveillance, advocate for users and innovators, and support freedom-enhancing technologies. An important part of its work is educating policymakers, the press, and the public through its blog, Deeplinks, which offers news and commentary on digital issues. EFF also publishes comprehensive whitepapers and educational guides, and its attorneys, technologists, and activists speak regularly on digital issues in a variety of fora. EFF is based in San Francisco, California.

5. Defendant Global Equity Management (SA) Pty Ltd ("GEMSA") is a privately held Australian corporation. GEMSA has filed numerous patent lawsuits in the United States District Court for the Eastern District of Texas alleging that other companies have violated patents that GEMSA holds. *See, e.g., Global Equity Mgmt. (SA), Pty. Ltd. v. Ericsson, Inc.*, No. 2:16-cv-00618-RWS-RSP, 2017 WL 365398, at *1-2 (E.D. Tex. Jan. 25, 2017) (describing 37 patent lawsuits filed by GEMSA).[1]

JURISDICTION AND VENUE

6. This action arises and is brought under the Securing the Protection of our Enduring and Established Constitutional Heritage Act (the "SPEECH Act"), 28 U.S.C. §§ 4101-05, and the Declaratory Judgment Act, 28 U.S.C. §§ 2201 02. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331, 1332(a)(2), and 4101-05.

7. Venue is appropriate in this District pursuant to 28 U.S.C. § 1391(b)(2) because a substantial part of the events or omissions giving rise to the claim occurred in this District.

[1] A copy of this Order is attached hereto as Exhibit 1.

8. GEMSA's contacts with this District subject it to this Court's jurisdiction. As set forth in further detail at Paragraphs 19-34 below, GEMSA:

a. Emailed a demand letter to EFF in August 2016, demanding that EFF take certain actions in San Francisco to benefit GEMSA, including removing the article from EFF's website;

b. Obtained a court injunction in October 2016 that requires EFF to undertake significant acts in San Francisco, prohibits it from engaging in lawful speech there, and threatens penalties that would be felt by EFF and its directors and officers there;

c. Purported to serve EFF with the injunction in December 2016 at its offices in San Francisco; and

d. Mailed a letter to EFF at its offices, dated January 20, 2017, that enclosed a copy of the injunction, again demanding that EFF undertake certain acts in San Francisco, and threatening to pursue all available legal remedies, including whatever relief "the relevant court may deem just and proper," if EFF did not comply.

FACTS

EFF'S "STUPID PATENT OF THE MONTH" SERIES

9. One component of EFF's overall mission to support online privacy, free expression, and innovation is to promote reform of the U.S. patent system so that it supports the development of new digital technologies, particularly by individuals, nonprofits, and small businesses. EFF argues that the patent system is broken in many ways, including that the Unites States Patent and Trademark Office ("USPTO") far too often issues questionable patents for digital technology that is not innovative, and that "patent trolls" acquire those questionable patents and use the threat of costly litigation to extract exorbitant and unjust licensing fees. As part of this work, EFF documents the harm caused by inappropriate patents, has filed reexamination petitions and an *inter partes* review challenging patents at the USPTO, litigates on behalf of small businesses targeted by

bogus infringement claims where there is a broader public interest, files amicus briefs, and advocates in favor of patent reform at the USPTO, in Congress, and to the general public.

10. In 2014 EFF began publishing a series of articles on its website called "Stupid Patent of the Month" to call attention to examples of questionable patents that stifle innovation, harm the public, and can be used to shake down unsuspecting users of commonplace processes or technologies. EFF explains to readers that the series is intended to highlight "spectacularly dumb patents that have been recently issued or asserted. With this series, we hope to illustrate by example just how badly reform is needed—at the Patent Office, in court, and in Congress." *Stupid Patent of the Month*, Elec. Frontier Found., https://www.eff.org/issues/stupid-patent-month.[2] Each article describes the patent, explains the basis for EFF's opinion that it is "stupid," and shows how the patent is being or could be misused to stifle innovation or harm the public. The articles often urge readers to contact members of Congress to support patent reform legislation.

11. The featured patents often are being asserted by "patent trolls" in actual or threatened litigation. As one court has explained, the term "patent troll" usually refers to "an entity that enforces patent rights against accused infringers in an attempt to collect licensing fees, but does not manufacture products or supply services based upon the patents in question." *Cascades Computer Innovation LLC v. RPX Corp.*, No. 12-CV-01143 YGR, 2013 WL 316023, at *1 (N.D. Cal. Jan. 24, 2013) (citations omitted). In EFF's view, "[a] patent troll uses patents as legal weapons, instead of actually creating any new products or coming up with new ideas. Instead, trolls are in the business of litigation (or even just threatening litigation)." *Patent Trolls*, Elec. Frontier Found., https://www.eff.org/issues/resources-patent-troll-victims.[3]

12. The "Stupid Patent of the Month" series has succeeded in raising public awareness of the problem of inappropriate patents and has driven positive change. For example, IBM recently filed a formal disclaimer with the USPTO dedicating a patent to the public after EFF featured it as the "Stupid Patent of the Month" for February 2017. Daniel Nazer, *Stupid Patent of the Month:*

[2] A printout of this page is attached hereto as Exhibit 2.

[3] A printout of this page is attached hereto as Exhibit 3.

IBM Patents Out-of-Office Email, Deeplinks Blog (Mar. 1, 2017), https://www.eff.org/deeplinks/2017/02/stupid-patent-month-ibm-patents-out-office-email.[4] The patent, granted in January 2017 from an application filed in 2010, covers an out-of-office email system similar to those already in widespread use for decades.

13. Many of the "Stupid Patent of the Month" posts (including the one at issue here) are written by Daniel Nazer, an EFF staff attorney. Before joining EFF, Mr. Nazer was a patent litigator in the San Francisco law firm now known as Keker, Van Nest & Peters, and a Residential Fellow at Stanford Law School's Center for Internet and Society.

THE JUNE 2016 "STUPID PATENT OF THE MONTH"

14. Beginning in October 2015, GEMSA filed more than three dozen patent infringement lawsuits in the Eastern District of Texas, asserting that the defendants had infringed two patents GEMSA owns: U.S. Patent No. 6,690,400 ("the '400 patent") and U.S. Patent No. 7,356,677 ("the '677 patent"). *See* Ex. 1 (discussing the suits). The defendants included a broad range of mostly household-name businesses that use Amazon Web Services technology,[5] including those in the travel industry such as Airbnb, Expedia, and TripAdvisor; consumer products firms such as Johnson & Johnson and General Electric; and high-tech companies such as Uber, Netflix, and Spotify.

15. This flurry of lawsuits drew Mr. Nazer's attention. Upon reviewing the '400 patent, he decided to name it as Stupid Patent of the Month for June 2016. *See* Daniel Nazer, *Stupid Patent of the Month: Storage Cabinets on a Computer*, Deeplinks Blog (June 30, 2016), https://www.eff.org/deeplinks/2016/06/stupid-patent-month-storage-cabinets-computer.[6] In that post (the "Article"), Mr. Nazer accurately described the '400 patent and GEMSA's litigation efforts and sharply criticized both the patent and GEMSA's lawsuits.

[4] A copy of this article is attached hereto as Exhibit 4.

[5] As explained on its website, "Amazon Web Services (AWS) is a secure cloud services platform, offering compute power, database storage, content delivery and other functionality to help businesses scale and grow." *See* https://aws.amazon.com/what-is-aws/.

[6] A printout of the Article is attached hereto as Exhibit 5.

16. The Article begins:

> How do you store your paper files? Perhaps you leave them scattered on your desk or piled on the floor. If you're more organized, you might keep them in a cabinet. This month's stupid patent, US Patent No. 6,690,400 (the '400 patent), claims the idea of using "virtual cabinets" to graphically represent data storage and organization. While this is bad, the worse news is that the patent's owner is suing just about anyone who runs a website.

On EFF's website, the patent number is a highlighted hyperlink to the full text of the patent archived on Google Patents at https://www.google.com/patents/US6690400. Thus, with a simple mouse click, readers can read the patent for themselves.[7]

17. Next, Mr. Nazer describes the patent's history and context, summarizes the patent's claims, and discusses GEMSA's role in asserting it:

> The '400 patent is owned by Global Equity Management (SA) Pty. Ltd. ("GEMSA") which seems to be a classic patent troll. GEMSA is incorporated in Australia and appears to have no business other than patent litigation. The patent began its life with a company called Flash VOS. This company once offered a product that allowed users to run multiple operating systems on personal computers with x86-compatible processors. The '400 patent describes a graphical user interface for this system. The interface allows users to interact with "graphical depictions of cabinets" that represent memory partitions and different operating systems.
>
> GEMSA says that Flash VOS moved the computer industry a "quantum leap forwarded in the late 90's when it invented Systems Virtualization." But Flash VOS didn't invent partitions, didn't invent virtual machines, and didn't invent running multiple operating systems on a single computer. All of these concepts predate its patent application, some by decades. In any event, the '400 patent claims only a very specific, and in our view, quite mundane user interface.
>
> Importantly, the '400 patent's claims require very specific structures. For example, claim 1 requires "a secondary storage partitions window" and "at least one visible cabinet representing a discrete operating system." A user interface must have all of these features to infringe the claim.

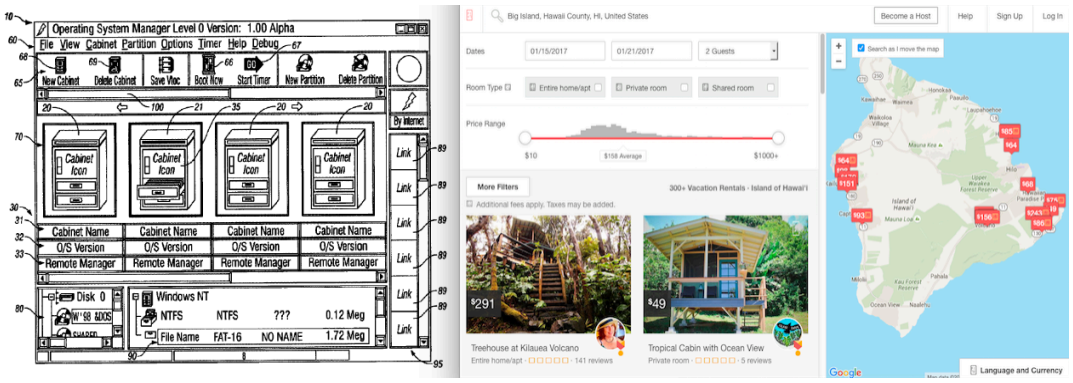
Hyperlinks in this section include a link to an archived version of the Flash VOS website (linked from the phrase "once offered"), a description of the 1990s-vintage x86 computer processors (linked from the word "x86"), and the history of virtualization technology (linked from the phrase

[7] A printout of the hyperlinked patent is attached hereto as Exhibit 6.

"virtual machines").[8] Illustrating the playful and hyperbolic nature of the post, hyperlinks also included a picture of a t-shirt emblazoned with a map of Australia captioned with the slang "Straya!" (linked from the word "Australia") and an article discussing the history of the clichéd use of the term "quantum leap" (linked from the word "quantum").

18. The Article closes with Mr. Nazer discussing and criticizing GEMSA's litigation, and advocating patent reform legislation:

> In the past year, GEMSA has sued dozens of companies, ranging from Airbnb to Zillow. In each case, it makes the bare assertion that the defendant's website infringes the '400 patent. For example, it simply states that "AIRBNB maintains, controls and/or operates a website with a graphical user interface ("GUI") at www.airbnb.com that infringes one or more claims of the '400 patent."
>
> GEMSA doesn't explain how Airbnb's website satisfies highly specific claim limitations like "a virtual cabinet representing a discrete operating system." In fact, the accused website bears almost no similarity to GEMSA's supposed invention:



> As far as we can tell, GEMSA seems to think that anyone with a website that links to hosted content infringes its patent. Complaints with such sparse, and implausible, infringement allegations should be thrown out immediately for failure to state a claim.
>
> There will be no prizes for guessing where GEMSA has filed its litigation. Every one of its cases was filed in the Eastern District of Texas, where we have long complained that local rules favor patent trolls like GEMSA. Venue reform legislation currently before Congress would stop trolls flocking to the Eastern District of Texas. That might help reduce abusive patent trolling. But we still need broader patent reform to ensure that such weak patents don't lead to abusive troll litigation.

[8] Printouts of these hyperlinked pages are collectively attached hereto as Exhibit 7.

Hyperlinks in this final section include links to copies of GEMSA's complaints against Airbnb and Zillow from those companies' names and links to previous EFF articles on "patent troll" litigation and patent reform legislation.[9] The inclusion of a diagram from the '400 patent and screenshots from one of the allegedly infringing websites provide the reader with further background and context for the Article's criticism of GEMSA and its patent.

19. On July 22, 2016, Amazon Web Services, Inc., filed a declaratory judgment action against GEMSA in the Eastern District of Virginia seeking a declaration of non-infringement and invalidity of the '400 and '677 patents. *See* Complaint, *Amazon Web Servs., Inc. v. Global Equity Mgmt. (SA) Pty. Ltd.*, No. 3:16-cv-00619-MHL (E.D. Va. July 22, 2016) (Doc. 1).[10] In January 2017, the Eastern District of Texas stayed more than 30 lawsuits still pending there that involved infringement claims against Amazon Web Services clients. *See* Ex. 1. On March 24, 2017, the Eastern District of Texas transferred GEMSA's remaining four lawsuits in that forum to the Northern District of California. Order, *Global Equity Mgmt. (SA) Pty. Ltd. v. Alibaba.com, Inc.*, 15-cv-01702-RWS-RSP (E.D. Tex. Mar. 24, 2017) (Doc. 73).

GEMSA'S THREATS AND ITS AUSTRALIAN LITIGATION AGAINST EFF

20. GEMSA did not take EFF's criticism well. Two months after the Article appeared, in August 2016, GEMSA's Australian counsel, Pasha Mehr, emailed EFF a letter captioned "Demand of Apology for Slander and Defatory [sic] Statements" (the "Demand Letter").[11] GEMSA accused EFF of engaging in "defamatory, false and malicious slander" by posting the Article "with the intention of portraying our client's intellectual property as stupid in addition to numerous other malicious lies and misleading statements about the '400 patent owned by Our Client."

[9] A copy of the pages hyperlinked at "Eastern District of Texas" and at "long complained" are collectively attached hereto as Exhibit 8, together with two Eastern District of Texas orders hyperlinked therein.

[10] A copy of the complaint (without exhibits) is attached hereto as Exhibit 9.

[11] A copy of the Demand Letter is attached hereto as Exhibit 10.

21. Although GEMSA did not specify which statements in the Article are purportedly false or otherwise misleading, it "requested" that EFF draft "an unqualified apology and retraction, to be copied to all users having viewed your website since the date of that publication in additional [sic] to diligent effort to removing all copies of the said published article from the internet." GEMSA also demanded EFF's "unconditional agreement to payment of all the damages your article may cause as compensation." GEMSA did not state what those purported damages were, or their amount. It closed with a threat to "institute a suit against you in a court of law" if EFF did not capitulate to its demands within two weeks.

22. EFF engaged an Australian law firm, King & Wood Mallesons, for the limited purpose of responding to the Demand Letter. On September 13, 2016, that firm responded to Mr. Mehr (the "First Response"), explaining that EFF would not accede to GEMSA's demands.[12] It noted that the Demand Letter was "very vague and fails to specify any specific statements in the Article that are considered to be defamatory." It asked GEMSA to clarify which specific statements in the Article it considered to be actionably defamatory, what the "suggested imputations" of each statement were, and the relevant law on which GEMSA relied for its assertions.

23. GEMSA never responded. Instead, in October 2016, it filed suit against EFF in the Supreme Court of South Australia. GEMSA did not properly serve copies of the case-initiating documents on EFF in the United States pursuant to the Federal Rules of Civil Procedure and the Hague Convention on the Service Abroad of Judicial and Extrajudicial Documents, and EFF did not waive service.

24. On or around October 4, 2016, GEMSA filed an Interlocutory Application with the Australian court seeking an order requiring EFF to "immediately remove" the Article from its website and restraining EFF "from publishing any content with respect to [GEMSA's] intellectual property."[13]

[12] A copy of the First Response is attached hereto as Exhibit 11.

[13] A copy of the Interlocutory Application and accompanying Summons is attached hereto as Exhibit 12.

25. In support of its Interlocutory Application, GEMSA submitted the Affidavit of Schumann Rafizadeh, who attests that he is the inventor of the '400 patent and "the Director and Shareholder of the Plaintiff."[14] Mr. Rafizadeh did not assert in the Affidavit that any statements contained in the Article are false or otherwise misleading. He did expressly state that, when he "consulted with GEMSA's U.S. based legal team" about EFF's Article, they "advised [him] to retain representation in Australia."

26. Two weeks later, on or around October 20, GEMSA made further filings in the Supreme Court of South Australia, including a Statement of Claim and a Second Affidavit of Schumann Rafizadeh. Again, GEMSA failed to serve EFF. GEMSA mailed the documents to King & Wood Mallesons despite having been previously informed by the firm that it no longer represented EFF.

27. In the Statement of Claim, GEMSA purported to assert causes of action against EFF for violation of Australia's Competition and Consumer Act by way of alleged "misleading and deceptive conduct," and for common law "negligent misstatement of fact."[15] The Statement sets forth nine "representations" in the Article that GEMSA asserts are "misleading or deceptive or likely to mislead or deceive." According to the Statement of Claim, the challenged "representations" and the reasons they are misleading are:

a. The '400 patent is "stupid."

GEMSA's assertion: The '400 patent "is not in fact 'stupid.'"

b. The '400 patent "has claimed the idea of using virtual cabinets to graphically represent data storage and organization."

GEMSA's assertion: This description "does not accurately depict the complexities involved with the Patent."

[14] A copy of the Affidavit of Schumann Rafizadeh (without exhibits) is attached hereto as Exhibit 13. Mr. Rafizadeh is identified by the USPTO as one of two inventors of the '400 patent in 1999. Ex. 6. He assigned the patent to Flash VOS, Inc. on the date the patent was filed in 1999, and Flash VOS then assigned it to GEMSA in 2014. *Id.*

[15] A copy of the Statement of Claim is attached hereto as Exhibit 14.

c. GEMSA "is suing anyone who runs a website." (This alleged "representation" misquotes the Article. The Article said GEMSA "is suing *just about* anyone who runs a website.")

GEMSA's assertion: It "does not in fact sue anyone who runs a website."

d. GEMSA "is a classic patent troll." (This alleged "representation" misquotes the Article. The Article said GEMSA "seems to be" a classic patent troll.)

GEMSA's assertion: It is "not in fact a classic patent troll."

e. GEMSA "once offered a product that allowed its users to run multiple operating systems on personal computers with x86-compatible processors." (This alleged "representation" misquotes the Article. The Article said that *Flash VOS*, the company that obtained the patent from the USPTO, once offered such a product.)

GEMSA's assertion: This description "does accurately portray the complexities and uses involved with its product." (Presumably GEMSA intended to insert the word "not" after "does.")

f. GEMSA's "product 'FLASH VOS' did not invent partitions, did not invent virtual machines and did not invent running multiple operating systems on a single computer." (This alleged "representation" misquotes the Article. The Article made these statements about *the company Flash VOS*, not about a "product" owned by GEMSA.)

GEMSA's assertion: EFF "did not have reasonable grounds for making" this statement.

g. GEMSA's "patent claims require very specific structures, namely a 'secondary storage partitions window' and 'at least one visible cabinet representing a discrete operating system.'" (This alleged "representation" misquotes the Article. The Article said "*the '400 patent's* claims require very specific structures. *For example, claim 1* requires 'a secondary storage

partitions window' and 'at least one visible cabinet representing a discrete operating system.'")

GEMSA's assertion: EFF "did not have reasonable grounds for making" this statement.

h. GEMSA "seems to think that anyone with a website that links to hosted content infringes its patent."

GEMSA's assertion: EFF "did not have reasonable grounds for making" this statement.

i. GEMSA "issued patent claims in the Eastern District of Texas because local rules favour patent trolls." (This alleged "representation" misquotes the Article. The Article said "[e]very one of [GEMSA's] cases was filed in the Eastern District of Texas," and noted that that court's local rules "favor patent trolls like GEMSA.")

GEMSA's assertion: EFF "did not have reasonable grounds for making" this statement.

28. Notably, the *only* statements the Statement of Claim alleges are *false* – that the patent is "stupid," that GEMSA is a "patent troll," and that GEMSA "is suing anyone with a website" – are plainly hyperbolic statements of opinion. (With respect to two other statements, GEMSA merely asserts that the Article fails to "accurately portray the complexities" of its patent, and with respect to four others, GEMSA not only does not dispute their veracity but also does not offer any hint as to how they could possibly be actionable.)

29. In his Second Affidavit,[16] Mr. Rafizadeh conceded that "GEMSA largely makes its profits from the licensing fees borne by companies who have used, or who are interested in using, the Patent product." GEMSA's website confirms GEMSA's aggressive litigation strategy, warning

[16] A copy of the Second Affidavit of Schumann Rafizadeh (without exhibits) is attached hereto as Exhibit 15.

its readers that "GEMSA has patented rights to main storage virtualization technologies and intends to vigorously defends [sic] those rights against infringements by any e-commerce site."[17]

30. Although Mr. Rafizadeh vaguely referenced "misrepresentations published in the article," he did not endeavor to identify the alleged misrepresentations or to explain how they are false or misleading.

31. Mr. Rafizadeh surmised in the Second Affidavit, without offering any evidence in support, that EFF's Article is the cause of numerous problems GEMSA has encountered in trying to enforce the patent in the United States, including that "mediations were cancelled or delayed," that companies GEMSA has sued have shown a "reduced interest in pursuing pre-trial settlement negotiations," that GEMSA has been sued by Amazon for declaratory judgment of non-infringement and invalidity of patents, that "U.S. Defendants have joined and instated two Interparte Proceedings against GEMSA" for the first time, that the Eastern District of Texas set a *Markman* hearing to "confirm the legitimacy of the patent,"[18] and that the court "ruled that a third party expert be appointed to investigate the authenticity of the Patent."

32. Mr. Rafizadeh alluded – again, without offering any evidence – to an alleged conspiracy to "sabotage [GEMSA's] position" purportedly carried out by EFF, one of its donors (Mark Cuban), Airbnb and Zillow.[19] And he falsely contended that EFF's Article hyperlinks to "unsealed" complaints filed by GEMSA against Airbnb and Zillow that "are not available in the public domain and can only be obtained through one of the Defendants in that litigation." In fact, both complaints are available to the public (including on PACER),[20] there has never been a motion

[17] A copy of this page from GEMSA's website is attached hereto as Exhibit 16.

[18] In a *Markman* hearing, the court does not "confirm the legitimacy of" of a patent. Rather, it "construe[s] the contested claims of the patents" so that "a jury can determine whether the accused products infringe." *In re Papst Licensing GmbH & Co. KG Litig.*, 905 F. Supp. 2d 43, 45 n.4 (D.D.C. 2012), *judgment entered*, 987 F. Supp. 2d 58 (D.D.C. 2013), *vacated and remanded on other grounds sub nom. In re Papst Licensing Digital Camera Patent Litig.*, 778 F.3d 1255 (Fed. Cir. 2015).

[19] In Paragraph 14, Mr. Rafizadeh inaccurately cites to a news article as "EFF Patent Gets Half-Million-Dollar Boost from Mark Cuban and Notch." In fact, that news article is titled "EFF Patent *Project* Gets Half-Million-Dollar Boost from Mark Cuban and Notch."[19] EFF does not own any patents.

[20] Copies of the docket sheets from PACER for both cases are collectively attached hereto as Exhibit 17.

to seal the complaint filed in either lawsuit, and GEMSA's own press release announcing its first wave of lawsuits attaches a copy of one of the complaints and explicitly notes that they are public records available on PACER.[21]

33. EFF did not appear in the Australian suit.

THE AUSTRALIAN COURT INJUNCTION AND ITS EFFECTS ON EFF

34. On October 31, 2016, the Australian court issued an "Order with Injunction" (the "Australian Injunction") against EFF, which GEMSA purported to serve on EFF at its California offices on December 21, 2016.[22] The Australian Injunction orders EFF to immediately remove the Article from its website and not to otherwise disseminate it. It also states: "Until further order [EFF is] restrained from publishing any content with respect to the Plaintiff's intellectual property," a statement that, on its face, applies to speech about other GEMSA patents that EFF has never before mentioned. It warns that if EFF "does not comply with this order its assets may be seized and it [sic] directors and other officers may be liable to be imprisoned for contempt of Court." It contains no discussion of the court's analysis.

35. GEMSA's counsel emailed another letter to EFF on January 20, 2017 (the "Second Demand Letter"), enclosing a copy of the Australian Injunction.[23] In it, GEMSA asserted that, by not removing the Article from its website, EFF is in "continued violation of Australian laws" and that if EFF does not comply with the order to take down the article, it "may be liable for contempt of Court." GEMSA demanded that EFF take down the Article and "make immediate arrangements for any links to the article to be removed from the world wide web including any and all other websites which references [sic] the infringing [sic] material." GEMSA threatened that if EFF does not take such steps, "we will be forced to do so at your expense." GEMSA also demanded that EFF pay "compensation" to GEMSA for purported damages "in the vicinity of $750,000.00" within

[21] *See* Ex. 16.

[22] A copy of the Australian Injunction, together with the documents that accompanied its delivery, is attached hereto as Exhibit 18.

[23] A copy of the Second Demand Letter is attached hereto as Exhibit 19.

twenty-one days, and threatened to "seek full monetary damages and equitable relief" that the "relevant court" may deem proper.

36. EFF responded to Mr. Mehr on February 10, 2017 (the "Second Response") through its U.S. counsel.[24] The Second Response stated, in part:

> EFF will not be bullied into paying GEMSA, having its speech muzzled, or censoring itself. The [Australian] court's order, which runs contrary to longstanding United States law and the U.S. Constitution, is unenforceable. Moreover, GEMSA's claims against EFF are baseless. Among other things, EFF's commentary includes substantially true facts, protected opinion, and rhetorical hyperbole, and is privileged under the law and the First Amendment of the U.S. Constitution.

37. EFF has not removed the Article from its website and does not intend to do so. The Article is a statement of EFF's opinion about GEMSA's patent based on disclosed facts and public information, commentary that is of significant public concern and protected by the First Amendment to the United States Constitution.

38. Nevertheless, the Australian Injunction has cast a shadow over the legality of EFF's speech about GEMSA's '400 patent and litigation, and is chilling EFF's further speech. Given the present uncertainty concerning the injunction's enforceability in the United States, EFF feels constrained from speaking further about these topics – indeed, about any of GEMSA's patents, since the order sweeps that broadly – aside from simply reporting about this declaratory judgment action to its readers.

39. Also of significant concern to EFF is that, absent an order from a United States court declaring the Australian Injunction repugnant to U.S. law and unenforceable here, GEMSA will follow through on its counsel's threat and successfully use the injunction to persuade American search engines to "deindex" the Article, which would effectively preclude EFF from speaking publicly on this important U.S. legal and political issue altogether.[25]

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[24] A copy of the Second Response is attached hereto as Exhibit 20.

[25] "Deindexing" is a process by which a search engine disables the computer code that directs an internet searcher to a particular webpage. Thus, when an article has been "deindexed," any search that otherwise would have resulted in the webpage being included in the list of results will no longer produce a list containing that webpage in the results. Search engines generally permit users to submit "removal requests" requesting that particular webpages be deindexed. *See, e.g.*,

FIRST CAUSE OF ACTION

FOR DECLARATORY JUDGMENT UNDER THE SPEECH ACT, 28 U.S.C. §§ 4101-05

40. Plaintiff re-alleges and incorporates by reference Paragraphs 1 through 38 of the Complaint.

41. The Australian Injunction is a "foreign judgment for defamation" under 28 U.S.C. § 4102.

42. It is apparent from the face of the Australian Injunction, and the Statement of Claim and Interlocutory Application that led to its entry, that the law applied by the Australian court when it entered the injunction against EFF does not provide as much protection for freedom of speech and press as the First Amendment to the United States Constitution. For example and without limitation, the injunction does not protect a state interest of the highest order, nor is it narrowly tailored to achieve that objective, as would be necessary in the United States for such a prior restraint order to pass constitutional muster. GEMSA has not met – and cannot meet – these fundamental First Amendment requirements. Moreover, the injunction is facially overbroad: It prohibits *all* future speech by EFF about *any* of GEMSA's intellectual property.

43. The law applied by the Australian court when it entered the injunction against EFF did not provide as much protection for freedom of speech as California state and constitutional law would provide. For example and without limitation, the Australian court did not grant the protections from GEMSA's baseless claims that would have been afforded by California's Anti-SLAPP statute, Cal. Civ. Proc. Code §§ 425.16 *et seq.*

44. The Article is not actionable under well-established First Amendment and California precedent because, among other things, the statements in the Article are: (1) true; (2) constitutionally protected statements of opinion based on true disclosed facts; (3) constitutionally protected rhetorical hyperbole; (4) privileged as fair and accurate reports of government

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https://support.google.com/legal/answer/3110420 (Google's "Legal Removal Request," a copy of which is attached hereto as Exhibit 21).

documents; (5) made without the requisite degree of fault; and/or (6) not "of and concerning" GEMSA.

45. The exercise of jurisdiction over EFF by the Australian court in the Australian lawsuit did not comport with the due process requirements that are imposed on domestic courts by the United States Constitution. For example and without limitation, GEMSA did not properly serve the case initiating documents on EFF pursuant to the Hague Convention.

46. Therefore, EFF seeks a declaratory judgment that the Australian Injunction is repugnant to the Constitution and laws of the United States and cannot be recognized or enforced in the United States.

SECOND CAUSE OF ACTION

FOR DECLARATORY JUDGMENT UNDER THE DECLARATORY JUDGMENT ACT, 28 U.S.C. §§ 2201-02

47. Plaintiff re-alleges and incorporates by reference Paragraphs 1 through 45 of the complaint.

48. There is an actual controversy between GEMSA and EFF.

49. It is apparent from the face of the Australian Injunction, and the Statement of Claim and Interlocutory Application that led to its entry, that the law applied by the Australian court when it entered the injunction against EFF does not provide as much protection for freedom of speech and press as the First Amendment to the United States Constitution. For example and without limitation, the injunction does not protect a state interest of the highest order, nor is it narrowly tailored to achieve that objective, as would be necessary in the United States for such a prior restraint order to pass constitutional muster. GEMSA has not met – and cannot meet – these fundamental First Amendment requirements. Moreover, the injunction is facially overbroad: It prohibits *all* future speech by EFF about *any* of GEMSA's intellectual property.

50. The law applied by the Australian court when it entered the injunction against EFF did not provide as much protection for freedom of speech as California state and constitutional law would provide. For example and without limitation, the Australian court did not apply the

substantive immunity from GEMSA's baseless claims that would have been afforded by California's Anti-SLAPP statute, Cal. Civ. Proc. Code §§ 425.16 *et seq.*

51. The Article is not actionable under well-established First Amendment and California precedent because, among other things, the statements in the Article are: (1) true; (2) constitutionally protected statements of opinion based on true disclosed facts; (3) constitutionally protected rhetorical hyperbole; (4) privileged as fair and accurate reports of government documents; (5) made without the requisite degree of fault; and/or (6) not "of and concerning" GEMSA.

52. The exercise of jurisdiction over EFF by the Australian court in the Australian lawsuit did not comport with the due process requirements that are imposed on domestic courts by the United States Constitution. For example and without limitation, GEMSA did not properly serve the case initiating documents on EFF pursuant to the Hague Convention.

53. Therefore, EFF seeks a declaratory judgment that the Australian Injunction is repugnant to the public policy and laws of California and the United States and is therefore not recognizable or enforceable in the United States.

PRAYER FOR RELIEF

WHEREFORE, EFF respectfully requests that the Court:

(1) Declare that the Australian Injunction is repugnant to the United States Constitution and the laws of California and the United States;

(2) Declare that the Australian Injunction cannot be recognized or enforced in the United States; and

(3) Grant EFF such further relief as the Court deems appropriate, including awarding EFF its attorneys' fees and costs.

DATED: April 12, 2017

Respectfully submitted by:

s/ Ashley I. Kissinger

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Exhibit 1

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

GLOBAL EQUITY MANAGEMENT (SA) PTY. LTD., Plaintiff, v. ERICSSON, INC., AMAZON WEB SERVICES, INC., and VADATA, INC. Defendants.	Case No. 2:16-cv-00618-RWS-RSP

MEMORANDUM ORDER

Before the Court is Defendant Amazon Web Services, Inc., and VADATA, Inc. ("Amazon")'s Motion to Dismiss or, in the Alternative, Transfer Claims Against Amazon Under The First-to-File Rule and to Stay Claims Against Customer Defendant Ericsson, Inc. Pending Resolution of the First-Filed Action in the Eastern District of Virginia (Dkt. No. 10) ("Amazon's Motion"), as well as Defendant Ericsson Inc. ("Ericsson")'s Motion to Stay and Joinder in Amazon's Motion to Stay (Dkt. No. 16) ("Ericsson's Motion"). For the following reasons, the Court hereby **GRANTS** Amazon's Motion and Ericsson's Motion, as more specifically set forth in the accompanying Order.

I. BACKGROUND

A. GEMSA Suits

Plaintiff Global Equity Management (SA) Pty. Ltd. ("GEMSA") filed 37 patent lawsuits (of which 34 are currently pending and 3 have been closed) with this Court in five main phases:

(1) First, on **October 30, 2015**, GEMSA filed five (5) patent lawsuits:

(i) *GEMSA v. AirBNB, Inc.*, 2:15-cv-1700

(ii) *GEMSA v. Alibaba.com, Inc. et al*, 2:15-cv-1702

(iii) *GEMSA v. PriceLine Group, Inc., Booking.com*, 2:15-cv-1703

(iv) *GEMSA v. PriceLine Group, Inc., Kayak, Inc.*, 2:15-cv-1704 (closed 1/26/16)

(v) *GEMSA v. PriceLine Group, Inc., Priceline.com*, 2:15-cv-1705 (closed 1/26/16)

(2) Second, on **January 29, 2016**, GEMSA filed ten (10) more patent lawsuits:

(i) *GEMSA v. Expedia, Inc.*, 2:16-cv-95

(ii) *GEMSA v. Hotels.com, L.P. et al*, 2:16-cv-96

(iii) *GEMSA v. CruiseShipCenters, L.P. et al*, 2:16-cv-97

(iv) *GEMSA v. eBay, Inc.*, 2:16-cv-98

(v) *GEMSA v. Travelocity USA*, 2:16-cv-99

(vi) *GEMSA v. Expedia Inc, Travago GmbH*, 2:16-cv-100

(vii) *GEMSA v. Expedia Inc, Orbitz Worldwide, Inc.*, 2:16-cv-101

(viii) *GEMSA v. Expedia Inc, Hotwire Inc*, 2:16-cv-102

(ix) *GEMSA v. TripAdvisor LLC*, 2:16-cv-103

(x) *GEMSA v. Hipmunk, Inc.*, 2:16-cv-104 (closed 8/10/16)

On **April 6, 2016**, thirteen (13) of the above lawsuits, specifically the three cases 2:15-cv-1700, -1702, -1703 and the ten cases of 2:16-cv-95, -96, -97, -98, -99, -100, -101, -102, -103 and -104 were consolidated under the single lead case of 2:16-cv-95. (*See* Dkt. No. 9 in 2:16-cv-95).

The consolidation orders in cases 2:16-cv-104, -1700, -1702, -1703 were posted **May 4, 2016**. (*See, e.g.*, Dkt. No. 46 of 2:16-cv-1700). No consolidation orders were posted in the cases of 2:16-cv-1704 and -1705 because those cases were closed on January 26, 2016, as noted above.

(3) Third, on **June 14, 2016**, GEMSA filed twenty (20) more patent lawsuits:

(i) *GEMSA v. Ericsson, Inc.*, 2:16-cv-618

(ii) *GEMSA v. Johnson & Johnson USA, Inc.*, 2:16-cv-619

(iii) *GEMSA v. Philips, Inc.*, 2:16-cv-620

(iv) *GEMSA v. SAP America, Inc.*, 2:16-cv-621

(v) *GEMSA v. Siemens Corporation*, 2:16-cv-622

(vi) *GEMSA v. The Nasdaq OMX Group, Inc. et al*, 2:16-cv-623

(vii) *GEMSA v. Ticketleap.com, LLC et al*, 2:16-cv-624

(viii) *GEMSA v. Live Nation Entm't, Inc. (d/b/a Ticketmaster, Inc.)*, 2:16-cv-625

(xi) *GEMSA v. Ubisoft Studio, Inc. (d/b/a Ubisoft)*, 2:16-cv-626

(x) *GEMSA v. General Electric Company*, 2:16-cv-627

(xi) *GEMSA v. McGraw Hill Fin., Inc. (d/b/a S&P Global and S&P Capital IQ)*, 2:16-cv-628

(xii) *GEMSA v. Zynga, Inc.*, 2:16-cv-629

(xiii) *GEMSA v. Alcatel-Lucent, Inc.*, 2:16-cv-630

(xiv) *GEMSA v. Uber Technologies, Inc.*, 2:16-cv-631

(xv) *GEMSA v. Artek Surfin Chemicals, Ltd. (d/b/a Galata Chemicals, LLC)*, 2:16-cv-632

(xvi) *GEMSA v. Netflix, Inc.*, 2:16-cv-633

(xvii) *GEMSA v. AdRoll, Inc.*, 2:16-cv-634

(xviii) *GEMSA v. Spotify USA, Inc.*, 2:16-cv-635

(xix) *GEMSA v. Hitachi America, Ltd.*, 2:16-cv-636

(xx) *GEMSA v. Zillow, Inc.*, 2:16-cv-637

(4) Fourth, on **July 27, 2016**, GEMSA filed *GEMSA v. Amazon.com, Inc. et al,* 2:16-cv-823. It is to be noted that GEMSA named in their complaint, and filed suit against, three parties: (i) Amazon.com, Inc., (ii) Amazon Web Services, Inc., and (iii) Vadata, Inc. On **July 28, 2016,** GEMSA filed a Notice of Voluntary Dismissal (Dkt. No. 4 in 2:16-cv-823) voluntarily dismissing, without prejudice, Amazon Web Services, Inc. and Vadata, Inc., still leaving Amazon.com Inc. in the case of 2:16-cv-823. GEMSA's voluntary dismissal as to Amazon Web Services, Inc. and Vadata, Inc. was granted on August 1, 2016 (Dkt. No. 5 in 2:16-cv-823) by the Court.

(5) Fifth, on **October 4, 2016** GEMSA filed the case of *GEMSA v. Alibaba Group Holding, Ltd. et al,* 2:16-cv-1074.

On **October 6, 2016**, eleven (11) of the above lawsuits, specifically the cases of 2:16-cv-618, -619, -620, -621, -622, -623, -624, -625, -626, -627, -628, -629, -630, -631, -632, -633, -634, -635, -636, -637, and -823 became consolidated under the lead case of 2:16-cv-618. (*See* Dkt. No. 24 of 2:16-cv-618). On **December 21, 2016**, the case of 2:16-cv-1074 became consolidated under lead case 2:16-cv-618. (Dkt. No. 16 in 2:16-cv-1074).

B. Amazon's Involvement

In all of these 34 currently pending lawsuits except for three,[1] GEMSA alleges that various Defendants who Amazon asserts are customers of theirs which use their technology, e.g. Amazon Web Services (AWS), infringe the claims of two asserted patents that GEMSA owns: U.S. patent No. 6,690,400 ("the '400 patent") and U.S. Patent No. 7,356,677 ("the '677 patent"). *Id.*

On **July 22, 2016** (before the filing of *GEMSA v. Amazon.com, Inc. et al,* 2:16-cv-823 on **July 27, 2016** as noted above in Part(I)(A)(4)), Amazon filed a declaratory judgment action in the U.S. District Court for the Eastern District of Virginia against GEMSA seeking a declaration of

[1] The cases that do not accuse Amazon technology: (i) *GEMSA v. Alibaba.com Inc., et al,* 2:15-cv-1702, (ii) *GEMSA v. eBay, Inc.,* 2:16-cv-98 & (iii) *GEMSA v. PriceLine Group, Inc., Booking.com,* 2:15-cv-1703. (Dkt. No. 13 at 8).

non-infringement and invalidity of the '400 and '677 patents. (Dkt. No. 10 at 1, 3 and 7; Dkt. No. 10-9, Ex. H: The Complaint of E.D. Va. Case No. 3:16-cv-619, Dkt. No. 1).

Because GEMSA is an Australian company with no U.S. presence (Dkt. No. 10 at 1), and has not designated a representative in the United States for service of process affecting its patent rights (*Id.* at 7), Amazon filed its declaratory judgment suit in the Eastern District of Virginia under 35 U.S.C. § 293, which provides, in pertinent part:

> "Every patentee ***not residing in the United States*** may file in the Patent and Trademark Office a written designation stating the name and address of a person residing within the United States on whom may be served process or notice of proceedings affecting the patent or rights thereunder. If the person designated cannot be found at the address given in the last designation, or if *no person has been designated,* the ***United States District Court for the Eastern District of Virginia shall have jurisdiction*** and summons shall be served by publication or otherwise as the court directs."

35 U.S.C. § 293 (Emphasis added). *Id.* at 1, 7. Amazon also contends that "Amazon maintains offices and data centers that provide and support the accused technology" in the Eastern District of Virginia. *Id.* at 1.

On **July 27, 2016** (Part I(A)(4) above), GEMSA filed a lawsuit in this district against Amazon.com, Inc., AWS, Inc. and VADATA, Inc. alleging infringement of the '400 and '677 patents (*GEMSA v. Amazon.com, Inc. et al*, 2:16-cv-823). *Id.* at 8. Also on July 27, 2016, GEMSA amended its complaints in 20 of its previously filed customer cases (*See e.g.*, 2:16-cv-618, Dkt. No. 8) in order to add AWS, Inc. and VADATA, Inc. as defendants in each of those 20 cases.[2]

[2] Amazon contends that GEMSA's July 28, 2016 voluntary dismissal of AWS and VADATA in Dkt. No. 4 (granted in Dkt. No. 5) of 2:16-cv-823, but still keeping Amazon.com still in the case (See PartI(A)(4)) was likely an effort to "circumvent the first-to-file rule, as AWS and VADATA (not their parent company, Amazon.com, Inc.) are the plaintiffs in the first-filed declaratory judgment action pending in Virginia. But Amazon's first-filed declaratory judgment action takes precedence over GEMSA's second-filed action regardless of whether the parties to the two cases are the same, as the two cases involve the same core issues – purported infringement by Amazon's technology and invalidity of the GEMSA Patents…GEMSA's procedural stunt has no effect on the first-to-file analysis.")

In its pending 31 lawsuits alleging infringement by Amazon's customer Defendants, GEMSA alleges that each customer Defendant through its website "or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS')." *Id.* at 3.

1. GEMSA's Infringement Contentions

According to GEMSA, the Amazon customer Defendants infringe because their websites "access[ed] websites, data, data centers and the like owned or controlled by Amazon." *Id.* at 4. The complaints in these Amazon customer suits also allege that each Amazon customer Defendant infringes the asserted '400 and '677 GEMSA patents by using a "GUI for the administration and management" of its website, and the "GUI" of these accused customer Defendant websites "interacts with AWS." *Id.* Amazon further contends that GEMSA's claim charts identify only functionality of Amazon's AWS, not individual features or technology provided by each of the customer Defendants, in their infringement contentions. *Id.*

a. GEMSA's Claim Chart for the '400 patent

An introductory segment in GEMSA's infringement contentions claim chart for the '400 patent states that the GUI of the accused customer Defendant websites "connects to a virtualized operating systems [sic] and databases run hosted [sic] by Amazon as…shown in the following charts." *Id.* The claim chart then includes mapping of every limitation of the asserted claims to a screen shot from the AWS website, e.g. (1) GEMSA accuses "Amazon's main menu bar" in an AWS screenshot as infringing the limitation of a "main menu bar" recited by claim 1 of the '400 patent (*Id.* at 4-5); (2) GEMSA alleges that "Amazon's cabinet selection button bar" in an AWS screenshot infringes the limitation of "a cabinet selection button bar" as recited by claim 1 of the '400 patent (*Id.* at 5); and (3) GEMSA alleges that a screenshot from the AWS website infringes

each remaining limitation of claim 1 of the '400 patent, e.g., the limitation "a cabinet visible partition window" as recited by claim 1 of the '400 patent (*Id.* at 6).

b. GEMSA's Claim Chart for the '677 patent

GEMSA's infringement contention claim chart for the '677 patent similarly maps claim limitations from the '677 patent to screenshots of the AWS website. For example, (1) GEMSA maps the limitation "means for selecting one of said virtual computer systems to become next operable before suspending a currently operational virtual computer system" to an AWS screenshot (*Id.*), and (2) GEMSA also states that each accused Defendant customer website "satisfies the recitation via: [Each Defendant's] Client APP in AWS (Me SOS) / Framework/AMI [Amazon Machine Image] then XEN handles ACPI [Advanced Configuration and Power Interface] calls from AMIs and HW level," which Amazon contends is "squarely directed" to their technology because the AMI or "Amazon Machine Image" is used to create an instance of a virtual machine on Amazon's "Elastic Compute Cloud" (EC2) web service, and "XEN" refers to the primary virtual machine hypervisor used by Amazon's EC2. *Id.* at 6-7. Therefore, Amazon contends that "GEMSA's complaints and its infringement contentions make clear that Amazon's technology – not the technology provided by, or specific to, any of the disparate Amazon customers it has sued – is the sole basis of GEMSA's infringement case" and that each of "these customers [ranging from Ticketleap.com, LLC, to Uber Technologies, Inc., to Ubisoft Studio Inc., to Netflix, Inc., Zillow, Inc., and Spotify USA Inc.] provide a wide variety of products and services, including music and video streaming, video gaming, travel services, financial services, and consumer health products, among others – none of which is accused of infringing the GEMSA Patents." *Id.* at 7.

II. SUMMARY OF ARGUMENTS

The contentions from the parties involving Amazon's Eastern District of Virginia ("EDVa") declaratory judgment ("DJ") action and GEMSA's Eastern District of Texas ("EDTx") patent suits will be addressed first before the Court performs its analysis of the case at hand.

A. Amazon's Initial Contentions

Amazon first argues that because their **July 22, 2016** EDVa DJ action was filed before GEMSA's **July 27, 2016** amendment adding AWS, Inc. and VADATA, Inc. (now under lead case 2:16-cv-618) and also GEMSA's **July 27, 2016** filing of new EDTx case 2:16-cv-823, Amazon's EDVa DJ action is effectively "filed first" under the first-to-file rule. (Dkt. No. 10 at 9-12).

Amazon then asserts that GEMSA's **July 27, 2016** complaint amendment to add AWS, Inc. and VADATA, Inc. are not considered first-filed because they do not "relate back" to the original complaints, which requires a "mistake concerning the proper party's identity" under Fed. R. Civ. P. 15(c)(1)(C)(ii) – something Amazon states GEMSA cannot possibly show here because their infringement contentions specifically accused Amazon's technology, therefore they made a "deliberate strategic choice" not to name Amazon as a Defendant in their originally filed complaints against Amazon's customer Defendants. (Dkt. No. 10 at 12-13).

Amazon further contends that the core issues in both the EDVa DJ action and the EDTx patent suits not only "substantially" overlap – they "completely" overlap (Dkt. No. 10 at 14), an assertion that GEMSA does not dispute (Dkt. No. 13 at 5; Dkt. No. 19 at 2).

Amazon additionally argues that because (1) Amazon is the real party-in-interest with respect to GEMSA's infringement allegations, (2) Amazon's filing of its EDVa DJ action was not anticipatory, (3) venue and jurisdiction are proper in the EDVa, and (4) there is no efficiency to be gained from consolidation with any other case in the EDTx, there is no reason for the Court to deviate from the first-to-file rule. (Dkt. No. 10 at 14-17).

Amazon finally asserts that Federal Circuit law – specifically *In re Google*, 588 F. App'x 988, 989 (Fed. Cir. 2014) and *In re Nintendo*, 756 F.3d 1363,1365 (Fed. Cir. 2014) as well as various district court cases listed at (Dkt. No. 10 at 20-21) – mandates that customer suits must be stayed in favor of suits against the real source of the accused technology. *Id.* at 17-20.

B. GEMSA's Response

In response, GEMSA argues that because their 20 earlier-filed **June 14, 2016** EDTx lawsuits (Part(I)(A)(3)) preceded the **July 22, 2016** filing of Amazon's EDVa DJ action, the first-to-file rule favors their suits. (Dkt. No. 13 at 2-3, 5). GEMSA also argues that the first-filed rule does not require identity of parties; therefore, the fact that AWS, Inc. and VADATA, Inc. were not present in GEMSA's originally filed complaint does not change the first-filed analysis. *Id.* at 3.

GEMSA then asserts that Amazon has failed to establish that the customer suit exception properly applies here because their Defendant customers are not "mere resellers" as they allege is required by the customer suit exception. *Id.* at 5-7.

GEMSA further contends that the customer suit exception's guiding principles of efficiency and judicial economy comprising three factors[3] do not merit a transfer. *Id.* at 7-8.

GEMSA additionally argues that Amazon has not proven that a substantial controversy exists for their EDVa DJ action (*Id.* at 8-9), that Amazon has failed to prove that its customers agreed to be bound by infringement and validity decisions in the EDVa DJ action (*Id.* at 9-10), and that the equities of the customer suit doctrine do not support transfer to EDVa (*Id.* at 10-11).

[3] "[T]he following three factors are probative of whether or not it would be more efficient to proceed with the second-filed action before the first-filed action: (1) whether the consumers in the first-filed action are mere resellers of products manufactured by the party in the second-filed action; (2) whether the consumers in the first-filed action have agreed to be bound by any decision in the second-filed action, and; (3) whether the manufacturers in the second-filed action are the only source of the allegedly infringing activity or product." *Vantage Point Tech., Inc. v. Amazon.com, Inc.*, No. 2:13-cv-909-JRG, 2015 U.S. Dist. LEXIS 675, at *7. These factors are encompassed in the Court's overall first-to-file analysis. However, the Court weighs overall judicial efficiency more than these 3 "mere reseller" factors.

GEMSA next asserts that Amazon has not proven that the convenience factors under 28 U.S.C. § 1404(a) show EDVa is "clearly more convenient" than EDTx, namely that the relative ease of access to sources of proof actually weighs against transfer (e.g. Ericsson "regularly conducts business" in the EDTx, prior-art witnesses are located in Texas, and key patent prosecution documents are located in the Houston area) (*Id.* at 11-15). Also, GEMSA contends that many Texas witnesses GEMSA identified are subject to compulsory process in the EDTx but not EDVa (*Id.* at 15), the cost of attendance for willing witnesses weighs against transfer (*Id.* at 16), the motions to transfer venue to EDVa involve only some of the related actions, thus transferring would result in conflicting rulings (*Id.* at 16-17), Amazon has not shown that EDTx would be necessarily slower or that EDVa would be faster (Dkt. No. 17-18), the EDTx has a particular local interest in the outcome of the case (*Id.* at 18), the EDTx's familiarity with the governing law (patent law and also issues of Texas state law involving patents) weighs against transfer to EDVa (*Id.* at 18-19) and transfer could raise potential conflict of law issues (*Id.* at 20).

C. Amazon's Reply

In reply, Amazon first argues that the case here is nearly indistinguishable from the facts of *In re Google*, 588 F. App'x at 990, which GEMSA ignores in their response. (Dkt. No. 17 at 1). Amazon then asserts that its EDVa DJ action is still first-filed under the first-to-file rule because the Federal Circuit (in e.g., *In re Google*, 588 F. App'x at 989) has held that first-filed customer suits (such as the EDTx Defendant customer suits filed by GEMSA) are not entitled to deference under the first-to-file rule. (Dkt. No. 17 at 1-2). Amazon next contends that GEMSA's reliance on the 60 year-old *Kerotest* case, 342 U.S. at 180, is misplaced because it involved only one customer case, where GEMSA has sued more than 30 customer defendants here. *Id.* at 2-3.

Amazon additionally argues that the EDVa is the proper venue for this lawsuit not only because of 35 U.S.C. § 293, which states that non-resident patentees such as GEMSA must be sued

in the EDVa, but also due to the convenience factors under 28 U.S.C. § 1404(a). *Id.* at 4. Namely, in terms of the 1404(a) convenience factors, none of the relevant parties have any connection to the EDTx and even Ericsson's presence in the EDTx is not relevant because under the *Google* case, only the location of evidence and witnesses pertaining to the true target of the infringement allegations (here, Amazon) matter. *Id.* at 4-5. Furthermore, GEMSA is an Australian company with no employees, operation or presence in Texas, and Amazon has strong connections to Virginia because it maintains offices and data centers there that provide and support the accused technology, and Amazon's offices and data centers in Virginia employ a large number of people, including employee witnesses who may have knowledge relevant to the issues in this case. *Id.* at 5. As a result, because the majority of relevant evidence in patent infringement cases usually comes from the accused infringer, the ease of accessing Amazon's sources of proof weighs in favor of transfer to EDVa. *Id.* Finally, Amazon states that several potentially important prior art witnesses are located on the east coast – including named inventors of prior art references cited on the face of the '677 and '400 patents and assignees of the patents, such as Lucent or IBM, are all located in New York, New Jersey and Illinois – making the EDVa more convenient overall. *Id.* at 5-6.

Amazon further asserts that this case falls squarely within the customer suit exception to the first-to-file rule because the Federal Circuit in the *Google* case rejected the "mere reseller" argument. *Id.* at 6. Amazon also argues that courts routinely stay cases brought against users of software pending resolution of claims between the patentee and the producer of the software, even where the end users are not "resellers" or have to take some action as part of the alleged infringement. *Id.* at 7. In addition, Amazon contends that the very point of their EDVa DJ action is to avoid duplicative action and GEMSA's argument that "litigating more than 30 cases in this district could somehow be more efficient than litigating a single case in Virginia" makes no sense.

Id. at 8. Amazon further notes that it has over a million customers of its web services, of which GEMSA has chosen to sue just a few dozen; therefore, resolution of a single EDVa DJ action will moot litigation not only for the over 30 pending customer suits but also potentially hundreds if not thousands of future suits against Amazon customers. *Id.* at 9.

Amazon states that GEMSA identified only three of its more than 30 customer cases that involve anything other than Amazon technology (e.g. the actions against Alibaba, 2:15-cv-1702; E-Bay, 2:16-cv-98; and Booking.com, 2:15-cv-1703) – which Amazon argues is not a reason to have over 30 trials in the EDTx, particularly when Amazon's single EDVa DJ action will resolve all the issues in all the pending customer cases. *Id.* Amazon also points out that GEMSA's assertion that Amazon should have intervened in over 30 different lawsuits than filing a single DJ action is the "antithesis of efficiency" and staying the claims against Amazon's numerous customer defendants while EDVa resolves a single DJ action is the most efficient approach. *Id.* at 9-10.

Finally, Amazon asserts that "[i]f Amazon wins a judgment of non-infringement in the Virginia [DJ] action, GEMSA cannot prove infringement by Amazon customers. And if Amazon succeeds on its invalidity claims, GEMSA will have no patents to assert in the customer cases. If, on the other hand, GEMSA prevails on its anticipated infringement counterclaims, it will win a damages award from Amazon and would be unable to recover in any subsequent action against Amazon's customers based solely on their use of Amazon's technology—which is what GEMSA alleges in this district…Thus, whether Amazon's customers agree to be bound or not, GEMSA's customer claims will be resolved once Amazon's [EDVa DJ] action is resolved. GEMSA's customer claims should be stayed."

D. GEMSA's Sur-Reply

In sur-reply, GEMSA mainly repeats the same arguments it made before in its response, however more briefly. Specifically, GEMSA asserts that their EDTx suits conform to the first-

filed rule (*Id.* at 1-2), the customer suit exception does not apply to Amazon here, at least because the customer Defendants are not "merely resellers" and the principles of efficiency and economy would not be served by transfer (*Id.* at 2-3), that Amazon has not proven a proper DJ action in failing to prove that a substantial controversy exists for a DJ action,[4] plus failing to prove that its customers have agreed to be bound by infringement and validity decisions in the DJ action, and the equities and the 1404(a) convenience factors do not warrant transfer to EDVa (*Id.* at 3-5).

III. APPLICABLE LAW

"The Supreme Court has repeatedly observed that under the doctrine of comity, when cases involving substantially overlapping issues are pending before two federal district courts, there is a strong preference to avoid duplicative litigation," a practice that "reflects an elementary principle of 'wise judicial administration.'" *In re Google Inc.*, 588 F. App'x 988, 990 (Fed. Cir. 2014), *citing Colo. River Water Conservation Dist. v. United States,* 424 U.S. 800, 817 (1976); *Kerotest Mfg. Co. v. C–O–Two Fire Equip. Co.*, 342 U.S. 180 (1952).

A. First-to-File Rule

In maintaining the conservation of judicial resources, both the Federal Circuit and the Fifth Circuit have utilized the "first-to-file rule" which "stands for the common sense proposition that, when two cases are the same or very similar, efficiency concerns dictate that only one court decide both cases" and where "the overlap is complete or nearly complete, the usual rule is for the court of first jurisdiction to resolve the issues." *In re Telebrands Corporation,* 824 F.3d 982, 984 (Fed. Cir. 2016); *See Save Power Ltd. v. Syntek Fin. Corp.*, 121 F.3d 947, 950 (5th Cir. 1997); *West Gulf Mar. Ass'n v. ILA Deep Sea Local 24*, 751 F.2d 721, 730 (5th Cir. 1985). Therefore, as a doctrine

[4] The Court leaves it to the EDVa to decide whether or not the DJ action filed in EDVa Case No. 3:16-cv-619 was a proper one, and for purposes of this Order is only deciding the merits of Amazon's Motion to Stay (Dkt. No. 10) and Ericsson's Motion to Stay (Dkt. No. 16).

intended to avoid conflicting decisions and promote judicial efficiency, the first-to-file rule "generally favors pursuing only the first-filed action when multiple lawsuits involving the same claims are filed in different jurisdictions." *Merial Ltd. v. Cipla Ltd.*, 681 F.3d 1283, 1299 (Fed. Cir. 2012). The first-to-file rule should also not be applied rigidly. *See Kerotest*, 342 U.S. at 183 ("Wise judicial administration, giving regard to conservation of judicial resources and comprehensive disposition of litigation, does not counsel rigid mechanical solution of such problems."); *Elecs. for Imaging, Inc. v. Coyle*, 394 F.3d 1341, 1347 (Fed. Cir. 2005) (exceptions to the first-to-file rule may be made if justified by "considerations of judicial and litigant economy, and the just and effective disposition of disputes.") (internal quotations omitted).

"Under the first-to-file rule, a district court may choose to stay, transfer, or dismiss a duplicative later-filed action, although there are exceptions and the rule is not rigidly or mechanically applied – 'an ample degree of discretion, appropriate for disciplined and experienced judges, must be left to the lower courts.'" *Merial Ltd. v. Cipla Ltd.*, 681 F.3d 1283, 1299 (Fed. Cir. 2012), *citing Kerotest*, 342 U.S. at 183–84; *See Futurewei Technologies, Inc. v. Acacia Research Corp.*, 737 F.3d 704, 708 (Fed. Cir. 2013) ("Application of the first-to-file rule is 'generally a matter for a district court's discretion, exercised within governing legal constraints.'); *Martin v. Franklin Capital Corp.*, 546 U.S. 132, 139 (2005).

B. Customer Suit Exception

A customer suit exception exists to the first-to-file rule which provides that "litigation against or brought by the manufacturer of infringing goods takes precedence over a suit by the patent owner against customers of the manufacturer." *In re Dell Inc.*, 600 F. App'x 728, 730 (Fed. Cir. 2015), *citing Katz v. Lear Siegler, Inc.*, 909 F.2d 1459, 1464 (Fed. Cir. 1990). The customer suit exception is also "based on the manufacturer's presumed greater interest in defending its actions against charges of patent infringement; and to guard against possibility of abuse." *Spread*

Spectrum Screenings LLC v. Eastman Kodak Co., 657 F.3d 1349, 1357 (Fed. Cir. 2011), *citing Kahn v. Gen. Motors Corp.*, 889 F.2d 1078, 1081 (Fed. Cir. 1989)); *see also Katz*, 909 F.2d at 1464 (stating that "the manufacturer is the true defendant in the customer suit" and that it "must protect its customers, either as a matter of contract, or good business, in order to avoid the damaging impact of an adverse ruling against its products") (citation omitted). The "guiding principles in the customer suit exception cases are efficiency and judicial economy." *Spectrum Screenings*, 657 F.3d at 1357, *citing Tegic Commc'ns Corp. v. Bd. of Regents of Univ. of Tex. Sys.*, 458 F.3d 1335, 1343 (Fed. Cir. 2006). "Generally speaking, courts apply the customer suit exception to stay earlier-filed litigation against a customer while a later-filed case involving the manufacturer proceeds in another forum." *Spectrum Screenings*, 657 F.3d at 1357.

IV. ANALYSIS

Applying the first-to-file rule, the Court finds that Amazon's EDVa DJ action (E.D. Va Case No. 3:16-cv-619) was first filed. Thus, Amazon's EDVa DJ action shall proceed first while 21 GEMSA EDTx suits shall be STAYED, pending resolution of Amazon's EDVa DJ action.

A. The First-to-File Rule

Considering the balancing of equities and the degree of discretion afforded district courts in applying the first-to-file rule, the Court finds that Amazon has sufficiently proven that its EDVa DJ action was "first filed" on **July 22, 2016**, before GEMSA filed case 2:16-cv-823 against Amazon.com, Inc., AWS, Inc. and VADATA, Inc. (later dismissing AWS, Inc. and VADATA, Inc.) and amended its original **June 14, 2016** filed complaints on **July 27, 2016** to add AWS, Inc. and VADATA, Inc. Although GEMSA argues that the first-to-file rule does not require identity of parties, the Court finds that GEMSA's amended complaints are not first-filed because they do not "relate back" to the originally filed **June 14, 2016** complaints, as Rule 15 of the Federal Rules of Civil Procedure provides that an amendment to change the defendants only "relates back" to the

originally filed complaint when the parties to be brought in by the amendment (AWS, Inc. and VADATA, Inc.) "knew or should have known that the action would have been brought against it, but for a mistake concerning the proper party's identity." Fed. R. Civ. P. 15(c)(1)(C)(ii). Due to GEMSA's originally filed complaint specifically accusing Amazon technology specifically belonging to AWS, Inc. and VADATA, Inc. (AWS screenshots, references to AMS, AMI, XEN, *see* Part I(B)(1)(b)), it is probable that GEMSA was not mistaken as to the identity of AWS, Inc., VADATA, Inc. or Amazon and their technology in amending its complaints.

1. Equitable Concerns Considered by the Federal Circuit

Furthermore, even though GEMSA's **June 14, 2016** EDTx patent lawsuits (*e.g.* 2:16-cv-618) were technically filed before Amazon's **July 27, 2016** EDVa DJ action, the Federal circuit has implied in the *Google* case – which bears similar facts to the case here – that first-filed customer suits are not to be given deference under the first-to-file rule, especially in light of more important equitable concerns. *See Google*, 588 F. App'x at 990, n. 2 ("[W]e [the Federal Circuit] are also unpersuaded by Respondents' argument that, despite not initially naming Google as a defendant, their actions are entitled to precedence under a first-filed designation since their complaints in Texas [patent infringement suits] were filed before the California action [a DJ action], because as the Supreme Court noted in rejecting a similar argument in *Kerotest Manufacturing*, "the equities of the situation do not depend on this argument.")(citation omitted).

2. *Kerotest*

GEMSA's reliance and citation of *Kerotest* is also not relevant, persuasive or on point here, and is distinguishable from the facts of the present case.[5] The main distinction between *Kerotest*

[5] In Kerotest, a patentee known as C-O-Two ("C") sued Acme Equipment Company ("A"), a single customer of Kerotest ("K"), in the Northern District of Illinois ("NDIll") for patent infringement. 342 U.S. at 181. Then, K filed a DJ action of non-infringement and invalidity of the asserted patents in the District of Delaware ("DDel"). *Id.* Afterwards, C then amended its complaint to add K to its lawsuit in the NDIll. *Id.* at 182. C filed a motion to stay the

and the case here is that the patentee in *Kerotest* sued only one customer defendant, making it simple, and not a major expenditure of judicial resources, to try the Chicago patent suit before the Delaware DJ action because it was only *one* customer defendant and only *one* other action. Here, there are more than 30 pending infringement patent cases in the EDTx to resolve versus a single DJ action in EDVa. Therefore, the issue of judicial efficiency immediately becomes apparent, especially when the Court is faced with the choice of handling either 30 or more patent suits or one DJ action, and is further told that there is a high possibility that those 30 or more patent suits can be resolved by the resolution of that one other DJ action. This was also the same reasoning espoused by the Federal Circuit in the *Google* case: that proceeding with a single DJ action was more efficient than trying five separate customer patent cases, especially if there was a chance that the one DJ action could resolve all five separate trials in one fell swoop. 558 F'Appx at 990.

B. 35 U.S.C. § 293 & The 1404(a) Convenience Factors

Regardless of the first-to-file analysis, venue is also proper in EDVa for two main reasons.

First, 35 U.S.C. § 293 states that "the United States District Court for the Eastern District of Virginia *shall have jurisdiction*" over non-resident patentees, and the parties do not dispute that GEMSA is an Australian company with a principal place of business located at 458 Morphett Road, Warradale, South Australia (Dkt. No. 8 at 1, ¶ 1), with no designated service representative in the U.S., and no employees or operations in Texas. (Dkt. No. 10 at 7; Dkt. No. 17 at 5).

Second, a court may consider venue considerations and depart from the usual first-to-file analysis in determining which case to first try when "judicial and litigant economy, and the just and effective disposition of disputes, require otherwise." *Genentech, Inc. v. Eli Lilly & Co.*, 998

infringement action in NDIll until resolution of the DDel DJ action, but DDel denied C's motion to stay and entered an injunction enjoining C from pursuing its lawsuit in the NDIll. *Id.* The Third Circuit reversed DDel's denial of C's motion to stay, noting that the single customer of A could not be added as a party to K's DJ action, whereas all parties could resolve their claims once and for all in the NDIll. *Id.*

F.2d 931, 937 (Fed.Cir.1993). Specifically, a court can look to the "the convenience and availability of witnesses, [the] absence of jurisdiction over all necessary or desirable parties ... the possibility of consolidation with related litigation, or considerations relating to the real party in interest." *Futurewei,* 737 F.3d at 708, *citing Genentech, Inc. v. Eli Lilly & Co.,* 998 F. 2d at 938.

In other words, a court can consider the convenience factors under 28 U.S.C. § 1404(a) in determining which case to try first. Both Amazon and GEMSA do not appear to have any connections or ties to the EDTx. Even though GEMSA argues that Ericsson has a "presence" in the EDTx, the Federal Circuit has rejected contacts of a customer Defendant being adequate to establish venue over a key Defendant (such as Amazon) who provides technology to various Defendant customers. *Google,* 588 F. App'x at 990. Instead, more focus is given to the location of evidence and witnesses relevant to this key technology Defendant, here Amazon (and in the *Google* case was Google, who provided the Android source code for many customer defendants and who also designed, created and tested products in the Northern District of California, a clearly more convenient forum). *Id.* Furthermore, § 1404(a) serves to "prevent the waste 'of time, energy and money' and 'to protect litigants, witnesses and the public against unnecessary inconvenience and expense.'" *Nintendo,* 756 F.3d at 1365-66, *citing* Katz, 909 F.2d at 1464.

Just as the Northern District of California was more convenient for Google because it was the location of witnesses and evidence relevant to the Android source code, the EDVa is where Amazon maintains offices, employees, and data centers that provide, support and create the accused technology. Potential employee witnesses who have relevant knowledge regarding the accused technology are also based in the EDVa. Therefore, the ease of access to evidence and witnesses from the primary accused infringer (here, Amazon) appear to weigh in favor of EDVa being the proper venue. Amazon has also shown that several potentially critical prior art witnesses

are located on the east coast, including inventors of patents cited on the faces of the '677 and '400 patents living in New York, New Jersey and Illinois, and assignees of the asserted patents such as Lucent and IBM also being based in New Jersey and New York.

C. The Customer Suit Exception

As an analysis performed independently from the first-to-file rule, and irrespective of which suit was technically "filed first," the Court finds that under the customer suit exception, GEMSA's EDTX patent suits should be stayed while Amazon's EDVA DJ action should proceed.

Because the Federal Circuit has stated that the guiding principles in applying the customer suit exception are efficiency and judicial economy, there is overwhelming justification in staying the over 30 pending GEMSA EDTx patent suits in favor of allowing Amazon's EDVa DJ action to go forward, especially if there is a possibility or likelihood that all of GEMSA's pending patent cases can be resolved once Amazon's EDVa DJ action is resolved.

Furthermore, the Court finds unpersuasive GEMSA's argument that the customer suit exception does not apply because the Amazon customer Defendants are not "mere resellers" of Amazon technology. As the Federal Circuit ruled in the *Google* case (in response to a nearly identical argument raised by patentee Rockstar stating that Google's customer defendant Samsung was not a reseller of Google technology because Samsung manufactured the accused mobile device hardware while Google did not), a "flexible approach" should be applied, regardless of whether a customer Defendant is really a reseller of another Defendant's technology, which includes "staying proceedings if the other suit is so closely related that substantial savings of litigation resources can be expected." 588 Fed. App'x at 991. Therefore, in *Google*, the Federal Circuit reasoned that "staying proceedings in Texas [would] likely further these objectives [e.g., saving litigation resources, judicial efficiency] by mooting or at least advancing the 'major premises' being litigated in the Texas actions." *Id.*, *quoting Katz*, 909 F.2d at 1464; *see also Nintendo*, 746 F.3d at 1365-66

(where the Federal Circuit stayed the retailer defendant suits because "the issues of infringement and validity [were] common to Nintendo and the Retailer Defendants").

The "customer-suit" exception also exists to avoid, if possible, "imposing the burdens of trial on the customer, for it is the manufacturer who is generally the 'true defendant' in the dispute." *Id.* at 1365. Consequently, because the resolution of Amazon's EDVa DJ action will likely resolve the "major issues" in GEMSA's EDTx customer suits, and Amazon for all practical purposes can be considered the "true defendant" here, GEMSA's EDTx customer suits should be stayed as a matter of judicial efficiency and economy. After all, "the customer-suit exception...[is] designed to facilitate just, convenient, efficient, and less expensive determination." *Id. See* Fed.R.Civ.P. 1; *Van Dusen v. Barrack*, 376 U.S. 612, 616 (1964).

D. Motion to Stay

In considering a motion to stay, this Court considers: "(1) whether a stay will unduly prejudice or present a clear tactical disadvantage to the nonmoving party; (2) whether a stay will simplify the issues in question and trial of the case; and (3) whether discovery is complete and whether a trial date has been set." *Datatreasury Corp. v. Wells Fargo & Co.*, 490 F. Supp. 2d 749, 754 (E.D. Tex. 2006) (citation omitted).

First, a stay will not unduly prejudice or present a clear tactical disadvantage to GEMSA because "major issues" relevant to their EDTx suits will be heard, namely patent validity and infringement issues pertaining to the '400 and '677 patents. Furthermore, if GEMSA prevails in the EDVa DJ action, they will still be able to pursue the customer patent suits in the EDTx. Second, a stay would also vastly simplify the issues in question and trial of the case, and resolution of the single EDVa DJ action could singlehandedly resolve the 30 or more pending EDTx patent suits. Third, at least in the cases consolidated under 2:16-v-618, a trial date has not been set and a Docket Control Order ("DCO") has not even been posted – although GEMSA has filed a proposed DCO

(Dkt. No. 92) suggesting that the close of fact discovery be January 29, 2018, more than a year from now. Therefore, a motion to stay GEMSA's 22 EDTx patent suits consolidated under 2:16-cv-618 pending resolution of Amazon's EDVa DJ action is warranted and should be granted.

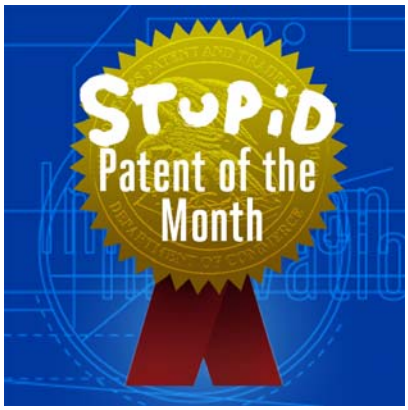
V. CONCLUSION

For the foregoing reasons, the Court hereby **GRANTS** Amazon's Motion (Dkt. No. 10) and Ericsson's Motion (Dkt. No. 16), as more specifically set out in the accompanying Order.

Exhibit 2

ELECTRONIC FRONTIER FOUNDATION
DEFENDING YOUR RIGHTS IN THE DIGITAL WORLD

Stupid Patent of the Month



Here at EFF, we see a lot of stupid patents. There was the patent on "scan to email." And the patent on "bilateral and multilateral decision making." There are so many stupid patents that Mark Cuban endowed a chair at EFF dedicated to eliminating them. We wish we could catalog them all, but with tens of thousands of low-quality software patents issuing every year, we don't have the time or resources to undertake that task.

But in an effort to highlight the problem of stupid patents, we're introducing a new blog series, Stupid Patent of the Month, featuring spectacularly dumb patents that have been recently issued or asserted. With this series, we hope to illustrate by example just how badly reform is needed—at the Patent Office, in court, and in Congress.

BLOG POSTS

MARCH 31, 2017
Stupid Patent of the Month: Storing Files in Folders

FEBRUARY 28, 2017
Stupid Patent of the Month: IBM Patents Out-of-Office Email

JANUARY 31, 2017
Stupid Patent of the Month: A Lyrics Website With User Interaction

DECEMBER 22, 2016
Stupid Patent of the Month: Carrying Trays on a Cart

NOVEMBER 30, 2016
Stupid Patent of the Month: Movies From the Cloud

OCTOBER 31, 2016

Stupid Patent of the Month: Changing the Channel

SEPTEMBER 30, 2016

Stupid Design Patent of the Month: Rectangles on a Screen

AUGUST 31, 2016

Stupid Patent of the Month: Elsevier Patents Online Peer Review

JULY 29, 2016

Stupid Patent of the Month: Solocron Education Trolls With Password Patent

JUNE 30, 2016

Stupid Patent of the Month: Storage Cabinets on a Computer

Exhibit 3

ELECTRONIC FRONTIER FOUNDATION
DEFENDING YOUR RIGHTS IN THE DIGITAL WORLD

Patent Trolls

The U.S. Patent System is supposed to represent a bargain between inventors and the public. In theory, it is simple: in exchange for dedicating a novel invention to society, along with a clear explanation of how to practice that invention, a patent applicant gets a 20-year monopoly.

But, lately, we've watched as the system appears to fall apart, harming innovation, the very thing it was designed to foster. Many factors contribute to the problems we've seen with the patent system, but perhaps none so much as the rise of the patent troll. To be sure, the patent troll problem is not a new one (remember the infamous RIM v NTP case?), but recently, we've followed a troubling new trend: more and more small developers and companies targeted by trolls.

What is a patent troll?

A patent troll uses patents as legal weapons, instead of actually creating any new products or coming up with new ideas. Instead, trolls are in the business of litigation (or even just threatening litigation). They often buy up patents cheaply from companies down on their luck who are looking to monetize what resources they have left, such as patents. Unfortunately, the Patent Office has a habit of issuing patents for ideas that are neither new nor revolutionary, and these patents can be very broad, covering everyday or commonsense types of computing – things that should never have been patented in the first place. Armed with these overbroad and vague patents, the troll will then send out threatening letters to those they argue infringe their patent(s). These letters threaten legal action unless the alleged infringer agrees to pay a licensing fee, which can often range to the tens of thousands or even hundreds of thousands of dollars.

Many who receive infringement letters will choose to pay the licensing fee, even if they believe the patent is bogus or their product did not infringe. That's because patent litigation is extremely expensive — often millions of dollars per suit — and can take years of court battles. It's faster and easier for companies to settle.

Lodsys

In particular, we've watched with dismay as Lodsys, a company that neither makes nor sells a product, targets small app developers, claiming the use of in-app purchasing technology (usually provided by Apple or Google) infringes Lodsys' patents.

It's impossible to know how many app developers Lodsys has actually threatened, but we do know that it has sued at least 11. Apple has moved to intervene in that suit, claiming that the license it took from the patents' former owner covers its app developer's uses of that technology, and Google has filed a Notice of Reexamination with the Patent Office challenging the validity of Lodsys' patents. But Apple's and Google's actions — while noteworthy — will take years to reach resolution. In the meantime, app developers are faced with an unenviable choice: either take a license from Lodsys or live with the fear that they could be the next party facing a lawsuit.

Resources

Trolling Effects (EFF's online database of patent demand letters)

EFF's Virtual Boot Camp (video)

FAQs for Lodsys Targets

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Stupid Patent of the Month: Changing the Channel

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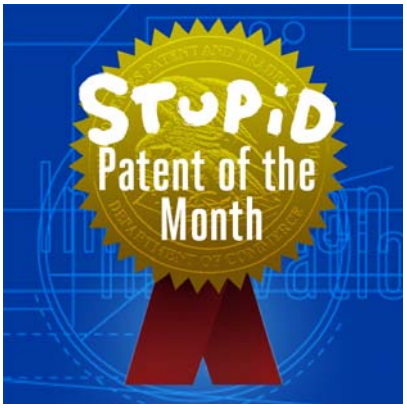
1 of 16 next ›

Exhibit 4

ELECTRONIC FRONTIER FOUNDATION
DEFENDING YOUR RIGHTS IN THE DIGITAL WORLD

FEBRUARY 28, 2017 | BY DANIEL NAZER

Stupid Patent of the Month: IBM Patents Out-of-Office Email



Update: March 1, 2017 *Today IBM told Ars Technica that it "has decided to dedicate the patent to the public" and it filed a formal disclaimer at the Patent Office making this dedication. While this is just one patent in IBM's massive portfolio, we are glad to learn that it has declared it will not enforce its patent on out-of-office email.*

On January 17, 2017, the United States Patent and Trademark Office granted IBM a patent on an out-of-office email system. Yes, really.

United States Patent No. 9,547,842 (the '842 Patent),"Out-of-office electronic mail messaging system," traces its history to an application filed back in 2010. That means it supposedly represents a new, non-obvious advance over technology from that time. But, as many office workers know, automated out-of-office messages were a "workplace staple" *decades* before IBM filed its application. The Patent Office is so out of touch that it conducted years of review of this application without ever discussing any real-world software.

The '842 Patent describes technology that would have been stupefyingly mundane to a 2010 reader. A user inputs "availability data" such as a "start date, an end date and at least one availability indicator message." The system then uses this data to send out-of-office messages. The only arguably new feature it claims is automatically notifying correspondents a few days *before* a vacation so that they can prepare in advance for a coworker's absence. From a technological perspective, this is a trivial change to existing systems. Indeed, it is like asking for a patent on the idea of sending a postcard, not from a vacation, but to let someone know you will go on a vacation.

It is worth considering the full prosecution history (PDF) of the '842 Patent to understand how the patent system reached such an absurd result. There were two big oversights. First, the examiner never considered whether this patent's software-related claims were eligible under the Supreme Court's decision in *Alice v. CLS Bank*. Second, the Patent Office did an abysmal job of reviewing prior art and considering obviousness.

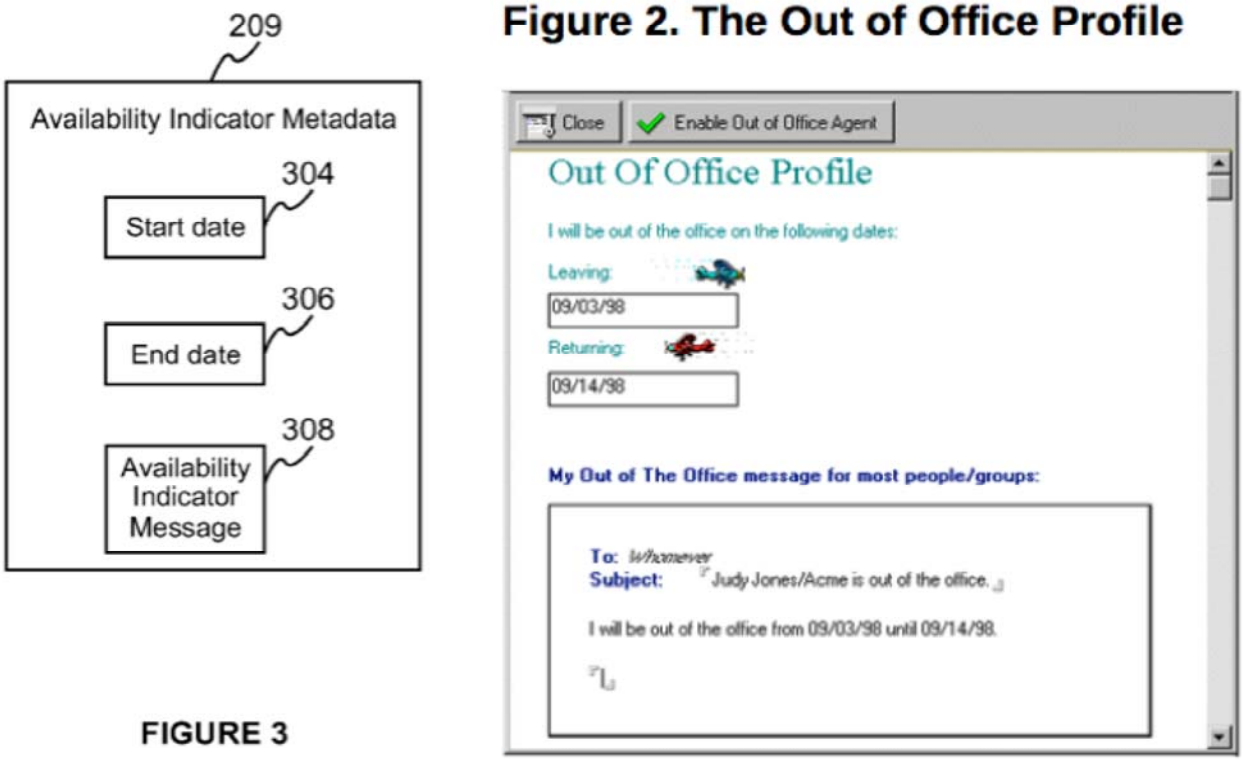
In *Alice*, the Supreme Court ruled that an abstract idea does not become eligible for a patent simply because it is implemented on a generic computer. That decision came down in June 2014, so the Patent Office had plenty of time to apply it to the application that led to this patent. If it had, it likely would have rejected the claims. The '842 Patent goes out of its way to make clear that its method can be implemented on a generic computer. The final three columns of the patent recite at length how its claims can be implemented in any programming language on essentially any kind of hardware.

At one point, the examiner did reject some of the application's claims under Section 101 of the Patent Act (which is the statute the *Alice* decision applies). But IBM overcame the rejection simply by arguing that the patent's method was implemented in computer hardware. In January 2013, IBM noted that "it was agreed [between IBM and the patent examiner] that the rejection ... under 35 U.S.C. § 101 could be overcome by reciting that a hardware storage device stores computer readable instructions or program code." Even if that was a reasonable response in 2013, it certainly was not after *Alice*. Yet the Patent Office never revisited the issue. We have submitted multiple rounds of comments (1, 2, 3, and 4) to the Patent Office urging it to be more diligent in applying *Alice*.

Even if the claims of the '842 Patent were non-abstract, they still should have been rejected as obvious. We've written before about how the Patent Office does a terrible job of finding and considering real-world evidence when reviewing patents. In fact, it seems to operate in an alternative universe where patents themselves provide the only evidence of the state of the art in software. The prosecution that led to the '842 Patent is a stark illustration of this.

You might think that a patent examiner faced with a patent application on an out-of-office email system might look at some real out-of-office email solutions. But the examiner considered *only* patents and patent applications. The Patent Office spent years going back-and-forth on whether IBM's claims where new compared to a particular 2006 patent application. But it never considered any of the many, many, existing real-world systems that pre-dated IBM's application.

https://www.eff.org/deeplinks/2017/02/stupid-patent-month-ibm-patents-out-office-email



A figure from IBM's patent (left) and from its 1998 publication about Notes (right)

To take just one example, the Patent Office never considered this detailed specification from 1998 (PDF) from IBM describing the out-of-office agent in Notes. Nor did it consider other well-known email features like scheduling and signatures. If the Patent Office had taken a peek at the real world, and applied a modicum of common-sense, it would have quickly rejected IBM's claims.

Some advocates for software patents have recently been pushing for legislative reform to undo *Alice*. Indeed, IBM is among those asking Congress to reopen the software patent floodgates. If they succeed, perhaps IBM can finally get a patent on shorter meetings (that application was rejected under Section 101). It's clear that software patents do not help people who actually write software. And while *Alice* has caused some frustration for those who churn out software patents, it has not harmed the software industry.

The patent system is still far from perfect. But the last thing we need is to go backwards and encourage the Patent Office to issue more nonsense like IBM's patent on out-of-office email.

Files

ibm_disclaimer_patent_no._9547842.pdf

Innovation Patents Stupid Patent of the Month

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Shadow Regulation
Social Networks
SOPA/PIPA: Internet Blacklist Legislation
Student Privacy
Stupid Patent of the Month
Surveillance and Human Rights
Surveillance Drones

https://www.eff.org/deeplinks/2017/02/stupid-patent-month-ibm-patents-out-office-email

Broadcasting Treaty
CALEA
Cell Tracking
Coders' Rights Project
Computer Fraud And Abuse Act Reform
Content Blocking
Copyright Trolls
Council of Europe
Cyber Security Legislation
CyberSLAPP
Defend Your Right to Repair!
Development Agenda
Digital Books
Digital Radio
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DMCA
DMCA Rulemaking
Do Not Track
Locational Privacy
Mandatory Data Retention
Mandatory National IDs and Biometric Databases
Mass Surveillance Technologies
Medical Privacy
Mobile devices
National Security and Medical Information
National Security Letters
Net Neutrality
No Downtime for Free Speech
NSA Spying
OECD
Offline : Imprisoned Bloggers and Technologists
Online Behavioral Tracking
Open Access
Open Wireless
Patent Busting Project
Terms Of (Ab)Use
Test Your ISP
The "Six Strikes" Copyright Surveillance Machine
The Global Network Initiative
The Law and Medical Privacy
TPP's Copyright Trap
Trans-Pacific Partnership Agreement
Travel Screening
TRIPS
Trusted Computing
Video Games
Wikileaks
WIPO
Transparency
Uncategorized

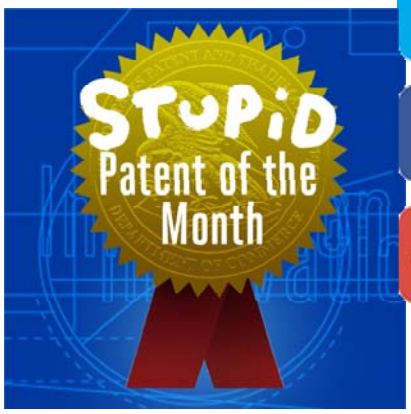
Exhibit 5

https://www.eff.org/deeplinks/2016/06/stupid-patent-month-storage-cabinets-computer

ELECTRONIC FRONTIER FOUNDATION
DEFENDING YOUR RIGHTS IN THE DIGITAL WORLD

JUNE 30, 2016 | BY DANIEL NAZER

Stupid Patent of the Month: Storage Cabinets on a Computer



How do you store your paper files? Perhaps you leave them scattered on your desk or piled on the floor. If you're more organized, you might keep them in a cabinet. This month's stupid patent, US Patent No. 6,690,400 (the '400 patent), claims the idea of using "virtual cabinets" to graphically represent data storage and organization. While this is bad, the worse news is that the patent's owner is suing just about anyone who runs a website.

The '400 patent is owned by Global Equity Management (SA) Pty. Ltd. ("GEMSA") which seems to be a classic patent troll. GEMSA is incorporated in Australia and appears to have no business other than patent litigation. The patent began its life with a company called Flash VOS. This company once offered a product that allowed users to run multiple operating systems on personal computers with x86-compatible processors. The '400 patent describes a graphical user interface for this system. The interface allows users to interact with "graphical depictions of cabinets" that represent memory partitions and different operating systems.

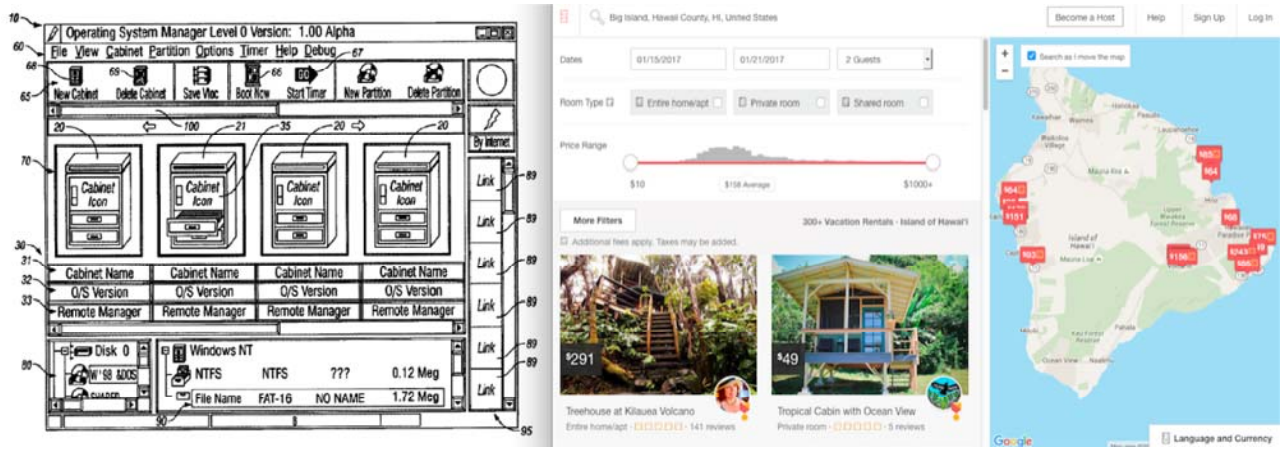
GEMSA says that Flash VOS moved the computer industry a "quantum leap forwarded in the late 90's when it invented Systems Virtualization." But Flash VOS didn't invent partitions, didn't invent virtual machines, and didn't invent running multiple operating systems on a single computer. All of these concepts predate its patent application, some by decades. In any event, the '400 patent claims only a very specific, and in our view, quite mundane user interface.

Importantly, the '400 patent's claims require very specific structures. For example, claim 1 requires "a secondary storage partitions window" and "at least one visible cabinet representing a discrete operating system." A user interface must have *all* of these features to infringe the claim.

https://www.eff.org/deeplinks/2016/06/stupid-patent-month-storage-cabinets-computer

In the past year, GEMSA has sued dozens of companies, ranging from Airbnb to Zillow. In each case, it makes the bare assertion that the defendant's website infringes the '400 patent. For example, it simply states that "AIRBNB maintains, controls and/or operates a website with a graphical user interface ("GUI") at www.airbnb.com that infringes one or more claims of the '400 patent."

GEMSA doesn't explain how Airbnb's website satisfies highly specific claim limitations like "a virtual cabinet representing a discrete operating system." In fact, the accused website bears almost no similarity to GEMSA's supposed invention:



As far as we can tell, GEMSA seems to think that anyone with a website that links to hosted content infringes its patent. Complaints with such sparse, and implausible, infringement allegations should be thrown out immediately for failure to state a claim.

There will be no prizes for guessing where GEMSA has filed its litigation. Every one of its cases was filed in the Eastern District of Texas, where we have long complained that local rules favor patent trolls like GEMSA. Venue reform legislation currently before Congress would stop trolls flocking to the Eastern District of Texas. That might help reduce abusive patent trolling. But we still need broader patent reform to ensure that such weak patents don't lead to abusive troll litigation.

Files

global_equity_management_v_airbnb_complaint.pdf
global_equity_management_v_zillow_complaint.pdf

Patents | Patent Trolls | Stupid Patent of the Month | Innovation

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Hollywood v. DVD
How Patents Hinder Innovation (Graphic)
ICANN
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Internet Governance Forum
Law Enforcement Access
Legislative Solutions for Patent Reform
Locational Privacy
Mandatory Data Retention
Patent Trolls
Patents
PATRIOT Act
Pen Trap
Policy Analysis
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Stupid Patent of the Month
Surveillance and Human Rights
Surveillance Drones
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Test Your ISP

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Coders' Rights Project
Computer Fraud And Abuse Act Reform
Content Blocking
Copyright Trolls
Council of Europe
Cyber Security Legislation
CyberSLAPP
Defend Your Right to Repair!
Development Agenda
Digital Books
Digital Radio
Digital Video
DMCA
DMCA Rulemaking
Do Not Track
Mandatory National IDs and Biometric Databases
Mass Surveillance Technologies
Medical Privacy
Mobile devices
National Security and Medical Information
National Security Letters
Net Neutrality
No Downtime for Free Speech
NSA Spying
OECD
Offline : Imprisoned Bloggers and Technologists
Online Behavioral Tracking
Open Access
Open Wireless
Patent Busting Project
The "Six Strikes" Copyright Surveillance Machine
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The Law and Medical Privacy
TPP's Copyright Trap
Trans-Pacific Partnership Agreement
Travel Screening
TRIPS
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WIPO
Transparency
Uncategorized

Exhibit 6

https://www.google.com/patents/US6690400

Graphic user interface for resources management of super operating system based computers

US 6690400 B1

Publication number	US6690400 B1
Publication type	Grant
Application number	US 09/409,013
Publication date	Feb 10, 2004
Filing date	Sep 29, 1999
Priority date	Sep 29, 1999
Fee status	Paid
Inventors	Parviz Moayyad, Schumann Rafizadeh
Original Assignee	Flash Vos, Inc.
Export Citation	BiBTeX, EndNote, RefMan

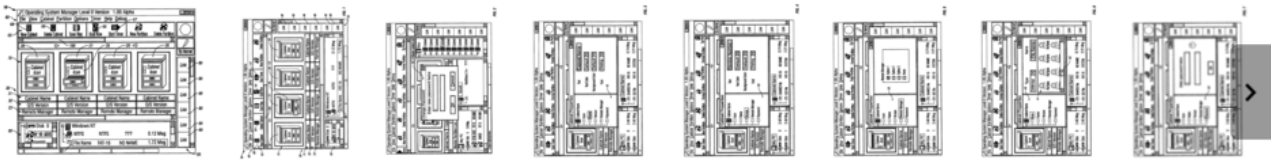
Patent Citations (5), Referenced by (93), Classifications (13), Legal Events (7)

External Links: USPTO, USPTO Assignment, Espacenet

ABSTRACT

This invention is a Graphic User Interface (GUI) that enables a user to virtualize the system and to define secondary storage physical devices through the graphical depiction of cabinets. The GUI allows the user to assign each cabinet a name, and to define the cabinet by its software, which may include single or multiple operating systems, programs and/or data files. The user is also allowed to manipulate (format, copy, resize, delete, zip) memory partitions in the secondary storage physical devices. The GUI also features graphically editable Internet hyperlinks for communication or remote management. Also, this invention uses a combination of Flash VOS VTOC and ACPI to perform “Cold Swaps” or “Context Switching”, which remove one active OS temporarily from all or part of memory and replace it with another active OS in all or part of memory. Information can be shared by multiple Operating Systems through the defined access to Shared Devices or Shared Partitions. The GUI can be used on a variety of computer systems, including multiple operating system and super operating system based computers.

IMAGES (18)



DESCRIPTION

CROSS-REFERENCE TO RELATED APPLICATIONS

This application contains subject matter which is related to the application “Storage Manager for Computer Devices and Method for Manipulating Secondary Storage”, Ser. No. 90/283,418, Art Unit 2783, filed on Apr. 1, 1999 by Shumann Rafizadeh, assigned to Flash Vos, Inc.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

TITLE OF THE INVENTION

Graphic User Interface for Resources Management of Super Operating System Based Computers.

BACKGROUND OF THE INVENTION

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1. Technical Field

CLAIMS (39)

We claim:

1. A graphic user interface for displaying means for allocating a computer device's resources to multiple operating system environments, partitioned on individual virtual cabinets, on said computer device, said graphic user interface comprising:

a main menu bar;

a cabinet selection button bar;

said cabinet selection button bar graphically representing at least one virtual cabinet;

each said at least one virtual cabinet representing a discrete operating system;

a secondary storage partitions window;

a cabinet visible partition window;

said secondary storage partitions window graphically illustrating at least one partition of at least one secondary storage device;

said cabinet visible partition window graphically illustrating a cabinet record corresponding to a selected virtual cabinet on said cabinet selection button bar; and

This invention relates generally to computer operating systems, programs and databases, and more particularly, to graphic user interfaces allowing storage management and manipulation of multiple operating systems.

2. Background Information

This invention. relates generally to Graphic User Interfaces (GUI), applicable to various computer operating systems, including Multiple and Super Operating Systems. Specifically, this invention enables such computers to allocate computer resources graphically to one or more operating systems from the same or different software developers and select one or more of the existing environments to boot and run on the computer. Thus the user will be able to operate on the same computer to select multiple applications from various suppliers designed for various stand-alone operating systems or computers.

This invention is particularly useful in conjunction with super or higher level multiple operating systems or multi-boot environments. Super operating systems allow computer users to load multiple operating systems from secondary storage into main memory. This option frees the user from having to purchase software programs that are compatible with only one operating system, and further enables the user to benefit from the strengths of more than one operating system without having to maintain multiple computers.

The cornerstone of a super operating systems GUI is system virtualization, in which physical devices, such as a hard disk and memory, are mapped repeatedly or partitioned into a number of logical devices, each containing a separate operating system. These partitions, however, need to be set up as stable and rigid partitions or mappings so that the operating systems do not mix, intermingle, call on each other, or exchange data, unless the user desires such exchange. It would thus be beneficial to the prior art to provide a GUI mechanism that enables such system management locally or remotely.

Similarly, when certain operating systems, such as the Windows family of operating systems, are loaded from secondary storage to main memory, they are designed to monopolize and re-configure the entire computer system, including secondary storage devices, to suit their particular requirements and parameters. If more than one operating system is to co-exist in the same physical device (as is the case in super operating systems), then such operating systems must be restricted from accessing any portion of the secondary storage address blocks that contain the other operating systems. Therefore, it would be beneficial to the prior art to provide a GUI tool for a user to manage system resources and restrict access to pre-specified resources.

Typically, upon Power On or Restart the computer BIOS transfers (or boots) the single operating system that controls the entire computer resources. These resources are distributed and managed between the applications, users or system invoked for operation. This GUI invention will allow the users to run optionally any application they wish run on their computer, by allowing the user to allocate and manage the system resources between one or more environments, such as cabinets or partitions, using one or more operating systems compatible with that system's hardware.

Furthermore, this GUI will facilitate user access to the Internet with or without traditional browsers by using any applications, both Operating System (OS) present and No-OS stand-alone, capable of communication with the Internet or another remote computer.

This GUI also facilitates local or remote reporting or manipulation of computer system environments, including storage size, user time allocation, user privileges, sharing and security of data, separations of potential users (such as parents and children, teachers and students or classes), different accounting periods and systems.

When different users use a computer system at different times, there is currently no operating-system-independent way to protect the data appropriate for one user from other users.

each said at least one cabinet visible partition window representing an operating system plus application software, databases and memory configured with said selected virtual cabinet.

2. A graphic user interface as in claim 1, further comprising:

means for manipulating said selected virtual cabinet record through said cabinet visible partition window.

3. A graphic user interface as in claim 2, further comprising:

a main toolbar; and

a cabinet properties window.

4. A graphic user interface as in claim 3, further comprising means for designating and illustrating one of said at least one cabinet record as an active selected virtual cabinet.

5. A graphic user interface as in claim 4, further comprising means for designating and illustrating one of said at least one partition in each of said at least one cabinet record as a bootable partition for said at least one cabinet record.

6. A graphic user interface as in claim 4, further comprising a timer window for graphically illustrating a countdown from a modifiable pre-specified number to “0”.

7. A graphic user interface as in claim 4, further comprising at least one button associated with an application program that does not require an operating system to be downloaded directly into a memory of said computer device.

8. A graphic user interface as in claim 4, further comprising means for restricting access to sail at least one cabinet record through a password input.

9. A graphic user interface as in claim 4, further comprising means for naming said at least one cabinet record.

10. A graphic user interface as in claim 4, further comprising means for remote management of any of said multiple operating systems.

11. A graphic user interface as in claim 4, further comprising means for allocation of at least one shared partition to more than one of said multiple operating systems in said computer device.

12. A graphic user interface as in claim 4, further comprising means for allocation of at least one shared device to more than one of said multiple operating systems in said computer device.

13. A graphic user interface as in claim 4, further comprising means for portability in operation in said computer device with said multiple operating systems.

14. A graphic user interface as in claim 4, further comprising means for portability in operation of at least one No-OS embedded software application in said computer device.

15. A graphic user interface as in claim 4, wherein said multiple operating system is a super operating system.

16. A graphic user interface for displaying moans for allocating a computer device's resources to at least one operating system on said computer device, said graphic user interface comprising:

a secondary storage partitions window for graphically illustrating each of at least one partition of at least one secondary storage device for each of at least one operating systems on said computer;

For instance, parents who use a computer for business purposes cannot, in general, protect their critical data while allowing children to play games on the same system. It would therefore be beneficial to the prior art to provide a GUI Interface for allocation of secondary storage device that can restrict access to a pre-specified section, independent of any operating system, in the form of Virtual Cabinets (Cabinet Records, hereinafter referred to as “Cabinets”). A cabinet is defined herein as a virtual storage device, capable of containing, typically through the use of virtual table of content pointers, all (or partitions of) shared (or non-shared) operating systems, application software (both OS dependent and No-OS embedded), databases and memory.

Prior art known in the industry includes power management and configuration tools and standards such as Advanced Configuration and Power Interface (ACPI), System Table of Contents and Organizations such as Flash Vos Dynamic or Static Virtual Table of Contents (VTOC) and Self Virtualizing Storage. ACPI is a power management specification that enables the operating system to control the amount of power given to each device attached to the computer. With ACPI, the operating system can turn off peripheral devices, such as CD-ROM players, when they are not in use, or can automatically power up the computer as soon as an input device such as a mouse is moved. The Flash Vos Dynamic or Static Virtual Table of Contents (VTOC) is part of a Storage Manager, wherein relevant identifying information is contained for each Partition of secondary storage. At least one Cabinet is created, containing a list of Partitions. Each Cabinet can have a separate list of Partitions, and each Partition can be included in more than one Cabinet. One of the Cabinets is designated as an Active Cabinet. Upon continuation of the boot sequence, the contents (i.e., the list of Partitions within that Cabinet) replace the Partition list of the secondary storage device. If the secondary storage device is bootable, then the Partition within that Cabinet marked as bootable is bootstrapped and is loaded into main memory. The contents of the Partitions and Cabinets may be modified by a user through a graphic user interface, such as described in this invention.

Other related art includes Graphic User Interfaces such as Windows or Xwindows, Bitmap Graphics, VGA, SVGA, User Prompting, Pointing Devices and Internet (including HTML) interfaces, all of which are known by those skilled in the art of computer programming.

Prior art patents include the Eick '998 Patent (U.S. Pat. No. 5,945,998, issued Aug. 31, 1999). The '998 Patent discloses a software apparatus that displays subentities in a computer program graphically, to allow the user to go to a subroutine or subentity without scrolling. The '998 Patent does not teach movement of operating systems within a super operating system environment to specified cabinets, partition modification or remote location control of partition setup.

BRIEF SUMMARY OF THE INVENTION

This invention is a Graphic User Interface that enables a user to virtualize a computer system and to define secondary storage physical devices, in single or multiple/super operating system environments. The system, at its firmware level, enables a user to define and alter the address boundaries of the physical devices and memory. The address boundaries of the physical devices are defined by the address boundaries of one of the logical devices, which has been partitioned or remapped within that physical device. Because such boundary definitions can be implemented at the firmware level of the physical device, every address access request, regardless of its origin and regardless of the origin of the request (i.e., the software component issuing the request), can be subject to the firmware-defined boundaries.

Accordingly, the objectives of this invention are to provide, inter alia, a Graphic User Interface and functions that:

graphically defines multiple functions for allocation of system resources for use in multiple operating systems or no operating system (No-OS or embedded)

means for configuring said at least one partition of said at least one secondary storage device through said secondary storage partitions window;

a cabinet selection button bar;

said cabinet selection button bar graphically representing at least one virtual cabinet record;

each said at least one virtual cabinet record representing a discrete operating system;

a cabinet visible partition window for graphically illustrating a selected virtual cabinet record;

means for manipulating said at least one cabinet record through said cabinet visible partition window;

said cabinet visible partition window graphically illustrating am operating system plus application software, databases and memory configured with said selected virtual cabinet; and

means for modifying said at least one cabinet record through said cabinet visible partition window.

17. A graphic user interface as in claim 16, further comprising means fair designating and illustrating one of said at least one cabinet record as an active cabinet.

18. A graphic user interface as in claim 17, further comprising means for designating and illustrating one of said partitions in each of said at least one cabinet record as a bootable partition for said at least one cabinet record.

19. A graphic user interface as in claim 17, further comprising at least one direct button associated with an application program that does not require an operating system to be downloaded directly into a memory of said computer device.

20. A graphic user interface as in claim 17, further comprising means for restricting access to said at least one cabinet record through a password input.

21. A graphic user interface as in claim 17, further comprising means for naming said at least one cabinet record.

22. A graphic user interface as in claim 17, further comprising means for remote management of any of said at least one operating systems.

23. A graphic user interface as in claim 17, further comprising means for allocation of at least one shared partition to more than one of said at least one operating system in said computer device.

24. A graphic user interface as in claim 17, further comprising means for allocation of at least one shared device to more than one of said at least one operating system in said computer device.

25. A graphic user interface as in claim 17, further comprising means for portability in operation is said computer device with said at least one operating system.

26. A graphic user interface as in claim 17, further comprising means for portability in operation of at least one No-OS embedded software applications in said computer device.

27. A graphic user interface as in claim 18, further comprising a timer window for graphically illustrating a countdown from a modifiable pre-specified number to “0”.

28. A computer program product for use on a computer system with a memory

graphically defines any size of feature windows and totally hide them if necessary;

save the specific views as needed for all function windows;

enable restricted partitioning and supports storage virtualization;

allows the remote management of any of the operating systems through selection of any bootable cabinet or partition upon invoking the OS Manager component of the GUI; and

enables such partitioning and supports such storage virtualization regardless of the origin of an address request and independent of any operating system.

The functions are performed in the following organizations:

System and OS Functions

Partition Tools and Functions:

Create, Delete, Format, Copy, Resize, Zip or Pack, Set Bootable

Cabinet Tools and Functions:

List, View, Default Boot, Boot, Create, Delete, Virtualization, Set Attributes, Invoke Cabinets

Operating Systems Tools and Functions:

Boot Option, Size, Logo, Security, Resources and Management.

Internet Functions

This GUI window allows the user to use the Internet to remotely select other systems and organizations that are frequently accessed to be tailored and available for direct communication with or without requiring a specific (OS Dependent or Independent) browser or link up program.

User Functions

This window allows the user to select his most commonly used applications regardless of the specific OS or No OS environment and quickly access them from the GUI.

Flash Vos Site access

This GUI option allows users to access the Flash Vos Web site for update of their software, purchase or license of additional software and or information and products.

Management Functions

The GUI provides a Local and Remote Management Option for any number of the supported OS environment(s). Examples of such support management tools include Intel's Landesk, CA's Unicenter, Flash Vos and Norton Utilities.

Other objects of the invention will become apparent from time to time throughout the specification hereinafter disclosed.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 depicts the Boot View of the FVOS GUI.

FIG. 2 depicts the Super User Password Change Window of the FVOS GUI.

FIG. 3 depicts the Cabinet Name Editor of the FVOS GUI.

FIG. 4 depicts the Primary OS Version Editor of the FVOS GUI.

FIG. 5 depicts the Remote Manager Editor of the FVOS GUI.

FIG. 6 depicts the Cabinet Icon Editor of the FVOS GUI.

comprising a computer usable medium having computer readable program code thereon for generating, a graphic user interface on the display device which facilitates manipulation of operating systems, programs and databases in said multiple operating system, the computer readable program code comprising:

program code for accessing and displaying each of at least one partition of at least one secondary storage device;

program code for configuring said at least one partition of said at least one secondary storage device through a secondary storage partitions window;

program code for displaying a cabinet selection button bar;

said cabinet selection button bar graphically representing at least one virtual cabinet record;

each said at least one virtual cabinet record representing a discrete operating system;

program code for displaying a cabinet visible partition window for graphically illustrating, at least one cabinet record, each of said at least one cabinet record representing an operating system plus application software, databases and memory configured with said selected virtual cabinet record;

program code for manipulating said virtual cabinet record through said cabinet visible partition window; and

program code for means for modifying said at least one cabinet record through said cabinet visible partition window.

29. A computer program product as in claim 28, further comprising program code means for designating and illustrating one of said at least one cabinet record as an active cabinet.

30. A computer program product as in claim 29, further comprising program code means for designating and illustrating one of said at least one partition in each of said at least one cabinet record as a bootable partition for said at least one cabinet record.

31. A computer program product as in claim 30, further comprising program code means for displaying a timer window for graphically illustrating a countdown from a modifiable pre-specified number to “0”.

32. A computer program product as in claim 30, further comprising program code means for at least one button associated with an application program that does not require an operating system to be downloaded directly into a memory of said computer system.

33. A computer program product as in claim 30, further comprising program code means for restricting access to said at least one cabinet record through a password input.

34. A computer program product as in claim 30, further comprising program code means for naming said at least one cabinet record.

35. A computer program product as in claim 30, further comprising program code means for remote management of any of said multiple operating systems.

36. A computer program product as in claim 30, further comprising program code means for allocation of at least one shared partition to more than one of said multiple operating systems in said computer system.

37. A computer program product as in claim 30, further comprising program code means for allocation of at least one shared device to more than one of said multiple operating systems in said computer system.

FIG. 8 depicts the Active Contents Window of the FVOS GUI.

FIG. 9 depicts the Boot Cabinet Button of the FVOS GUI.

FIG. 10 depicts the Configuration View of the FVOS GUI.

FIG. 11 depicts the Cabinet Editor Button of the FVOS GUI.

FIG. 12 depicts the Change Cabinet Count Window of the FVOS GUI.

FIG. 13 depicts the Partition Toolbar of the FVOS GUI.

FIG. 14 depicts the Internet Button Editor of the FVOS GUI.

FIG. 15 depicts FVOS GUI with the Boot Stop Button active.

FIG. 16 depicts the Partition Resizing Window of FVOS GUI.

FIG. 17 depicts the Partition Formatting Window of FVOS GUI.

NOTE: The Figures provided in this disclosure may include trademarks belonging to entities other than the present inventor. These trademarks are included only for representational descriptions, and do not form in part or in whole any disclosure or claim.

DETAILED DESCRIPTION OF THE INVENTION

The Graphic User Interface ("GUI") of the present invention enables a user to allocate and manage the resources of a computer system by defining one or more cabinets, each cabinet containing one or more partitions of one or more existing software and/or data. Examples of such existing software includes operating systems ("OS"), OS dependent programs and No-OS (self-contained, embedded OS) programs. This resource allocation and management is performed graphically with a pointing device and/or keyboard, and is referred to as Flash Vos GUI **10** or FVOS GUI **10** for short. FVOS GUI **10** also allows users to tailor the computer system to be managed locally or remotely, manipulate and share partitions, cabinets and files and their characteristics or operating environments. For the purposes of this invention and disclosure, the terms "Virtual Cabinet", "Cabinet Record" and "cabinet" are synonymous. A cabinet is defined herein as a virtual storage device, capable of containing, typically through the use of virtual table of content pointers, all (or partitions of) shared (or non-shared) operating systems, application software (both OS dependent and No-OS embedded), databases and memory. This invention provides, inter alia, means for manipulating cabinets. This manipulation comprises adding partitions, deleting partitions, naming the cabinet, assigning an icon to the cabinet, configuring partitions in the cabinet, defining user access, defining remote management functions and booting the cabinet.

FVOS GUI **10** is portable, in that it is capable of being executed on various types of data processing systems without converting it to a different language and with little or no modification.

FVOS GUI **10** uses a combination of Flash VOS VTOC (Virtual Operating System—Virtual Table of Contents) and Advanced Configuration and Power Interface (ACPI) to perform "Cold Swaps" or "Context Switching." A Cold Swap removes one active OS temporarily from all or part of memory and replaces it with another OS in all or part of memory with another active OS, and further allows sharing of information by Shared Device or Shared Partitions among multiple Operating Systems.

FVOS GUI **10** provides access restriction for privileged or various users by password and virtual boundary establishments.

FIG. 1 depicts the Boot View of FVOS GUI **10**. Depicted in FIG. 1 are typical components of FVOS GUI **10**, comprising Main Pull Down Menu Bar **60**, Main Toolbar **65**, Cabinet Selection Button Bar **70**, Cabinet Properties Window **30**, Secondary Storage Partitions Window **80**, Active Selected Cabinet Visible Partition Window **90** and URL Internet Button Bar **95**.

In the preferred embodiment, many of the functions performed by FVOS GUI **10** are allowed only for "Super Users", who must log into FVOS GUI **10** by verifying a password, such as under the "Options" pull-down menu of Main Pull Down Bar **60**. In an alternative embodiment, Main Pull Down Bar **60** can be an alternative menu bar, comprising devices such as link buttons, hot keys, function keys or other function call-ups known in the industry. The Super User can change the password through Password Change Window **99**, as depicted in FIG. **2**. Password Change Window **99** is typically activated through the "Options" pull down menu of Main Pull Down Bar **60**, by selecting the "change password" option and then verifying the current password. A Super User is able to create new memory partitions, delete partitions, format partitions, copy partitions, resize partitions, zip partitions, create and edit cabinets and change passwords. In an alternative embodiment, any user may perform any of the functions afforded by the design of FVOS GUI **10**, including all described as being used by a Super User.

In FIG. 1, Cabinet Buttons **20** represent inactive cabinets, which contain operating systems, programs and data not in current use by the computer. Cabinet Button **21** represents an active cabinet, which contains the selected software and

38. A computer program product as in claim 30, further comprising program code means for portability in operation in said computer system with said multiple operating systems.

39. A computer program product as in claim 30, further comprising program code means for portability in operation of at least one No-OS embedded software application in said computer system.

The name of each cabinet named in Cabinet Name Window **31** is chosen by the “Super User” and is arbitrary. In the preferred embodiment, the name selected will be that of the primary operating system contained in the cabinet. The name is editable through Cabinet Name Editor **45**, depicted in FIG. **3**. In Cabinet Name Editor **45**, the “Super User” types in the name text via a keyboard or similar input device. The Text Color, Background Color and Font for the cabinet name depicted in Cabinet Name Window **31** are selected in Cabinet Name Editor **45** from drop-down menus using a standard pointing device such as a mouse.

The text shown in Primary Operating System Version Window **32** identifies the release version of the primary operating system contained in the active cabinet. The text shown is editable by the “Super User” through the Primary Operating System Version Editor **50**, depicted in FIG. **4**. In Primary Operating System Version Window **50**, the user types in the name text via a keyboard or similar input device. The Text Color, Background Color and Font for the cabinet name depicted in Primary Operating System Version Window **32** are selected in Primary Operating System Version Editor **50** from drop-down menus using a standard pointing device such as a mouse.

The location of the remote manager depicted in Remote Manager Window **33** can be edited by the “Super User” through the Remote Manager Editor **55**, depicted in FIG. **5**. The Remote Manager location is selected from a check box, radio button or similar icon identified with a remote manager. The Remote Manager has the capability of remote management of any of the operating systems through selection of any bootable cabinet or partition upon invoking the OS Manager component of the Virtual Operating System manipulated by FVOS GUI **10**.

Each Cabinet Identifying Icon **35**, FIG. 1, can be edited by the “Super User” using Cabinet Icon Editor **40**, depicted in FIG. **6**. To change Cabinet Identifying Icon **35**, the user double clicks a pointing device, such as a mouse, while the cursor is placed over the desired icon from Window **41**. This action places the new Identifying Icon **35** graphic on the selected cabinet **4** button. Additional icon choices are displayed by scrolling scroll bar **42**.

In the preferred embodiment, each Cabinet is access controlled through the use of a password. This password can be changed by a user or “Super User” through Cabinet Password Window **62**, depicted in FIG. **7**.

As stated above, Cabinet Button **21** depicts an active cabinet, whose contents, which may include operating systems, partitions, software and data, can be manipulated (added, removed, renamed, relocated in memory) by FVOS GUI **10**. The contents of the active cabinet are depicted in FIG. 8 in Active Selected Cabinet Visible Partition Window **90**. The contents of the all secondary storage devices found in the computer system are depicted in Secondary Storage Partitions Window **80** as Secondary Storage Icon **180** and Secondary Storage Text Descriptor **186**. The partitions of each secondary storage device are depicted with icons **180** and text descriptors **181**, viewable through content button expanders **182**. The partitions can be virtually copied from the secondary storage to the active cabinet by an input device operation, such as “click and drag” movement using a pointer device such as a mouse, or by double clicking using such pointer device. The pointer device is placed over either icon **180** or text descriptor **181** in Secondary Storage Partitions Window **80**, and the “click and drag” or double clicking operation of the pointer device places the partition described by icon **180** and text descriptor **181** into the active cabinet. As depicted in FIG. 9, the partition can be removed from the active cabinet by “right clicking” a pointer device over the selected partition, evoking cabinet button **190**, and selecting Remover **93**. In the preferred embodiment, the Configuration View shown in FIG. 10 allows for the same functions without being limited to the Selected Cabinet. Partitions are moved from the Secondary Storage Partitions Window **80** to the desired Cabinet depicted in Master Cabinet Visible Partition Window **91**. Master Cabinet Visible Partition Window **91** depicts all cabinets, both selected (active) and non-selected (inactive), booted and non-booted.

When FVOS GUI **10** is initiated, an operating system (OS) will boot up automatically within a defined time, such as **10** seconds, after FVOS GUI **10** initiation (unless Stop Timer Button **13**, FIG. 15, is clicked using a standard pointer input), when Boot Now Button **66**, FIG. 1, is selected with a standard pointer input device such as a mouse, or when selected Cabinet Button **21** is double-clicked. In FIG. 9, the Timer is graphically represented by Digital CountdownTimer**81** and Bar Countdown Timer **82**. The OS that boots up will be either the default OS or a selected partition OS from the Active Cabinet. The default OS is defined either in Cabinet Name Window **31** and Primary Operating System Version Window **32**, or is selected in the Active Selected Cabinet Visible Partition Window **90** by “right clicking” using a standard pointing device on the depicted partition, and selecting Boot Cabinet Button **94**, FIG. **9**. Boot Cabinet Button **94** can be selected at any time the cabinet is active, including when another operating system partition in Active Cabinet is running, allowing “Cold Swaps” of operating systems. Alternatively, any cabinet, selected or non-selected, can be selected from a cabinet in Master Cabinet Visible Partition Window **91**, and booted up at any time using Boot Cabinet Window **94**.

New cabinets can be added either by using New Cabinet Button **68**, FIG. 1, or choosing the “New” option under the “Cabinet” pull-down menu from Main Pull Down Menu Bar **60**, FIG. **1**. Cabinets can be deleted either by using Delete Cabinet Button **69** or choosing the “Delete” option under the “Cabinet” pull-down menu from Main Pull Down Menu Bar **60**. As depicted in FIG. 11, “right clicking” with a pointer input device such as a mouse brings up New Cabinet Button **63**, which allows the Super User to delete or edit the new cabinet through Cabinet Icon Editor **40**, Cabinet Name Editor **45**, Primary Operating System Version Editor **50**, and/or Remote Manager Editor **55**. The total number of Cabinets allowable is controlled by the “Super User”, by selecting from Main Pull Down Menu Bar **60** the pull-down menu “Options”, then “Super User” and then “Set Cabinet Limit.” Change Cabinet Count Window **61**, as depicted in FIG. 12, allows the Super

Partitions can be edited either with options available from the “Partition” pull-down menu from Main Pull Down Menu Bar **60**, or by using Partition Buttons **64** on Main Toolbar **65** depicted in FIG. **13**. Partition functions available include creating new, deleting, formatting, copying, resizing and zipping partitions.

Resizing Partition Window **110** is called by clicking on the Resize Partition button in Main Toolbar **65**. As seen in FIG. 16, Resizing Partition Window **110** allows the user or Super User to resize the allocated memory space in the partition by Partition Data, Free Space Retained and Free Space Discarded. The allocations are in the format chosen by the user from Buttons **111**, which enable the display of allocations in percentage, sectors, megabytes or cylinders of the total partition.

Formatting the partition is performed through Partition Formatting Window **120**, which is called up either through clicking on the Format Partition button in Main Toolbar **65**, or using the “Partition” pull-down menu in Main Pull Down Menu Bar **60**, and selecting the “Format” option. By clicking Format Button **121**, depicted in FIG. 17, the Partition is formatted. The completed results are shown in Partition Format Window **125**.

When the Cabinet configurations are set in the desired manner, FVOS GUI **10** is saved using Save VTOC Button **100**, FIG. **1**. The saved configuration will then be the initial configuration when FVOS GUI **10** is initiated, until the user reconfigures FVOS GUI **10**.

FVIS GUI **10** also features hot links to Internet Sites via Buttons **89** depicted on URL Internet Button Bar **95**. Buttons **89** can be added or deleted from URL Internet Button Bar **95** through the Internet Button File Editor Window **96**, as depicted in FIG. **14**. To delete an Internet button, the user double-clicks the desired button depicted in Active URL Button Window **97**. To add an Internet button, the user double clicks the desired button depicted in Available Internet Button Window **98**. Buttons **89** may be any Internet URL. In the preferred embodiment, Buttons **89** are manufacturer buttons that can be used for accessing manufacturers WEB sites for downloading and configuring that vendor's cabinet. Vendors, including software and system manufacturers and distributors, can have their own Button **89** to download through the Internet their OS independent applications such as Internet Browser, Online Services, OS Support, Computer Service/Help, Video Conferencing, Data Base access, and turnkey (No-OS) applications for specific services. In the preferred embodiment, Buttons **89** contain an embedded Search Engine and Network Router.

Main Toolbar **65**, Cabinet Selection Button Bar **70**, Secondary Storage Partitions Window **80**, Active Selected Cabinet Visible Partition Window **90** and URL Internet Button Bar are all scrollable by scroll bar sliders, tabs and/or arrows.

PATENT CITATIONS

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[illegible]	[illegible]	[illegible]	[illegible]	Storage management method and storage management

Citing Patent	Filing date	Publication date	Applicant	Title
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CLASSIFICATIONS

U.S. Classification	715/779, 715/775, 715/966
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Cooperative Classification	Y10S715/966, G06F3/0632, G06F3/0605, G06F2206/1008, G06F3/067
European Classification	G06F3/06A4C2, G06F3/06A6D, G06F3/06A2A2

LEGAL EVENTS

Date	Code	Event	Description
Sep 29, 1999	AS	Assignment	**Owner name:** FLASH VOS, INC., TEXAS **Free format text:** ASSIGNMENT OF ASSIGNORS INTEREST;ASSIGNORS:RAFIZADEH, SCHUMANN;MOAYYAD, PARVIS;REEL/FRAME:010291/0566 **Effective date:** 19990928
Jun 14, 2007	FPAY	Fee payment	**Year of fee payment:** 4
Sep 23, 2011	FPAY	Fee payment	**Year of fee payment:** 8
Sep 23, 2011	SULP	Surcharge for late payment	**Year of fee payment:** 7
Jan 22, 2014	AS	Assignment	**Owner name:** GLOBAL EQUITY MANAGEMENT (SA) PTY LTD., AUSTRALIA **Free format text:** ASSIGNMENT OF ASSIGNORS INTEREST;ASSIGNOR:FLASH VOS, INC.;REEL/FRAME:032015/0436 **Effective date:** 20140115
Apr 28, 2015	FPAY	Fee payment	**Year of fee payment:** 12
Nov 22, 2016	IPR	Aia trial proceeding filed before the patent and appeal board: inter partes review	**Free format text:** TRIAL NO: IPR2016-01828 **Opponent name:** EBAY INC.,ALIBABA.COM HONG KONG LTD. ANDBOOKIN.COM **Effective date:** 20160922

Exhibit 7

https://web.archive.org/web/20010405094252/http:/www.flashvos.com/frame_index.html

FlashVOS's SOS™ gives you Freedom of Choice

SOS is the first ever Super Operating System. SOS allows multiple x86 operating systems to run on a single PC and provides many capabilities for managing those operating systems. SOS has been developed using virtualization technology. With this technology, SOS will revolutionize the computer industry.

Features

- Run multiple operating systems on a single PC
- Install and run any operating system
- Create, manage and modify disk partitions
- Run multilingual environments with ease
- Set up and manage simulation or test environments
- Create and run various databases on any x86 platform
- Remote monitoring and control via the Internet
- Run applications without launching an operating systems (embedded x86 application support)
- Access the Internet without launching an operating system (embedded x86 network application support)
- Restrictively manage and share partitions between operating environments

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https://en.wikipedia.org/wiki/X86

x86

From Wikipedia, the free encyclopedia

x86 is a family of backward-compatible instruction set architectures[a] based on the Intel 8086 CPU and its Intel 8088 variant. The 8086 was introduced in 1978 as a fully 16-bit extension of Intel's 8-bit-based 8080 microprocessor, with memory segmentation as a solution for addressing more memory than can be covered by a plain 16-bit address. The term "x86" came into being because the names of several successors to Intel's 8086 processor end in "86", including the 80186, 80286, 80386 and 80486 processors.

Many additions and extensions have been added to the x86 instruction set over the years, almost consistently with full backward compatibility.[b] The architecture has been implemented in processors from Intel, Cyrix, AMD, VIA and many other companies; there are also open implementations, such as the Zet SoC platform.[2]

The term is not synonymous with IBM PC compatibility, as this implies a multitude of other computer hardware; embedded systems, as well as general-purpose computers, used x86 chips before the PC-compatible market started,[c] some of them before the IBM PC (1981) itself.

As of 2017, the majority of personal computers and laptops sold are based on the x86 architecture (despite inroads from Chromebook-style ARM designs, the segment-leading Apple MacBook family remains exclusively x86), while other categories—especially high-volume mobile categories such as smartphones or tablets—are dominated by ARM; at the high end, x86 continues to dominate compute-intensive workstation and cloud computing segments.[3]

Contents

x86

Designer	Intel, AMD
Bits	16-bit, 32-bit and 64-bit
Introduced	1978 (16-bit), 1985 (32-bit), 2003 (64-bit)
Design	CISC
Type	Register–memory
Encoding	Variable (1 to 15 bytes)
Branching	Condition code
Endianness	Little
Page size	8086–i286: None i386, i486: 4 KB pages P5 Pentium: added 4 MB pages (Legacy PAE: 4 KB→2 MB) x86-64: added 1 GB pages
Extensions	x87, IA-32, X86-64, MMX, 3DNow!, SSE, SSE2, AES-NI, CLMUL, RdRand, SHA, MPX, SGX, SSE, SSE2, SSE3, SSSE3, SSE4, SSE4.2, SSE5, XOP, F16C, ADX, BMI, FMA, AVX, AVX2, AVX512, VT-x, AMD-V, TSX, ASF
Open	Partly. For some advanced features, x86 may require license from Intel; x86-64 may require an additional license from AMD. The 80486 processor has been on the market for more than 20 years[1] and so cannot be subject to patent claims. The pre-586 subset of the x86 architecture is therefore fully open.
Registers	
General purpose	▪ 16-bit: 6 semi-dedicated registers, BP and SP are not general-purpose ▪ 32-bit: 8 GPRs, including EBP and ESP ▪ 64-bit: 16 GPRs, including RBP and RSP
Floating point	▪ 16-bit: optional separate x87 FPU ▪ 32-bit: optional separate or integrated x87 FPU, integrated SSE2 units in later processors

- 64-bit: integrated x87 and SSE2 units

Intel 8086

Intel Core 2 Duo – an example of an x86-compatible, 64-bit multicore processor

AMD Athlon (early version) – a technically different but fully compatible x86 implementation

Overview

In the 1980s and early 1990s, when the 8088 and 80286 were still in common use, the term x86 usually represented any 8086 compatible CPU. Today, however, x86 usually implies a binary compatibility also with the 32-bit instruction set of the 80386. This is due to the fact that this instruction set has become something of a lowest common denominator for many modern operating systems and probably also because the term became common *after* the introduction of the 80386 in 1985.

A few years after the introduction of the 8086 and 8088, Intel added some complexity to its naming scheme and terminology as the "iAPX" of the ambitious but ill-fated Intel iAPX 432 processor was tried on the more successful 8086 family of chips,[d] applied as a kind of system-level prefix. An 8086 *system*, including coprocessors such as 8087 and 8089, as well as simpler Intel-specific system chips,[e] was thereby described as an iAPX 86 *system*.[4][f] There were also terms *iRMX* (for operating systems), *iSBC* (for single-board computers), and *iSBX* (for multimodule boards based on the 8086-architecture) – all together under the heading *Microsystem 80*.[5][6] However, this naming scheme was quite temporary, lasting for a few years during the early 1980s.[g]

Although the 8086 was primarily developed for embedded systems and small multi-user or single-user computers, largely as a response to the successful 8080-compatible Zilog Z80,[7] the x86 line soon grew in features and processing power. Today, x86 is ubiquitous in both stationary and portable personal computers, and is also used in midrange computers, workstations, servers and most new supercomputer clusters of the TOP500 list. A large amount of software, including operating systems (OSs) such as DOS, Windows, Linux, BSD, Solaris and macOS, functions with x86-based hardware.

Modern x86 is relatively uncommon in embedded systems, however, and small low power applications (using tiny batteries) as well as low-cost microprocessor markets, such as home appliances and toys, lack any significant x86 presence.[h] Simple 8-bit and 16-bit based architectures are common here, although the x86-compatible VIA C7, VIA Nano, AMD's Geode, Athlon Neo and Intel Atom are examples of 32- and 64-bit designs used in some *relatively* low power and low cost segments.

There have been several attempts, including by Intel itself, to end the market dominance of the "inelegant" x86 architecture designed directly from the first simple 8-bit microprocessors. Examples of this are the iAPX 432 (a project originally named the "Intel 8800"[8]), the Intel 960, Intel 860 and the Intel/Hewlett-Packard Itanium architecture. However, the continuous refinement of x86 microarchitectures, circuitry and semiconductor manufacturing would make it hard to replace x86 in many segments. AMD's 64-bit extension of x86 (which Intel eventually responded to with a compatible design)[9] and the scalability of x86 chips such as the eight-core Intel Xeon and 12-core AMD Opteron is underlining x86 as an example of how continuous refinement of established industry standards can resist the competition from completely new architectures.[10]

Chronology

The table below lists processor models and model series implementing variations of the x86 instruction set, in chronological order. Each line item is characterized by significantly improved or commercially successful processor microarchitecture designs.

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First introduced	Prominent CPU brands	Linear address size (bits)	Segment / offset size (bits)	Physical address size (bits)	Notable (new) features
1978	Intel 8086, Intel 8088 and clones	16		20	First x86 microprocessors
1982	Intel 80186, Intel 80188 and clones, NEC V20/V30	16		20	Hardware for fast address calculations, fast multiplication and division
1982	Intel 80286 and clones	16	14 / 16	24	MMU, for protected mode and a larger address space
1985	Intel 80386 and clones, AMD Am386	32	14 / 32	32	32-bit instruction set, MMU with paging, PGA132 socket
1989	Intel 80486 and clones, AMD Am486	32	14 / 32	32	RISC-like pipelining, integrated x87 FPU (80-bit), on-chip cache, PGA168 socket
1992	Cyrix Cx486SLC, Cyrix Cx486DLC	32	14 / 32	32	L1 cache and pipelining introduced into the 386 platform, PGA132 socket
1993	Pentium, Pentium MMX, Rise mP6	32	14 / 32	32	Superscalar, 64-bit databus, faster FPU, MMX (2× 32-bit), Socket 7, SMP
1995	Pentium Pro	32	14 / 32	36 (PAE)	µ-op translation, conditional move instructions, out-of-order, register renaming, speculative execution, PAE (Pentium Pro), in-package L2 cache (Pentium Pro), Socket 8
1996	AMD K5, Cyrix 6x86, Cyrix MII, Nx586 (1994), IDT/Centaur-C6, Cyrix III-Samuel (2000), VIA C3-Samuel2 / VIA C3-Ezra (2001)	32	14 / 32	32	Discrete microarchitecture (µ-op translation)
1997	Am5x86, Cyrix 5x86, Pentium OverDrive	32	14 / 32	32	Partial Pentium's specification brought into the 486 platform
1997	Pentium II/III, Celeron, Xeon	32	14 / 32	36 (PAE)	SSE (2× 64-bit), on-die L2 Cache (Mendocino, Coppermine), SLOT 1 or Socket 370
1997	AMD K6/2/III, Cyrix III-Joshua (2000)	32	14 / 32	32	On-die L2-Cache (K6-III, Cyrix III Joshua), 3DNow!, no PAE support, Super Socket 7 (K6-2)
1999	Athlon, Athlon XP	32	14 / 32	36 (PAE)	Superscalar FPU, wide design (up to three x86 instr./clock), Slot A or Socket A, SMP
2000	Pentium 4	32	14 / 32	36 (PAE)	Deeply pipelined, 20 pipeline stages, Intel VT-x, Rapid Execution Engine, Execution Trace Cache, Replay system, Quad-Pumped Front-Side Bus, high frequency, SSE2, hyper-threading, Socket 478
2000	Transmeta Crusoe, Transmeta Efficeon	32	14 / 32	32	VLIW design with x86 emulator, on-die memory controller
2001	Intel Itanium IA-32 compatibility mode	32	14 / 32	N/A	EPIC architecture with an on-package engine (pre-2006 chips, later using IA-32 Execution Layer) that provides backward support for most IA-32 applications
2003	Pentium M, VIA C7 (2005), Intel Core (2006)	32	14 / 32	36 (PAE)	Optimized for low thermal design power, four pumped FSB, µ-op fusion
2003	Athlon 64, Athlon 64 X2 (2005), Sempron (2004), Opteron	64	n/a	36 (Athlon FX, Athlon, Sampron)/40 (Opteron)	AMD64 processor (excluding 32-bit Sempron), on-die memory controller, HyperTransport, CMP, virtualization (AMD-V) on some models, Socket 754/939/940 or AM2 socket
2005	Pentium 4 Prescott F/506/516/5x1/6xx, Celeron D 3x1/3x6/355, Pentium D	64	n/a	36	EM64T technology introduced, very deeply pipelined, 31 pipeline stages, high frequency, SSE3, LGA 775 socket, CMP, x86-64

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2006	Intel Core 2	64	n/a	36 (Intel Core 2,[11] Xeon 5100 [12]/40 (Xeon 7200/7300 on LGA771[13])	Intel 64 processor, low power, multi-core, lower clock frequency, SSE4 (Penryn), wide dynamic execution, µ-op fusion, macro-µ-op fusion, virtualization (Intel VT) on some models
2007	Dm&p vortex86	32	14 / 32	36	in-order core with high pipeline, deep integrated with sound&graphic unit(SoC), on-chip memory controller, low clock, low power for embedded use
2007	AMD Phenom, AMD Phenom II (2008)	64	n/a	40 (Phenom, Athlon, Sampron)/48 (Phenom II, Opteron)	Monolithic quad-core, SSE4a, HyperTransport 3, AM2+ or AM3 socket
2008	VIA Nano	64	n/a	36	Out-of-order, superscalar, 64-bit (integer CPU), hardware-based encryption; very low power; adaptive power management
2008	Intel Core i3, Core i5 and Core i7 (Nehalem/Westmere)	64	n/a	40	Hyper-Threading, Intel Turbo Boost 1.0, AES-NI, Out-of-order, QuickPath, native memory controller, on-die L3 cache, modular, Intel HD Graphics introduced onto CPU chip (Clarkdale), LGA 1366 (Nehalem) or LGA 1156 socket
2008	Intel Atom	32	14 / 32	32 (Bonnell) 36 (Bay Trailer and later)	In-order but highly pipelined, very-low-power, some models (Diamondville) with 32-bit (integer CPU), on-die GPU (Penwell, Cedarview)
2010	AMD FX	64	n/a	48 (FX) 52 (Opteron)	highly pipelined, about 20 stages long pipeline, very-power hungry, very high clock, share instruction cache and FlexFPU between two cores in the module, first consumer octa-core processor, CMT (Clustered Multi-Thread), FMA, OpenCL, support up to 64 socket per chipset.
2011	AMD APU C, E and Z Series (Bobcat)	64	n/a	36	Out-of-order, 64-bit (integer CPU), on-die GPU; low power (Bobcat), Socket FM1 (Desktop)
2011	AMD APU A and E Series (Llano)	64	n/a	40	on-die GPU, first generation fusion APU
2011	AMD APU A Series (Bulldozer, Trinity and later)	64	n/a	48	SSE5/AVX (4× 64-bit), highly modular design, integrated on-die GPU, Socket FM2 or Socket FM2+, GPGPU
2011	Intel Core i3, Core i5 and Core i7 (Sandy Bridge/Ivy Bridge)	64	n/a	42	Internal Ring connection, Intel Turbo Boost 2.0, F16C[14] AVX, GPGPU, Micro-operation cache(Uop Cache), relatively long pipeline (14 to 19 stages),[15]LGA 1155 socket.
2012	Intel Xeon Phi (Larrabee)	64	n/a	36	many integrated core (MIC) architecture (w/62), in-order P54C with x86-64, very wide vector unit, LRBni instructions (8× 64-bit), four threads per core.
2013	Intel Core i3, Core i5 and Core i7 (Haswell/Broadwell)	64	n/a	44	AVX2, FMA3, TSX, BMI1, BMI2 and ABM instructions, Intel ADX, Fully integrated voltage regulator (FIVR), Intel Turbo Boost 3.0 Max(Broadwell-E), high clock rate, LGA 1150 socket
2015/2016	Intel Core i3, Core i5 and Core i7 (Skylake/Kaby Lake/Cannonlake)	64	n/a	46	Out-of-order, 64-bit (integer CPU), AVX-512, Intel SGX, Intel MPX, high clock rate,

					integrated on-die southbridge, integrated on-die x86 MIC array GPU, SoC, MIC

History

Other manufacturers

Am386, released by AMD in 1991

At various times, companies such as IBM, NEC,[i] AMD, TI, STM, Fujitsu, OKI, Siemens, Cyrix, Intersil, C&T, NexGen, UMC, and DM&P started to design or manufacture[j] x86 processors (CPUs) intended for personal computers as well as embedded systems. Such x86 implementations are seldom simple copies but often employ different internal microarchitectures as well as different solutions at the electronic and physical levels. Quite naturally, early compatible microprocessors were 16-bit, while 32-bit designs were developed much later. For the personal computer market, real quantities started to appear around 1990 with i386 and i486 compatible processors, often named similarly to Intel's original chips. Other companies, which designed or manufactured x86 or x87 processors, include ITT Corporation, National Semiconductor, ULSI System Technology, and Weitek.

Following the fully pipelined i486, Intel introduced the Pentium brand name (which, unlike numbers, could be trademarked) for their new set of superscalar x86 designs; with the x86 naming scheme now legally cleared, other x86 vendors had to choose different names for their x86-compatible products, and initially some chose to continue with variations of the numbering scheme: IBM partnered with Cyrix to produce the 5x86 and then the very efficient 6x86 (M1) and 6x86MX (MII) lines of Cyrix designs, which were the first x86 microprocessors implementing register renaming to enable speculative execution. AMD meanwhile designed and manufactured the advanced but delayed 5k86 (K5), which, *internally*, was closely based on AMD's earlier 29K RISC design; similar to NexGen's Nx586, it used a strategy such that dedicated pipeline stages decode x86 instructions into uniform and easily handled micro-operations, a method that has remained the basis for most x86 designs to this day.

Some early versions of these microprocessors had heat dissipation problems. The 6x86 was also affected by a few minor compatibility problems, the Nx586 lacked a floating point unit (FPU) and (the then crucial) pin-compatibility, while the K5 had somewhat disappointing performance when it was (eventually) introduced. Customer ignorance of alternatives to the Pentium series further contributed to these designs being comparatively unsuccessful, despite the fact that the K5 had very good Pentium compatibility and the 6x86 was significantly faster than the Pentium on integer code.[k] AMD later managed to establish itself as a serious contender with the K6 set of processors, which gave way to the very successful Athlon and Opteron. There were also other contenders, such as Centaur Technology (formerly IDT), Rise Technology, and Transmeta. VIA Technologies' energy efficient C3 and C7 processors, which were designed by the Centaur company, have been sold for many years. Centaur's newest design, the VIA Nano, is their first processor with superscalar and speculative execution. It was, perhaps interestingly, introduced at about the same time as Intel's first "in-order" processor since the P5 Pentium, the Intel Atom.

Extensions of word size

The instruction set architecture has twice been extended to a larger word size. In 1985, Intel released the 32-bit 80386 (later known as i386) which gradually replaced the earlier 16-bit chips in computers (although typically not in embedded systems) during the following years; this extended programming model was originally referred to as *the i386 architecture* (like its first implementation) but Intel later dubbed it IA-32 when introducing its (unrelated) IA-64 architecture.

In 1999-2003, AMD extended this 32-bit architecture to 64 bits and referred to it as x86-64 in early documents and later as AMD64. Intel soon adopted AMD's architectural extensions under the name IA-32e, later using the name EM64T and finally using Intel 64. Microsoft and Sun Microsystems also use term "x64", while many Linux distributions also use the "amd64" term. Microsoft Windows, for example, designates its 32-bit versions as "x86" and 64-bit versions as "x64", while installation files of 64-bit Windows versions are required to be placed into a directory called "AMD64".[16]

Overview

Basic properties of the architecture

The x86 architecture is a variable instruction length, primarily "CISC" design with emphasis on backward compatibility. The instruction set is not typical CISC, however, but basically an extended version of the simple eight-bit 8008 and 8080 architectures. Byte-addressing is enabled and words are stored in memory with little-endian byte order. Memory access to unaligned addresses is allowed for all valid word sizes. The largest native size for integer *arithmetic* and memory addresses (or offsets) is 16, 32 or 64 bits depending on architecture generation (newer processors include direct support for smaller integers as well). Multiple scalar values can be handled simultaneously via

the SIMD unit present in later generations, as described below.[l] Immediate addressing offsets and immediate data may be expressed as 8-bit quantities for the frequently occurring cases or contexts where a -128..127 range is enough. Typical instructions are therefore 2 or 3 bytes in length (although some are much longer, and some are single-byte).

To further conserve encoding space, most registers are expressed in opcodes using three or four bits, the latter via an opcode prefix in 64-bit mode, while at most one operand to an instruction can be a memory location.[m] However, this memory operand may also be the *destination* (or a combined source *and* destination), while the other operand, the *source*, can be either *register* or *immediate*. Among other factors, this contributes to a code size that rivals eight-bit machines and enables efficient use of instruction cache memory. The relatively small number of general registers (also inherited from its 8-bit ancestors) has made register-relative addressing (using small immediate offsets) an important method of accessing operands, especially on the stack. Much work has therefore been invested in making such accesses as fast as register accesses, i.e. a one cycle instruction throughput, in most circumstances where the accessed data is available in the top-level cache.

Floating point and SIMD

A dedicated floating point processor with 80-bit internal registers, the 8087, was developed for the original 8086. This microprocessor subsequently developed into the extended 80387, and later processors incorporated a backward compatible version of this functionality on the same microprocessor as the main processor. In addition to this, modern x86 designs also contain a SIMD-unit (see SSE below) where instructions can work in parallel on (one or two) 128-bit words, each containing two or four floating point numbers (each 64 or 32 bits wide respectively), or alternatively, 2, 4, 8 or 16 integers (each 64, 32, 16 or 8 bits wide respectively).

The presence of wide SIMD registers means that existing x86 processors can load or store up to 128 bits of memory data in a single instruction and also perform bitwise operations (although not integer arithmetic[n]) on full 128-bits quantities in parallel. Intel's Sandy Bridge processors added the AVX (Advanced Vector Extensions) instructions, widening the SIMD registers to 256 bits. Knights Corner, the architecture used by Intel on their Xeon Phi co-processors, uses 512-bit wide SIMD registers.

Current implementations

During execution, current x86 processors employ a few extra decoding steps to split most instructions into smaller pieces called micro-operations. These are then handed to a control unit that buffers and schedules them in compliance with x86-semantics so that they can be executed, partly in parallel, by one of several (more or less specialized) execution units. These modern x86 designs are thus pipelined, superscalar, and also capable of out of order and speculative execution (via register renaming) and memory dependence prediction, which means they may execute multiple (partial or complete) x86 instructions simultaneously, and not necessarily in the same order as given in the instruction stream.[17] Intel's and AMD's (starting from AMD Zen) CPUs are also capable of simultaneous multithreading with two threads per core (Xeon Phi has four threads per core) and in case of Intel transactional memory (TSX).

When introduced, in the mid-1990s, this method was sometimes referred to as a "RISC core" or as "RISC translation", partly for marketing reasons, but also because these micro-operations share some properties with certain types of RISC instructions. However, *traditional* microcode (used since the 1950s) also inherently shares many of the same properties; the new method differs mainly in that the translation to micro-operations now occurs asynchronously. Not having to synchronize the execution units with the decode steps opens up possibilities for more analysis of the (buffered) code stream, and therefore permits detection of operations that can be performed in parallel, simultaneously feeding more than one execution unit.

The latest processors also do the opposite when appropriate; they combine certain x86 sequences (such as a compare followed by a conditional jump) into a more complex micro-op which fits the execution model better and thus can be executed faster or with less machine resources involved.

Another way to try to improve performance is to cache the decoded micro-operations, so the processor can directly access the decoded micro-operations from a special cache, instead of decoding them again. Intel followed this approach with the Execution Trace Cache feature in their NetBurst Microarchitecture (for Pentium 4 processors) and later in the Decoded Stream Buffer (for Core-branded processors since Sandy Bridge).[18]

Transmeta used a completely different method in their x86 compatible CPUs. They used just-in-time translation to convert x86 instructions to the CPU's native VLIW instruction set. Transmeta argued that their approach allows for more power efficient designs since the CPU can forgo the complicated decode step of more traditional x86 implementations.

Segmentation

Minicomputers during the late 1970s were running up against the 16-bit 64-KB address limit, as memory had become cheaper. Some minicomputers like the PDP-11 used complex bank-switching schemes, or, in the case of Digital's VAX, redesigned much more expensive processors which could directly handle 32-bit addressing and data. The original 8086, developed from the simple 8080 microprocessor and primarily aiming at very small and inexpensive computers and other specialized devices, instead adopted simple segment registers which

increased the memory address width by only 4 bits. By multiplying a 64-KB address by 16, the 20-bit address could address a total of one megabyte (1,048,576 bytes) which was quite a large amount for a small computer at the time. The concept of segment registers was not new to many mainframes which used segment registers to swap quickly to different tasks. In practice, on the x86 it was (is) a much-criticized implementation which greatly complicated many common programming tasks and compilers. However, the architecture soon allowed linear 32-bit addressing (starting with the 80386 in late 1985) but major actors (such as Microsoft) took several years to convert their 16-bit based systems. The 80386 (and 80486) was therefore largely used as a fast (but still 16-bit based) 8086 for many years.

Data and code could be managed within "near" 16-bit segments within 64 KB portions of the total 1 MB address space, or a compiler could operate in a "far" mode using 32-bit `segment:offset` pairs reaching (only) 1 MB. While that would also prove to be quite limiting by the mid-1980s, it was working for the emerging PC market, and made it very simple to translate software from the older 8008, 8080, 8085, and Z80 to the newer processor. During 1985, the 16-bit segment addressing model was effectively factored out by the introduction of 32-bit offset registers, in the 386 design.

In real mode, segmentation is achieved by shifting the segment address left by 4 bits and adding an offset in order to receive a final 20-bit address. For example, if DS is A000h and SI is 5677h, DS:SI will point at the absolute address DS × 10h + SI = A5677h. Thus the total address space in real mode is 2^{20} bytes, or 1 MB, quite an impressive figure for 1978. All memory addresses consist of both a segment and offset; every type of access (code, data, or stack) has a default segment register associated with it (for data the register is usually DS, for code it is CS, and for stack it is SS). For data accesses, the segment register can be explicitly specified (using a segment override prefix) to use any of the four segment registers.

In this scheme, two different segment/offset pairs can point at a single absolute location. Thus, if DS is A111h and SI is 4567h, DS:SI will point at the same A5677h as above. This scheme makes it impossible to use more than four segments at once. CS and SS are vital for the correct functioning of the program, so that only DS and ES can be used to point to data segments outside the program (or, more precisely, outside the currently executing segment of the program) or the stack.

In protected mode, introduced in the 80286, a segment register no longer contains the physical address of the beginning of a segment, but contain a "selector" that points to a system-level structure called a *segment descriptor*. A segment descriptor contains the physical address of the beginning of the segment, the length of the segment, and access permissions to that segment. The offset is checked against the length of the segment, with offsets referring to locations outside the segment causing an exception. Offsets referring to locations inside the segment are combined with the physical address of the beginning of the segment to get the physical address corresponding to that offset.

The segmented nature can make programming and compiler design difficult because the use of near and far pointers affects performance.

Addressing modes

Addressing modes for 16-bit x86 processors can be summarized by the formula:

$$\begin{Bmatrix} \mathtt{CS:} \\ \mathtt{DS:} \\ \mathtt{SS:} \\ \mathtt{ES:} \end{Bmatrix} \left[\begin{Bmatrix} \mathtt{BX} \\ \mathtt{BP} \end{Bmatrix} \right] + \left[\begin{Bmatrix} \mathtt{SI} \\ \mathtt{DI} \end{Bmatrix} \right] + [\text{displacement}]$$

Addressing modes for 32-bit address size on 32-bit or 64-bit x86 processors can be summarized by the formula:[19]

$$\begin{Bmatrix} \mathtt{CS:} \\ \mathtt{DS:} \\ \mathtt{SS:} \\ \mathtt{ES:} \\ \mathtt{FS:} \\ \mathtt{GS:} \end{Bmatrix} \left[\begin{Bmatrix} \mathtt{EAX} \\ \mathtt{EBX} \\ \mathtt{ECX} \\ \mathtt{EDX} \\ \mathtt{ESP} \\ \mathtt{EBP} \\ \mathtt{ESI} \\ \mathtt{EDI} \end{Bmatrix} \right] + \left[\begin{Bmatrix} \mathtt{EAX} \\ \mathtt{EBX} \\ \mathtt{ECX} \\ \mathtt{EDX} \\ \mathtt{EBP} \\ \mathtt{ESI} \\ \mathtt{EDI} \end{Bmatrix} * \begin{Bmatrix} 1 \\ 2 \\ 4 \\ 8 \end{Bmatrix} \right] + [\text{displacement}]$$

Addressing modes for 64-bit code on 64-bit x86 processors can be summarized by the formula:

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$$\left\{ \begin{array}{l} \left\{ \begin{array}{l} \texttt{FS}: \\ \texttt{GS}: \end{array} \right\} [\text{general register}] + \left[\text{general register} * \left\{ \begin{array}{l} 1 \\ 2 \\ 4 \\ 8 \end{array} \right\} \right] \\ \\ \texttt{RIP} \end{array} \right\} + [\text{displacement}]$$

Instruction relative addressing in 64-bit code (RIP + displacement, where RIP is the instruction pointer register) simplifies the implementation of position-independent code (as used in shared libraries in some operating systems).

The 8086 had 64 KB of eight-bit (or alternatively 32 K-word of 16-bit) I/O space, and a 64 KB (one segment) stack in memory supported by computer hardware. Only words (two bytes) can be pushed to the stack. The stack grows toward numerically lower addresses, with `SS:SP` pointing to the most recently pushed item. There are 256 interrupts, which can be invoked by both hardware and software. The interrupts can cascade, using the stack to store the return address.

x86 registers

16-bit

The original Intel 8086 and 8088 have fourteen 16-bit registers. Four of them (AX, BX, CX, DX) are general-purpose registers (GPRs), although each may have an additional purpose; for example, only CX can be used as a counter with the *loop* instruction. Each can be accessed as two separate bytes (thus BX's high byte can be accessed as BH and low byte as BL). Two pointer registers have special roles: SP (stack pointer) points to the "top" of the stack, and BP (base pointer) is often used to point at some other place in the stack, typically above the local variables (see frame pointer). The registers SI, DI, BX and BP are address registers, and may also be used for array indexing.

Four segment registers (CS, DS, SS and ES) are used to form a memory address. The FLAGS register contains flags such as carry flag, overflow flag and zero flag. Finally, the instruction pointer (IP) points to the next instruction that will be fetched from memory and then executed; this register cannot be directly accessed (read or written) by a program.[20]

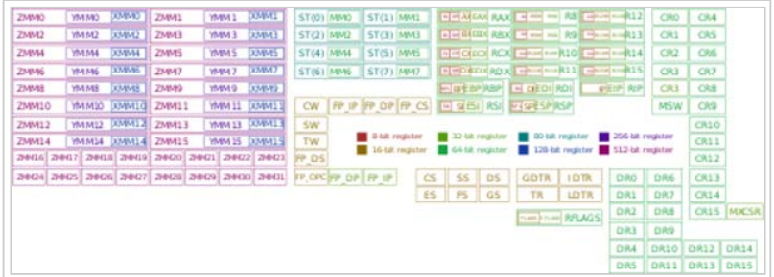
The Intel 80186 and 80188 are essentially an upgraded 8086 or 8088 CPU, respectively, with on-chip peripherals added, and they have the same CPU registers as the 8086 and 8088 (in addition to interface registers for the peripherals).

The 8086, 8088, 80186, and 80188 can use an optional floating-point coprocessor, the 8087. The 8087 appears to the programmer as part of the CPU and adds eight 80-bit wide registers, st(0) to st(7), each of which can hold numeric data in one of seven formats: 32-, 64-, or 80-bit floating point, 16-, 32-, or 64-bit (binary) integer, and 80-bit packed decimal integer.[6]:S-6, S-13..S-15

In the Intel 80286, to support protected mode, three special registers hold descriptor table addresses (GDTR, LDTR, IDTR), and a fourth task register (TR) is used for task switching. The 80287 is the floating-point coprocessor for the 80286 and has the same registers as the 8087 with the same data formats.

32-bit

With the advent of the 32-bit 80386 processor, the 16-bit general-purpose registers, base registers, index registers, instruction pointer, and FLAGS register, but not the segment registers, were expanded to 32 bits. The nomenclature represented this by prefixing an "**E**" (for "extended") to the register names in x86 assembly language. Thus, the AX register corresponds to the lowest 16 bits of the new 32-bit EAX register, SI corresponds to the lowest 16 bits of ESI, and so on. The general-purpose registers, base registers, and index registers can all be used as the base in addressing modes, and all of those registers except for the stack pointer can be used as the index in addressing modes.



Registers available in the x86 instruction set

Two new segment registers (FS and GS) were added. With a greater number of registers, instructions and operands, the machine code format was expanded. To provide backward compatibility, segments with executable code can be marked as containing either 16-bit or 32-bit instructions. Special prefixes allow inclusion of 32-bit instructions in a 16-bit segment or *vice versa*.

The 80386 had an optional floating-point coprocessor, the 80387; it had eight 80-bit wide registers: st(0) to st(7),[21] like the 8087 and 80287. The 80386 could also use an 80287 coprocessor.[22] With the 80486 and all subsequent x86 models, the floating-point processing unit (FPU) is integrated on-chip.

The Pentium MMX added eight 64-bit MMX integer registers (MMX0 to MMX7, which share lower bits with the 80-bit-wide FPU stack).[23] With the Pentium III, Intel added a 32-bit Streaming SIMD Extensions (SSE) control/status register (MXCSR) and eight 128-bit SSE floating point registers (XMM0 to XMM7).[24]

64-bit

Starting with the AMD Opteron processor, the x86 architecture extended the 32-bit registers into 64-bit registers in a way similar to how the 16 to 32-bit extension took place. An **R**-prefix identifies the 64-bit registers (RAX, RBX, RCX, RDX, RSI, RDI, RBP, RSP, RFLAGS, RIP), and eight additional 64-bit general registers (R8-R15) were also introduced in the creation of x86-64. However, these extensions are only usable in 64-bit mode, which is one of the two modes only available in long mode. The addressing modes were not dramatically changed from 32-bit mode, except that addressing was extended to 64 bits, virtual addresses are now sign extended to 64 bits (in order to disallow mode bits in virtual addresses), and other selector details were dramatically reduced. In addition, an addressing mode was added to allow memory references relative to RIP (the instruction pointer), to ease the implementation of position-independent code, used in shared libraries in some operating systems.

128-bit

SIMD registers XMM0–XMM15.

256-bit

SIMD registers YMM0–YMM15.

512-bit

SIMD registers ZMM0–ZMM31.

Miscellaneous/special purpose

x86 processors that have a protected mode, i.e. the 80286 and later processors, also have three descriptor registers (GDTR, LDTR, IDTR) and a task register (TR).

32-bit x86 processors (starting with the 80386) also include various special/miscellaneous registers such as control registers (CR0 through 4, CR8 for 64-bit only), debug registers (DR0 through 3, plus 6 and 7), test registers (TR3 through 7; 80486 only), and model-specific registers (MSRs, appearing with the Pentium[o]).

Purpose

Although the main registers (with the exception of the instruction pointer) are "general-purpose" in the 32-bit and 64-bit versions of the instruction set and can be used for anything, it was originally envisioned that they be used for the following purposes:

- AL/AH/AX/EAX/RAX: Accumulator
- BL/BH/BX/EBX/RBX: Base index (for use with arrays)
- CL/CH/CX/ECX/RCX: Counter (for use with loops and strings)
- DL/DH/DX/EDX/RDX: Extend the precision of the accumulator (e.g. combine 32-bit EAX and EDX for 64-bit integer operations in 32-bit code)
- SI/ESI/RSI: *Source index* for string operations.
- DI/EDI/RDI: *Destination index* for string operations.
- SP/ESP/RSP: Stack pointer for top address of the stack.
- BP/EBP/RBP: Stack base pointer for holding the address of the current stack frame.
- IP/EIP/RIP: Instruction pointer. Holds the program counter, the current instruction address.

Segment registers:

- CS: Code
- DS: Data
- SS: Stack

- ES: Extra data
- FS: Extra data #2
- GS: Extra data #3

No particular purposes were envisioned for the other 8 registers available only in 64-bit mode.

Some instructions compile and execute more efficiently when using these registers for their designed purpose. For example, using AL as an accumulator and adding an immediate byte value to it produces the efficient *add to AL* opcode of 04h, whilst using the BL register produces the generic and longer *add to register* opcode of 80C3h. Another example is double precision division and multiplication that works specifically with the AX and DX registers.

Modern compilers benefited from the introduction of the *sib* byte (*scale-index-base byte*) that allows registers to be treated uniformly (minicomputer-like). However, using the sib byte universally is non-optimal, as it produces longer encodings than only using it selectively when necessary. (The main benefit of the sib byte is the orthogonality and more powerful addressing modes it provides, which make it possible to save instructions and the use of registers for address calculations such as scaling an index.) Some special instructions lost priority in the hardware design and became slower than equivalent small code sequences. A notable example is the LODSW instruction.

Structure

General Purpose Registers (A, B, C and D)

64	56	48	40	32	24	16	8
R?X							
				E?X			
						?X	
						?H	?L

64-bit mode-only General Purpose Registers (R8, R9, R10, R11, R12, R13, R14, R15)

64	56	48	40	32	24	16	8
?							
				?D			
						?W	
							?B

Segment Registers (C, D, S, E, F and G)

16	8
?S	

Pointer Registers (S and B)

64	56	48	40	32	24	16	8
R?P							
				E?P			
						?P	
							?PL

Note: The ?PL registers are only available in 64-bit mode.

Index Registers (S and D)

64	56	48	40	32	24	16	8
R?I							
				E?I			
						?I	
							?IL

Note: The ?IL registers are only available in 64-bit mode.

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Instruction Pointer Register (I)

64	56	48	40	32	24	16	8
RIP							
				EIP			
						IP	

Operating modes

Real mode

Real Address mode,[25] commonly called Real mode, is an operating mode of 8086 and later x86-compatible CPUs. Real mode is characterized by a 20-bit segmented memory address space (meaning that only 1 MiB of memory can be addressed—actually, slightly more [p]), direct software access to peripheral hardware, and no concept of memory protection or multitasking at the hardware level. All x86 CPUs in the 80286 series and later start up in real mode at power-on; 80186 CPUs and earlier had only one operational mode, which is equivalent to real mode in later chips. (On the IBM PC platform, direct software access to the IBM BIOS routines is available only in real mode, since BIOS is written for real mode. However, this is not a characteristic of the x86 CPU but of the IBM BIOS design.)

In order to use more than 64 KB of memory, the segment registers must be used. This created great complications for compiler implementors who introduced odd pointer modes such as "near", "far" and "huge" to leverage the implicit nature of segmented architecture to different degrees, with some pointers containing 16-bit offsets within implied segments and other pointers containing segment addresses and offsets within segments. It is technically possible to use up to 256 KB of memory for code and data, with up to 64 KB for code, by setting all four segment registers once and then only using 16-bit offsets (optionally with default-segment override prefixes) to address memory, but this puts substantial restrictions on the way data can be addressed and memory operands can be combined, and it violates the architectural intent of the Intel designers, which is for separate data items (e.g. arrays, structures, code units) to be contained in separate segments and addressed by their own segment addresses, in new programs that are not ported from earlier 8-bit processors with 16-bit address spaces.

Protected mode

In addition to real mode, the Intel 80286 supports protected mode, expanding addressable physical memory to 16 MB and addressable virtual memory to 1 GB, and providing protected memory, which prevents programs from corrupting one another. This is done by using the segment registers only for storing an index into a descriptor table that is stored in memory. There are two such tables, the Global Descriptor Table (GDT) and the Local Descriptor Table (LDT), each holding up to 8192 segment descriptors, each segment giving access to 64 KB of memory. In the 80286, a segment descriptor provides a 24-bit base address, and this base address is added to a 16-bit offset to create an absolute address. The base address from the table fulfills the same role that the literal value of the segment register fulfills in real mode; the segment registers have been converted from direct registers to indirect registers. Each segment can be assigned one of four ring levels used for hardware-based computer security. Each segment descriptor also contains a segment limit field which specifies the maximum offset that may be used with the segment. Because offsets are 16 bits, segments are still limited to 64 KB each in 80286 protected mode.[26]

Each time a segment register is loaded in protected mode, the 80286 must read a 6-byte segment descriptor from memory into a set of hidden internal registers. Therefore, loading segment registers is much slower in protected mode than in real mode, and changing segments very frequently is to be avoided. Actual memory operations using protected mode segments are not slowed much because the 80286 and later have hardware to check the offset against the segment limit in parallel with instruction execution.

The Intel 80386 extended offsets and also the segment limit field in each segment descriptor to 32 bits, enabling a segment to span the entire memory space. It also introduced support in protected mode for paging, a mechanism making it possible to use paged virtual memory (with 4 KB page size). Paging allows the CPU to map any page of the virtual memory space to any page of the physical memory space. To do this, it uses additional mapping tables in memory called page tables. Protected mode on the 80386 can operate with paging either enabled or disabled; the segmentation mechanism is always active and generates virtual addresses that are then mapped by the paging mechanism if it is enabled. The segmentation mechanism can also be effectively disabled by setting all segments to have a base address of 0 and size limit equal to the whole address space; this also requires a minimally-sized segment descriptor table of only four descriptors (since the FS and GS segments need not be used).[q]

Paging is used extensively by modern multitasking operating systems. Linux, 386BSD and Windows NT were developed for the 386 because it was the first Intel architecture CPU to support paging and 32-bit segment offsets. The 386 architecture became the basis of all further development in the x86 series.

x86 processors that support protected mode boot into real mode for backward compatibility with the older 8086 class of processors. Upon power-on (a.k.a. booting), the processor initializes in real mode, and then begins executing instructions. Operating system boot code, which might be stored in ROM, may place the processor into the protected mode to enable paging and other features. The instruction set in protected mode is backward compatible with the one used in real mode.

Virtual 8086 mode

There is also a sub-mode of operation in 32-bit protected mode (a.k.a. 80386 protected mode) called *virtual 8086 mode*, also known as *V86 mode*. This is basically a special hybrid operating mode that allows real mode programs and operating systems to run while under the control of a protected mode supervisor operating system. This allows for a great deal of flexibility in running both protected mode programs and real mode programs simultaneously. This mode is exclusively available for the 32-bit version of protected mode; it does not exist in the 16-bit version of protected mode, or in long mode.

Long mode

In the mid 1990s, it was obvious that the 32-bit address space of the x86 architecture was limiting its performance in applications requiring large data sets. A 32-bit address space would allow the processor to directly address only 4 GB of data, a size surpassed by applications such as video processing and database engines. Using 64-bit addresses, it is possible to directly address 16 EiB of data, although most 64-bit architectures do not support access to the full 64-bit address space; for example, AMD64 supports only 48 bits from a 64-bit address, split into four paging levels.

In 1999, AMD published a (nearly) complete specification for a 64-bit extension of the x86 architecture which they called *x86-64* with claimed intentions to produce. That design is currently used in almost all x86 processors, with some exceptions intended for embedded systems.

Mass-produced *x86-64* chips for the general market were available four years later, in 2003, after the time was spent for working prototypes to be tested and refined; about the same time, the initial name *x86-64* was changed to *AMD64*. The success of the AMD64 line of processors coupled with lukewarm reception of the IA-64 architecture forced Intel to release its own implementation of the AMD64 instruction set.

Intel had previously implemented support for AMD64[27] but opted not to enable it in hopes that AMD would not bring AMD64 to market before Itanium's new IA-64 instruction set was widely adopted. It branded its implementation of AMD64 as *EM64T*, and later re-branded it *Intel 64*.

In its literature and product version names, Microsoft and Sun refer to AMD64/Intel 64 collectively as *x64* in the Windows and Solaris operating systems respectively. Linux distributions refer to it either as "x86-64", its variant "x86_64", or "amd64". BSD systems use "amd64" while macOS uses "x86_64".

Long mode is mostly an extension of the 32-bit instruction set, but unlike the 16–to–32-bit transition, many instructions were dropped in the 64-bit mode. This does not affect actual binary backward compatibility (which would execute legacy code in other modes that retain support for those instructions), but it changes the way assembler and compilers for new code have to work.

This was the first time that a *major* extension of the x86 architecture was initiated and originated by a manufacturer other than Intel. It was also the first time that Intel accepted technology of this nature from an outside source.

Extensions

Floating point unit

Early x86 processors could be extended with floating-point hardware in the form of a series of floating point numerical co-processors with names like 8087, 80287 and 80387, abbreviated x87. This was also known as the NPX (*Numeric Processor eXtension*), an apt name since the coprocessors, while used mainly for floating-point calculations, also performed integer operations on both binary and decimal formats. With very few exceptions, the 80486 and subsequent x86 processors then integrated this x87 functionality on chip which made the x87 instructions a de facto integral part of the x86 instruction set.

Each x87 register, known as ST(0) through ST(7), is 80 bits wide and stores numbers in the IEEE floating-point standard double extended precision format. These registers are organized as a stack with ST(0) as the top. This was done in order to conserve opcode space, and the registers are therefore randomly accessible only for either operand in a register-to-register instruction; ST0 must always be one of the two operands, either the source or the destination, regardless of whether the other operand is ST(x) or a memory operand. However, random access to the stack registers can be obtained through an instruction which exchanges any specified ST(x) with ST(0).

The operations include arithmetic and transcendental functions, including trigonometric and exponential functions, as well as instructions that load common constants (such as 0; 1; e, the base of the natural logarithm; log2(10); and log10(2)) into one of the stack registers. While the integer capability is often overlooked, the x87 can operate on larger integers with a single instruction than the 8086, 80286, 80386, or

any x86 CPU without to 64-bit extensions can, and repeated integer calculations even on small values (e.g. 16-bit) can be accelerated by executing integer instructions on the x86 CPU and the x87 in parallel. (The x86 CPU keeps running while the x87 coprocessor calculates, and the x87 sets a signal to the x86 when it is finished or interrupts the x86 if it needs attention because of an error.)

MMX

MMX is a SIMD instruction set designed by Intel and introduced in 1997 for the Pentium MMX microprocessor. The MMX instruction set was developed from a similar concept first used on the Intel i860. It is supported on most subsequent IA-32 processors by Intel and other vendors. MMX is typically used for video processing (in multimedia applications, for instance).

MMX added 8 new "registers" to the architecture, known as MM0 through MM7 (henceforth referred to as *MMn*). In reality, these new "registers" were just aliases for the existing x87 FPU stack registers. Hence, anything that was done to the floating point stack would also affect the MMX registers. Unlike the FP stack, these MMn registers were fixed, not relative, and therefore they were randomly accessible. The instruction set did not adopt the stack-like semantics so that existing operating systems could still correctly save and restore the register state when multitasking without modifications.

Each of the MMn registers are 64-bit integers. However, one of the main concepts of the MMX instruction set is the concept of *packed data types*, which means instead of using the whole register for a single 64-bit integer (quadword), one may use it to contain two 32-bit integers (doubleword), four 16-bit integers (word) or eight 8-bit integers (byte). Given that the MMX's 64-bit MMn registers are aliased to the FPU stack and each of the floating point registers are 80 bits wide, the upper 16 bits of the floating point registers are unused in MMX. These bits are set to all ones by any MMX instruction, which correspond to the floating point representation of NaNs or infinities.

3DNow!

In 1997 AMD introduced 3DNow!. The introduction of this technology coincided with the rise of 3D entertainment applications and was designed to improve the CPU's vector processing performance of graphic-intensive applications. 3D video game developers and 3D graphics hardware vendors use 3DNow! to enhance their performance on AMD's K6 and Athlon series of processors.

3DNow! was designed to be the natural evolution of MMX from integers to floating point. As such, it uses exactly the same register naming convention as MMX, that is MM0 through MM7. The only difference is that instead of packing integers into these registers, two single precision floating point numbers are packed into each register. The advantage of aliasing the FPU registers is that the same instruction and data structures used to save the state of the FPU registers can also be used to save 3DNow! register states. Thus no special modifications are required to be made to operating systems which would otherwise not know about them.

SSE

In 1999, Intel introduced the Streaming SIMD Extensions (SSE) instruction set, following in 2000 with SSE2. The first addition allowed offloading of basic floating-point operations from the x87 stack and the second made MMX almost obsolete and allowed the instructions to be realistically targeted by conventional compilers. Introduced in 2004 along with the *Prescott* revision of the Pentium 4 processor, SSE3 added specific memory and thread-handling instructions to boost the performance of Intel's HyperThreading technology. AMD licensed the SSE3 instruction set and implemented most of the SSE3 instructions for its revision E and later Athlon 64 processors. The Athlon 64 does not support HyperThreading and lacks those SSE3 instructions used only for HyperThreading.

SSE discarded all legacy connections to the FPU stack. This also meant that this instruction set discarded all legacy connections to previous generations of SIMD instruction sets like MMX. But it freed the designers up, allowing them to use larger registers, not limited by the size of the FPU registers. The designers created eight 128-bit registers, named XMM0 through XMM7. (*Note*: in AMD64, the number of SSE XMM registers has been increased from 8 to 16.) However, the downside was that operating systems had to have an awareness of this new set of instructions in order to be able to save their register states. So Intel created a slightly modified version of Protected mode, called Enhanced mode which enables the usage of SSE instructions, whereas they stay disabled in regular Protected mode. An OS that is aware of SSE will activate Enhanced mode, whereas an unaware OS will only enter into traditional Protected mode.

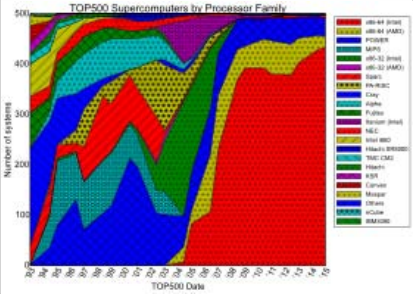
SSE is a SIMD instruction set that works only on floating point values, like 3DNow!. However, unlike 3DNow! it severs all legacy connection to the FPU stack. Because it has larger registers than 3DNow!, SSE can pack twice the number of single precision floats into its registers. The original SSE was limited to only single-precision numbers, like 3DNow!. The SSE2 introduced the capability to pack double precision numbers too, which 3DNow! had no possibility of doing since a double precision number is 64-bit in size which would be the full size of a single 3DNow! MMn register. At 128 bits, the SSE XMMn registers could pack two double precision floats into one register. Thus SSE2 is much more suitable for scientific calculations than either SSE1 or 3DNow!, which were limited to only single precision. SSE3 does not introduce any additional registers.

Physical Address Extension (PAE)

Physical Address Extension or PAE was first added in the Intel Pentium Pro, to allow an additional 4 bits of physical addressing in 32-bit protected mode. The size of memory in Protected mode is usually limited to 4 GB. Through tricks in the processor's page and segment memory management systems, x86 operating systems may be able to access more than 32-bits of address space, even without the switchover to the 64-bit paradigm. This mode does not change the length of segment offsets or linear addresses; those are still only 32 bits.

x86-64

By the 2000s it had become obvious that 32-bit x86 processors' limitations in memory addressing were an obstacle to their utilization in high-performance computing clusters and powerful desktop workstations. The aged 32-bit x86 was competing with much more advanced 64-bit RISC architectures which could address much more memory. Intel and the whole x86 ecosystem needed 64-bit memory addressing if x86 was to survive the 64-bit computing era, as workstation and desktop software applications were soon to start hitting the limitations present in 32-bit memory addressing. However, Intel felt that it was the right time to make a bold step and use the transition to 64-bit desktop computers for a transition away from the x86 architecture in general, an experiment which ultimately failed.



In supercomputer clusters (as tracked by TOP 500 data and visualized on the diagram above, last updated 2013), the appearance of 64-bit extensions for the x86 architecture enabled 64-bit x86 processors by AMD and Intel (olive-drab with small open circles, and red with small open circles, in the diagram, respectively) to replace most RISC processor architectures previously used in such systems (including PA-RISC, SPARC, Alpha and others), as well as 32-bit x86 (green on the diagram), even though Intel itself initially tried unsuccessfully to replace x86 with a new incompatible 64-bit architecture in the Itanium processor. The main non-x86 architecture which is still used, as of 2014, in supercomputing clusters is the Power Architecture used by IBM POWER microprocessors (blue with diamond tiling in the diagram), with SPARC as a distant second.

In 2001, Intel attempted to introduce a non-x86 64-bit architecture named IA-64 in its Itanium processor, initially aiming for the high-performance computing market, hoping that it would eventually replace the 32-bit x86.[28] While IA-64 was incompatible with x86, the Itanium processor did provide emulation capabilities for translating x86 instructions into IA-64, but this affected the performance of x86 programs so badly that it was rarely, if ever, actually useful to the users: programmers should rewrite x86 programs for the IA-64 architecture or their performance on Itanium would be orders of magnitude worse than on a true x86 processor. The market rejected the Itanium processor since it broke backward compatibility and preferred to continue using x86 chips, and very few programs were rewritten for IA-64.

AMD decided to take another path toward 64-bit memory addressing, making sure backward compatibility would not suffer. In April 2003, AMD released the first x86 processor with 64-bit general-purpose registers, the Opteron, capable of addressing much more than 4 GB of virtual memory using the new x86-64 extension (also known as AMD64 or x64). The 64-bit extensions to the x86 architecture were enabled only in the newly introduced long mode, therefore 32-bit and 16-bit applications and operating systems could simply continue using an AMD64 processor in protected or other modes, without even the slightest sacrifice of performance[29] and with full compatibility back to the original instructions of the 16-bit Intel 8086.[30](p13–14) The market responded positively, adopting the 64-bit AMD processors for both high-performance applications and business or home computers.

Seeing the market rejecting the incompatible Itanium processor and Microsoft supporting AMD64, Intel had to respond and introduced its own x86-64 processor, the "Prescott" Pentium 4, in July 2004.[31] As a result, the Itanium processor with its IA-64 instruction set is rarely used and x86, through its x86-64 incarnation, is still the dominant CPU architecture in non-embedded computers.

x86-64 also introduced the NX bit, which offers some protection against security bugs caused by buffer overruns.

As a result of AMD's 64-bit contribution to the x86 lineage and its subsequent acceptance by Intel, the 64-bit RISC architectures ceased to be a threat to the x86 ecosystem and almost disappeared from the workstation market. x86-64 began to be utilized in powerful supercomputers (in its AMD Opteron and Intel Xeon incarnations), a market which was previously the natural habitat for 64-bit RISC designs (such as the IBM POWER microprocessors or SPARC processors). The great leap toward 64-bit computing and the maintenance of backward compatibility with 32-bit and 16-bit software enabled the x86 architecture to become an extremely flexible platform today, with x86 chips being utilized from small low-power systems (for example, Intel Quark and Intel Atom) to fast gaming desktop computers (for example, Intel Core i7 and AMD FX), and even dominate large supercomputing clusters, effectively leaving only the ARM 32-bit and 64-bit RISC architecture as a competitor in the smartphone and tablet market.

Virtualization

Prior to 2005 x86 architecture processors were unable to meet the Popek and Goldberg requirements - a specification for virtualization created in 1974 by Gerald J. Popek and Robert P. Goldberg. However both commercial and open source x86 virtualization hypervisor products were developed using software-based virtualization. Commercial systems included VMware ESX, VMware Workstation, Parallels, Microsoft Hyper-V Server, and Microsoft Virtual PC; while open source systems included QEMU/KQEMU, VirtualBox, and Xen.

The introduction of the AMD-V and Intel VT-x instruction sets in 2005 allowed x86 processors to meet the Popek and Goldberg virtualization requirements.[32]

See also

- x86 assembly language
- x86 instruction listings
- CPUID
- Itanium
- 680x0, a competing architecture in the 16 & early 32bit eras
- PowerPC, a competing architecture in the later 32bit and 64bit eras
- Microarchitecture
- List of AMD microprocessors
- List of Intel microprocessors
- List of VIA microprocessors
- List of x86 manufacturers
- Input/Output Base Address
- Interrupt request
- iAPX

Notes

a. Unlike the microarchitecture (and specific electronic and physical implementation) used for a specific microprocessor design.
b. Intel abandoned its "x86" naming scheme with the *P5 Pentium* during 1993 (as *numbers* could not be trademarked). However, the term x86 was already established among technicians, compiler writers etc.
c. The GRID Compass laptop, for instance.
d. Including the 8088, 80186, 80188 and 80286 processors.
e. Such a system also contained the usual mix of standard 7400 series support components, including multiplexers, buffers and glue logic.
f. The actual meaning of iAPX was *Intel Advanced Performance Architecture*, or sometimes *Intel Advanced Processor Architecture*.
g. late 1981 to early 1984, approximately
h. The embedded processor market is populated by more than 25 different architectures, which, due to the price sensitivity, low power and hardware simplicity requirements, outnumber the x86.
i. The NEC V20 and V30 also provided the older 8080 instruction set, allowing PCs equipped with these microprocessors to operate CP/M applications at full speed (i.e. without the need to simulate an 8080 by software).
j. Fabless companies designed the chip and contracted another company to manufacture it, while fabbed companies would do both the design and the manufacturing themselves. Some companies started as fabbed manufacturers and later became fabless designers, one such example being AMD.
k. It had a slower FPU however, which is slightly ironic as Cyrix started out as a designer of fast Floating point units for x86 processors.
l. 16-bit and 32-bit microprocessors were introduced during 1978 and 1985 respectively; plans for 64-bit was announced during 1999 and gradually introduced from 2003 and onwards.
m. Some "CISC" designs, such as the PDP-11, may use two.
n. That is because integer arithmetic generates carry between subsequent bits (unlike simple bitwise operations).
o. Two MSRs of particular interest are SYSENTER_EIP_MSR and SYSENTER_ESP_MSR, introduced on the Pentium® II processor, which store the address of the kernel mode system service handler and corresponding kernel stack pointer. Initialized during system startup, SYSENTER_EIP_MSR and SYSENTER_ESP_MSR are used by the SYSENTER (Intel) or SYSCALL (AMD) instructions to achieve Fast System Calls, about three times faster than the software interrupt method used previously.
p. Because a segmented address is the sum of a 16-bit segment multiplied by 16 and a 16-bit offset, the maximum address is 1,114,095 (10FFEF hex), for an addressability of 1,114,096 bytes = 1 MB + 65,520 bytes. Before the 80286, x86 CPUs had only 20 physical address lines (address bit signals), so the 21st bit of the address, bit 20, was dropped and addresses past 1 MB were mirrors of the low end of the address space (starting from address zero). Since the 80286, all x86 CPUs have at least 24 physical address lines, and bit 20 of the computed address is brought out onto the address bus in real mode, allowing the CPU to address the full 1,114,096 bytes reachable with an x86 segmented address. On the popular IBM PC platform, switchable hardware to disable the 21st address bit was added to machines with an 80286 or later so that all programs designed for 8088/8086-based models could run, while newer software could take advantage of the "high" memory in real mode and the full 16 MB or larger address space in protected mode—see A20 gate.
q. An extra descriptor record at the top of the table is also required, because the table starts at zero but the minimum descriptor index that can be loaded into a segment register is 1; the value 0 is reserved to represent a segment register that points to no segment.

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Further reading

- Rosenblum, Mendel; Garfinkel, Tal (May 2005). *Virtual machine monitors: current technology and future trends* (PDF).

External links

Wikimedia Commons has media related to ***X86 Microprocessors***.

- 25 Years of Intel Architecture (http://www.intel.com/museum/corporatetimeline/index.htm?iid=about+ln_history)
- x86 CPUs guide (http://www.x86-guide.com/)
- Why Intel can't seem to retire the x86 (http://www.itworld.com/it-management/346559/why-intel-cant-seem-retire-x86)
- 32/64-bit x86 Instruction Reference (http://www.felixcloutier.com/x86/)
- Intel Intrinsics Guide (https://software.intel.com/sites/landingpage/IntrinsicsGuide/), an interactive reference tool for Intel intrinsic instructions

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http://www.everythingvm.com/content/history-virtualization

History of Virtualization

Mon 08/01/11

When you think of the beginning of Server Virtualization, companies like VMWare may come to mind. The thing you may not realize is Server Virtualization actually started back in the early 1960's and was pioneered by companies like General Electric (GE), Bell Labs, and International Business Machines (IBM).

The Invention of the Virtual Machine

In the Early 1960's IBM had a wide range of systems; each generation of which was substantially different from the previous. This made it difficult for customers to keep up with the changes and requirements of each new system. Also, computers could only do one thing at a time. If you had two tasks to accomplish, you had to run the processes in batches. This Batch processing requirement wasn't too big of a deal to IBM since most of their users were in the Scientific Community and up until this time Batch processing seemed to have met the customers needs.

Because of the wide range of hardware requirements, IBM began work on the S/360 mainframe system designed as a broad replacement for many of their other systems; and designed to maintain backwards compatibility. When the system was first designed, it was meant to be a single user system to run Batch Jobs.

However, this focus began to change in July 1, 1963 when Massachusetts Institute of Technology (MIT) announced Project MAC. Project MAC stood for Mathematics and Computation, but was later renamed to Multiple Access Computer. Project MAC was funded by a $2 Million grant from DARPA to fund research into computers, specifically in the areas of Operating Systems, Artificial Intelligence, and Computational Theory.

As part of this research grant, MIT needed new computer hardware capable of more than one simultaneous user and sought proposals from various computer vendors including GE and IBM. At this time, IBM was not willing to make a commitment towards a time sharing computer because they did not feel there was a big enough demand, and MIT did not want to have to use a specially modified system. GE on the other hand, was willing to make a commitment towards a time-sharing computer. For this reason MIT chose GE as their vendor of choice.

The loss of this opportunity was a bit of a wake-up call for IBM who then started to take notice as to the demand for such a system. Especially when IBM heard of Bell Labs' need for a similar system.

In response to the need from MIT and Bell Labs, IBM designed the CP-40 main frame. The CP-40 was never sold to customers, and was only used in labs. However, it is still importatnt since the CP-40 later evolved into the CP-67 system; which is the first commercial Main Frame to support Virtualization. The Operating system which ran on the CP-67 was referred to as CP/CMS. CP Stands for Control Program, CMS stands for Console Monitor System. CMS was a small single-user operating system designed to be interactive. CP was the program which created Virtual Machines. The idea was the CP ran on the Mainframe, and created Virtual Machines which ran the CMS; which the user would then interact with.

The User interaction portion is important. Before this system, IBM focused on systems where there was no user interaction. You would feed your program into the computer, it would do it's thing; then spit out the output to a printer or a screen. An Interactive Operating System meant you actually had a way of interacting with the programs while they ran.

The first version of the CP/CMS operating system was known as CP-40, but was only used in the lab. The Initial release of CP/CMS to the public was in 1968, the first stable release wasn't until 1972.

The traditional approach for a time sharing computer was to divide up the memory and other system resources between users. An Example of a time sharing operating system from the era is MultiCS. MultiCS

was created as part of Project MAC at MIT. Additional research and development was performed on MultiCS at Bell Labs, where it later evolved into Unix.

The CP approach to time sharing allowed each user to have their own complete [illegible] which effectively gave each user their own computer, and the operating was much more simple.

The main advantages of using virtual machines vs a time sharing operating system was more efficient use of the system since virtual machines were able to share the overall resources of the mainframe, instead of having the resources split equally between all users. There was better security since each users was running in a completely separate operating system. And it was more reliable since no one user could crash the entire system; only their own operating system.

Portability of Software

In the previous section, I mentioned MultiCS and how it evolved into Unix. While UNIX is not running virtualized operating systems, it is still a good example of application from another perspective. Unix is not the first multi-user operating system, but it is a very good example of one, and is one of the most widely used ever.

Unix is an example of Virtualization at the User or Workspace Level. Multiple users share the same CPU, Memory, Hard Disk, etc... pool of resources, but each have their own profile, separate from the other users on the system. Depending on the way the system is configured, the user may be able to install their own set of applications, and security is handled on a per user basis. Not only was Unix the first step towards multi-user operating systems, but it was also the first step towards application virtualization.

Unix is not an example of application virtualization, but it did allow users much greater portability of their applications. Prior to Unix, almost all operating systems were coded in assembly language. Alternatively, Unix was created using the C programming language. Since Unix was written in C, only small parts of the operating system had to be customized for a given hardware platform, the rest of the operating system could easily be re-compiled for each hardware platform with little or no changes.

Application Virtualization

Through the use of Unix, and C compilers, and adept user could run just about any program on any platform, but it still required users to compile all the software on the platform they wished to run on. For true portability of software, you needed some sort of software virtualization.

In 1990, Sun Microsystems began a project known as “Stealth”. Stealth was a project run by Engineers who had become frustrated with Sun’s use of C/C++ API’s and felt there was a better way to write and run applications. Over the next several years the project was renamed several times, including names such as Oak, Web Runner, and finally in 1995, the project was renamed to Java.

In 1994 Java was targeted towards the Worldwide web since Sun saw this as a major growth opportunity. The Internet is a large network of computers running on different operating systems and at the time had no way of running rich applications universally, Java was the answer to this problem. In January 1996. the Java Development Kit (JDK) was released, allowing developers to write applications for the Java Platform.

At the time, there was no other language like Java. Java allowed you to write an application once, then run the application on any computer with the Java Run-time Environment (JRE) installed. The JRE was and still is a free application you can download from then Sun Micro-systems website, now Oracle's website.

Java works by compiling the application into something known as Java Byte Code. Java Byte Code is an intermediate language that can only be read by the JRE. Java uses a concept known as Just in Time compilation (JIT). At the time you write your program, your Java code is not compiled. Instead, it is converted into Java Byte Code, until just before the program is executed. This is similar to the way Unix revolutionized Operating systems through it’s use of the C programming language. Since the JRE compiles the software just before running, the developer does not need to worry about what operating system or hardware platform the end user will run the application on; and the user does not need to know how to compile a program, that is handled by the JRE..
The JRE is composed of many components, most important of which is the Java Virtual Machine. . Whenever a java application is run, it is run inside of the Java Virtual Machine. You can think of the Java Virtual Machine is a very small operating system, created with the sole purpose of running your Java application. Since Sun/Oracle goes through the trouble of porting the Java Virtual Machine to run on various systems from your cellular phone to the servers in your Data-center, you don’t have to. You can write the application once, and run anywhere. At least that is the idea; there are some limitations.

Mainstream Adoption of Hardware Virtualization

As was covered in the Invention of the Virtual Machine section, IBM was the first to bring the concept of Virtual Machines to the commercial environment. Virtual Machines as they were on IBM’s Mainframes are still in use today, however most companies don’t use mainframes.
In January of 1987, Insignia Solutions demonstrated a software emulator called SoftPC. SoftPC allowed users to run Dos applications on their Unix workstations. This is a feat that had never been possible before. At the time, a PC capable of running MS DOS cost around $1,500. SoftPC gave users with a Unix workstation the ability to run DOS applications for a mere $500.
By 1989, Insignia Solutions had released a Mac version of SoftPC, giving Mac users the same capabilities;

and had added the ability to run Windows applications, not Just DOS applications. By 1994, Insignia Solutions began selling their software packaged with operating systems pre-loaded, including: SoftWindows, and SoftOS/2.

Inspired by the success of SoftPC, other companies began to spring up. In 1997, Apple created a program called Virtual PC and sold it through a company called Connectix. Virtual PC, like SoftPC allowed users to run a copy of windows on the Mac computer, in order to work around software incompatibilities. In 1998, a company called VMWare was established, and in 1999 began selling a product similar to Virtual PC called VMWare workstation. Initial versions of VMWare workstation only ran on windows; but later added support for other operating systems.

I mention VMWare because they are really the market leader in Virtualization in today's market. In 2001, VMWare released two new products as they branched into the enterprise market, ESX Server and GSX Server. GSX Server allowed users to run virtual machines on top of an existing operating system, such as Microsoft Windows, this is known as a Type-2 Hypervisor. ESX Server is known as a Type-1 Hypervisor, and does not require a host operating system to run Virtual Machines.
A Type-1 Hypervisor is much more efficient than a Type-2 hypervisor since it can be better optimized for virtualization, and does not require all the resources it takes to run a traditional operating system.

Since releasing ESX Server in 2001, VMWare has seen exponential growth in the enterprise market; and has added many complimentary products to enhance ESX Server. Other vendors have since entered the market. Microsoft acquired Connectix in 2003, after which they re-released Virtual PC as Microsoft Virtual PC 2004, then Microsoft Virtual Server 2005, both of which were un-released products from Connectix at the time Microsoft acquired them.

Citrix Inc, entered the Virtualization market in 2007 when they acquired Xensource, an open source virtualization platform which started in 2003. Citrix soon thereafter renamed the product to Xenserver.

Published Applications

In the early days of UNIX, you could access published applications via a Telnet Interface; and later SSH. Telnet is a small program allowing you to remotely access another computer. SSH is a version of telnet including various features such as encryption.

Telnet/SSH allows you to access either a text interface, or a Graphical interface, although it is not really optimized for graphics. Using telnet, you can access much of the functionality of the given server, from almost anywhere.

Windows and OS/2 had no manner of remotely accessing applications without third party tools. And the third party tools available only allowed one user at a time.

Some Engineers at IBM had an idea to create a multi-user interface for OS/2, however IBM did not share the same vision. So in 1989 Ed Lacobucci left IBM and started his own company called Citrus. Due to an existing trademark, the company was quickly re-branded as Citrix, a combination of Citrus and Unix.

Citrix licenced the source code to OS/2 through Microsoft and began working on creating their extension to OS/2. The company operated for two years and created a Multi-User interface for OS/2 called MULTIUSER. However Citrix was forced to abandon the project in 1991 after Microsoft announced it was no longer going to support OS/2. At that point, Citrix licensed source code from Microsoft and began working on a similar product focused on Windows.

In 1993 Citrix Acquired Netware Access Server from Novell. This product was similar to what Citrix had accomplished for OS/2 in that it gave multiple users access to a single system. Citrix Licensed the Windows NT source code in from Microsoft, then in 1995 began selling a product called WinFrame. WinFrame was a version of Windows NT 3.5 with remote access capabilities; allowing multiple users to access the system at the same time in order to remotely run applications.

While developing WinFrame for Windows NT 4.0, Microsoft decided to no longer grant the necessary licenses to Citrix. At this point Citrix licensed WinFrame to Microsoft, and it was included with Windows NT 4.0 as Terminal Services. As part of this agreement, Citrix agreed not to create a competing product, but was allowed to extend the functionality of Terminal Services.

Virtual Desktops

Virtual Desktop Infrastructures (VDI) is the practice of running a users Desktop Operating system, such as Windows XP within a virtual machine on a centralized infrastructure. Virtual Desktop Computers as we think of them today are a fairly new topic of conversation. But are very similar to the idea IBM had back in the 1960's with the virtual machines on their mainframe computers. You give each user on the system their own operating system, then each user can then do as the please without disrupting anyother users on the system. Each user has their own computer, it is centralized, and it is a very efficient use of resources.

If you compare MultiCS from back in the 1960's to the IBM Mainframes, it would be similar to comparing a Microsoft Terminal Server to a Virtual Desktop infrastructure today.

The jump from Virtual Desktops on Mainframes to Virtual Desktops as we know them today didn't really happen until 2007 when VMWare introduced their VDI product. Prior to this release, it was possible for users in a company to use virtual desktops as their primary computers. However, it wasn't really a viable solution due to management headaches. The introduction of Virtual Machine Manager from VMWare, and similar products from companies like Microsoft and Citrix has allowed this area to grow very rapidly.

Summary

Computer Virtualization has a long history, spanning nearly half a century. It can be used for making your applications easier to access remotely, allowing your applications to run on more systems than

originally intended, improving stability, and more efficient use of resources.

Some technologies can be traced back to the 60's such as Virtual Desktops, others can only be traced back a few years, such as virtualized applications.

Desktop Virtualization General VMWare Xen Server Other Virtualization Virtualization

Syndicate

Exhibit 8

AUGUST 17, 2015 | BY DANIEL NAZER

Deep Dive: Why We Need Venue Reform to Restore Fairness to Patent Litigation

Back in 2011, This American Life toured an office building in Marshall, Texas, and found eerie hallways of empty offices that serve as the 'headquarters' of patent trolls. For many, that was the first introduction to the strange world of the Eastern District of Texas, its outsized role in patent litigation and especially its effective support of the patent troll business model. Trolls love the Eastern District for its plaintiff-friendly rules, so they set up paper corporations in the district as an excuse to file suit there. Meanwhile, defendants find themselves dragged to a distant, inconvenient, and expensive forum that often has little or no connection to the dispute.

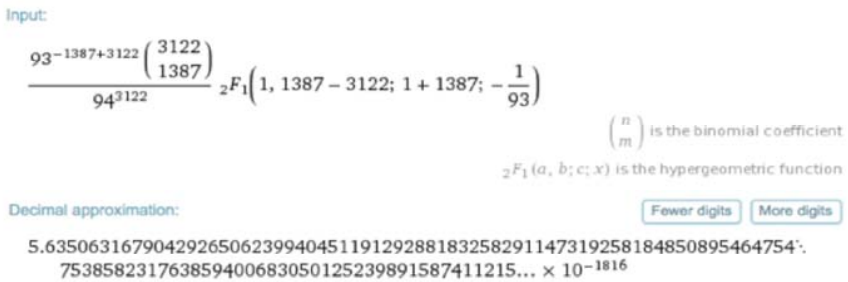
The remote district's role has only increased since 2011 and the latest data reveals that the Eastern District of Texas is headed to a record year. An astonishing 1,387 patent cases were filed there in the first half of 2015. This was 44.4% of all patent cases nationwide. And almost all of this growth is fueled by patent trolls.

Happily, lawmakers have finally moved to restore some balance. The latest version of the Innovation Act in the House includes language that would make it much harder for trolls to file in the Eastern District of Texas. The proposal goes under the decidedly mundane name of "venue reform" but it could actually be crucial to the effort fix our broken patent system.

The Luckiest Court in the Universe

The Eastern District of Texas is a federal court district running along the Texas–Louisiana border. The district covers a largely rural area without much of a technology industry. It is just one of 94 federal district courts. (Some states, like Vermont, have a single federal district, while others, like Texas and California, have as many as four.) If patent cases were distributed evenly among the federal district courts, each one would have received about 33 cases so far this year – a far cry from the 1,387 filings in the Eastern District of Texas.

Accident? We don't think so. In fact, we ran a calculation to see how likely it is that at least 1387 of 3122 patent cases might end up there by chance. This was the result:



This probability is so vanishingly small that you'd be more likely to win the Powerball jackpot 200 times in a row. Obviously, something other than chance is attracting trolls to this remote district.

Now that folks are taking notice, some Eastern District of Texas jurists are feeling a bit defensive. Former Judge Leonard Davis, for example, recently said: "To say the Eastern District is responsible [for the patent troll problem] is to say that the Southern District of Texas is responsible for immigration problems." This is nonsense. The Southern District of Texas gets

immigration cases because it sits on the U.S.-Mexico border. There is no equivalent reason for the Eastern District of Texas to be a hotbed of patent litigation. To understand why the district sees so much patent trolling, we need to look deeper.

How We Got Here

The Eastern District of Texas was not always so popular. In 1999, only fourteen patent cases were filed there. By 2003, the number of filings had grown to fifty-five. Ten years later, in 2013, it was 1,495.

This massive rise in litigation followed the appointment of Judge T. John Ward in 1999, and his drive to create local patent rules. Judge Ward's rules, while similar to patent rules in other federal districts, had some additional plaintiff-friendly features such as a compressed discovery schedule and a short timeline to trial. This so-called "rocket docket" attracted patent plaintiffs eager to use the compressed schedule to pressure defendants to settle. For those cases that went to trial, the district got a reputation for huge patent verdicts. As one commentator explained, the Eastern District's "speed, large damage awards, outstanding win-rates, likelihood of getting to trial, and plaintiff-friendly local rules suddenly made [it] the venue of choice for patent plaintiffs."

The explosion in patent litigation promptly led to a burst of new economic activity in East Texas. As the BBC wrote, Marshall is a "sleepy town kept busy with patent cases." The patent litigation boom creates business for hotels, restaurants, trial graphics services, copying, expert witnesses, jury consultants, court-appointed technical advisers, and, of course, lawyers. In other words, patent litigation has become important to the economic health of the communities surrounding the courthouse. But the federal courts don't exist to generate business for a particular region.

Tipping The Scales on Both Procedure and Substance

So why are these plaintiff-friendly rules so important? First, the rules impose particular burdens on defendants. If a patent case proceeds to discovery—the process whereby parties hand over information potentially relevant to the case—it will usually be more expensive in the Eastern District of Texas. This is because the local discovery order in patent cases requires parties to automatically begin producing documents before the other side even requests them. In patent troll cases, this imposes a much higher burden on defendants. Operating companies might be forced to review and disclose millions of documents while shell-company patent trolls tend to have very few documents. Trolls can exploit this imbalance to pressure defendants to settle.

Second, the rules make it harder to eliminate cases early. The Supreme Court's decision in *Alice v CLS Bank* invalidated many of the low-quality software patents favored by patent trolls. But this only helps defendants if they are able to get a ruling to that effect from the judge overseeing their case. Judges Rodney Gilstrap and Robert Schroeder recently indicated that they would require patent defendants to ask permission before they can file a motion to dismiss raising *Alice*. This means that defendants in the Eastern District of Texas will more often be forced to go through expensive discovery.

When judges in the Eastern District do issue rulings on challenges raising *Alice*, their decisions are very different from jurists in other parts of the country. Recent data from Docket Navigator analyzed all challenges under 35 USC § 101 so far this year:

- Nationwide: 71% granted or partially granted; 29% denied (76 decisions)
- Northern District of California: 82% granted or partially granted; 18% denied (11 decisions)
- District of Delaware: 90% granted or partially granted; 10% denied (10 decision)
- Eastern District of Texas: 27% granted; 73% denied (11 decisions)

While each challenged patent claim is different, the overall trend suggests judges in the Eastern District of Texas are applying *Alice* in a way that is far more favorable to patent owners.

The *Alice* decision, and its companion, *Octane Fitness v. Icon Health & Fitness* gave judges additional tools for quickly dismissing meritless patent cases and holding unscrupulous plaintiffs to account. This means that patent trolls—particularly those that bring weak cases hoping to use the cost of defense to extort a settlement—now need a favorable forum more than ever. Small wonder we've seen a spike in EDTX filings.

We have also written about unfair rules that make it harder for patent defendants to file for summary judgment in the Eastern District of Texas. These rules have a real impact. A recent study found that judges in the Eastern District granted only 18% of motions for summary judgment of invalidity while the national grant rate is 31%. And that statistic, of course, does not include all the summary judgment motions that would have been filed had the defendant been given permission.

Judges in the Eastern District of Texas have also harmed defendants by delaying rulings on motions to transfer (these are motions where the defendant asks for the case to be moved to a more sensible location). Delay prejudices defendants because they are stuck litigating an expensive case in a remote forum while the judge sits on the motion. (The judges' rules make clear that a pending motion to transfer or a motion to dismiss is not grounds to stay discovery in a case). The Federal Circuit recently issued a stern order (PDF) finding that an Eastern District magistrate judge had "arbitrarily refused to consider the merits" of a transfer motion. When that transfer motion was finally considered, it was granted (PDF), but not until after extensive litigation had already occurred, and requiring the parties to pay for a court-appointed technical advisor (PDF). More generally, studies have also found the Eastern District of Texas is reversed by the Federal Circuit at a higher rate compared to other districts.

Venue Reform Can Fix the Mess

It's time for Congress to act. Although the Federal Circuit has overruled some of the Eastern District of Texas' most egregious venue decisions, it has failed to bring basic fairness to where patent cases are litigated. We need new legislation to clarify that patent cases belong in forums with a real connection to the dispute.

Fortunately, Congress is looking at the problem. Representative Darrell Issa recently offered an amendment (PDF) to the Innovation Act that would tighten venue standards in patent cases. On June 11, the House Judiciary Committee approved the amendment. If this bill becomes law, shell company patent trolls will no longer be able to drag out of state operating companies all the way to Eastern Texas.

It's long past time for Congress to bring fairness to where, and how, patent cases are litigated. Contact your representative and tell them to pass the Innovation Act and to ensure that any final bill includes meaningful venue reform.

Patents | Patent Trolls | Innovation

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JULY 9, 2014 | BY DANIEL NAZER AND VERA RANIERI

Why Do Patent Trolls Go to Texas? It's Not for the BBQ

There is a lot in our current patent system that is in need of reform. The Patent Office is too lax in granting patents. Federal Circuit case law has consistently favored patentees. Another part of this problem is the forum shopping by patentees that leads to a disproportionate number of cases being filed in the Eastern District of Texas.

Back in 2011, *This American Life* did a one-hour feature called "When Patents Attack!" The story included a tour of ghostly offices in Marshall, Texas, where shell companies have fake headquarters with no real employees. For many people, it was their first introduction to the phenomenon that is the Eastern District of Texas, a largely rural federal court district that has somehow attracted a huge volume of high-tech patent litigation.

The Eastern District of Texas is still number one for patent cases. Last year, there were just over 6,000 patent suits filed in federal courts around the country. One in four of those cases (24.54% to be exact) were filed in the Eastern District of Texas. But why do patent plaintiffs, especially trolls, see it as such a favorable forum? Partly, the district's relatively rapid litigation timetable can put pressure on defendants to settle. But other local practices in the Eastern District also favor patentees. And, in our view, they do so in a way that is inconsistent with the governing Federal Rules, and work to mask the consistent refusal by the courts in the Eastern District to end meritless cases before trial.

The podcasting patent troll litigation provides a recent case study. EFF is currently fighting the patent troll Personal Audio at the Patent Office, where we're arguing that U.S. Patent 8,112,504 (the "podcasting patent") is invalid. But Personal Audio is also involved in litigation against podcasters and TV companies in the Eastern District of Texas. We've been following that case, and unsurprisingly, the defendants there are also arguing that the podcasting patent is invalid. Specifically, the defendants are arguing that earlier publications and websites describe the system for "disseminating media content" that Personal Audio says it invented.

Recently, something happened in that case that we thought deserved notice: the defendants were denied the opportunity to have the judge rule on summary judgment on this issue. This deserves a bit of explanation: generally, parties go to trial to have their rights decided by a jury. But the Federal Rules provide the parties the right to get "summary judgment" (i.e., a decision from the judge) where there is no "genuine dispute as to any material fact." To be clear, this doesn't mean the parties have to agree on all the facts. What it means is that where the only disputes are not genuine (e.g., there isn't enough evidence to support an argument) or not material (e.g., the resolution of the dispute would not change the outcome) summary judgment should be granted.

Unfortunately, the podcasting defendants in Texas weren't even given this opportunity. You see, in the Eastern District of Texas, judges require parties to seek *permission* to file a motion for summary judgment. That is, unless and until the judge lets you file your motion (even if it is clear as day that you're going to win), you're going to trial. The defendants in Texas sought that permission, but in a one-sentence order, their request was denied. (Note: The judge is allowing the defendants to file summary judgment on other issues, namely non-infringement and license).

Why this is important is that according to Federal Rules of Civil Procedure 56, defendants have a right to file a summary judgment motion and to have that motion decided. But in the Eastern District of Texas, the judge's "rule" effectively denies them these rights, which we think is contrary to the law. Furthermore, this requirement likely masks the true value of the already low grant rate of summary judgment. A recent study found that judges in the Eastern District of Texas granted only 18% of motions for summary judgment of invalidity. (In contrast, the

grant rate nationwide is 31%.) Considering that the study did not include instances where the defendant wasn't allowed to file summary judgment in the first place, we wouldn't be surprised if the true grant rate were much lower, and thus even further out-of-whack with the national average.

So why don't parties challenge the judge's rule? We don't know for sure, but we have a good guess. And it has to do with the fact that a single judge in the Eastern District had over 900 patent cases assigned to him in 2013.

Patentees and defendants (and of course, their lawyers) are often "repeat players," meaning they will be in front of the same judge on many different occasions in different cases. It's easy to see how telling a judge his rules are invalid may not be the best thing to do when you're usually trying to get him to agree with you. Given the volume of high-stakes litigation there, no one wants to be unpopular in Eastern District of Texas. (Indeed, of all the ice rinks in all the towns in all the world, why would patent heavyweight Samsung sponsor a rink directly in front of the courthouse in Marshall?) Another reason that this type of rule may not get challenged is that it's just not worth it. Even if you get to file your summary judgment motion, that doesn't mean that the judge will actually rule in a timely fashion (thus saving the expense of preparing for an unnecessary trial) or that you'll win. By the time you get to the point of appeal, you have many more important issues that you want the appeals court to consider. In the end, the parties are just stuck with the judge's rules and cases that should be decided quickly and early are left to languish.

And for patent trolls, this is a good thing. A plaintiff that doesn't have its weak case quickly and cheaply rejected increases its settlement pressure and keeps its patent alive longer. In contrast, a defendant, faced with the possibility of significant trial costs, will more likely succumb to settlement pressure in order to get the case to go away at the least cost. Thus patent trolls, who are often asserting extremely broad and likely-invalid patents, are incentivized to file in the Eastern District of Texas knowing that there's *another* hurdle an accused infringer has to overcome in order to win the case.

To be clear, local rules like those in the Eastern District violate the rights of both plaintiffs and defendants. By either refusing to rule on summary judgment or delaying a ruling right until the eve of trial, both sides incur significant costs. But it is easy to see how this would have a larger impact on those accused of infringing patents, especially in cases where the damages are less than the cost to go to trial.

We sympathize with judges who are trying to manage busy dockets. Understandably, the Court does not want to be faced with frivolous motions, or with five motions from both sides. But the court has other methods of dealing with these issues (for example limiting page length or allowing only one brief on all issues). What the court is not entitled to do, however, is prevent the parties from filing at all.

With respect to the podcasting patent, we've linked to the parties' papers on this issue here (defendants' letter requesting permission to file a motion), here (Personal Audio's response), and here (defendants' reply letter). You can make up your own mind, but, in our view, Personal Audio made no showing of any genuine or material dispute. The Federal Rules, properly applied, do not allow a party to survive summary judgment with such weak and unsupported arguments.

The defendants in the podcasting case may still win a motion for summary judgment of non-infringement, but unfortunately that could leave Personal Audio free to sue others. But because of the judge's order, if the current defendants in Texas want to invalidate the podcasting patent, they're going to have to go to trial. It is unfair and irregular procedures like these that make the Eastern District of Texas such a popular destination for patent trolls. As part of any true patent reform, this kind of forum-shopping incentive needs to end.

Files

- ecf_122_-_letter_brief_re_sj_of_invalidity.pdf
- ecf_185_-_order_re_sj_filing.pdf
- ecf_148_-_pa_response_to_letter_brief_re_sj_of_invalidity.pdf
- ecf_165_-_reply_letter_brief_re_sj_of_invalidity.pdf

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Trolling Effects

Ways To Help

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EFF v. Personal Audio LLC

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Anonymity
Anti-Counterfeiting Trade Agreement
Artificial Intelligence & Machine Learning
Biometrics
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Eyes, Ears & Nodes Podcast
FAQs for Lodsys Targets
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Fixing Copyright? The 2013-2016 Copyright Review Process
FTAA
Genetic Information Privacy
Government Hacking and Subversion of Digital Security
Hollywood v. DVD
How Patents Hinder Innovation (Graphic)
ICANN
International Privacy Standards
Internet Governance Forum
Law Enforcement Access
Legislative Solutions for Patent Reform
Locational Privacy
Mandatory Data Retention
Mandatory National IDs and Biometric Databases
Mass Surveillance Technologies
Medical Privacy
Mobile devices
National Security and Medical Information
National Security Letters
Net Neutrality
No Downtime for Free Speech
NSA Spying
OECD
Offline : Imprisoned Bloggers and Technologists
Online Behavioral Tracking
Patent Trolls
Patents
PATRIOT Act
Pen Trap
Policy Analysis
Printers
Public Health Reporting and Hospital Discharge Data
Reading Accessibility
Real ID
Reclaim Invention
RFID
Search Engines
Search Incident to Arrest
Section 230 of the Communications Decency Act
Shadow Regulation
Social Networks
SOPA/PIPA: Internet Blacklist Legislation
Student Privacy
Stupid Patent of the Month
Surveillance and Human Rights
Surveillance Drones
Terms Of (Ab)Use
Test Your ISP
The "Six Strikes" Copyright Surveillance Machine
The Global Network Initiative
The Law and Medical Privacy
TPP's Copyright Trap
Trans-Pacific Partnership Agreement
Travel Screening
TRIPS
Trusted Computing
Video Games
Wikileaks
WIPO
Transparency

https://www.eff.org/deeplinks/2014/07/why-do-patent-trolls-go-texas-its-not-bbq

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS

STANDING ORDER REGARDING SUBMISSION OF LETTER BRIEFS FOR CASES ASSIGNED TO JUDGE RODNEY GILSTRAP AND JUDGE ROY S. PAYNE

For certain purposes, this Court requires parties to submit letter briefs to the Court. Where the Court has required submission of a letter brief, the filing procedure is as follows. The letter brief should be addressed to either United States District Judge Rodney Gilstrap or United States Magistrate Judge Roy S. Payne, as appropriate, and filed electronically by attaching the letter brief as an Exhibit to a Notice of Compliance referencing the order that directed the submission of the letter brief. Said Notice must comply with all applicable local rules. Attached hereto is an exemplar of a Notice of Compliance. All letter briefs, unless specifically directed otherwise by a case-specific order, are to be submitted without attachments.

This Order shall apply to all cases assigned to either United States District Judge Rodney Gilstrap or United States Magistrate Judge Roy S. Payne regardless of the division within the district in which such cases were originally filed.

So ORDERED and SIGNED this 3rd day of February, 2012.

RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

P., INC.,	§	
	§	
Plaintiff,	§	
v.	§	**CIVIL ACTION NO. 2:12-CV-999**
	§	
D. CORPORATION, et al.,	§	
	§	
Defendants.	§	

NOTICE OF COMPLIANCE WITH COURT'S MOTION PRACTICE ORDER

In compliance with the Court's Motion Practice Order (Dkt. No. 20), D. Corporation files this Notice of its letter to the Court requesting permission to file a motion for summary judgment that no asserted claim of U.S. Patent No. 1,234,567 is infringed by the accused device. A copy of the letter is attached as Exhibit 1.

Respectfully Submitted,

Dated: January 20, 2012

By: /s/ Charles B. Attorney

Charles B. Attorney (admitted *pro hac vice*)
CBAttorney@DFirm.com
DEFENSE FIRM, LLP
100 N. Legal St.
Anywhere, Texas 00000
Telephone: 800-555-1212
Facsimile: 866-555-1212
Attorney for Defendant D. Corporation

CERTIFICATE OF SERVICE

The undersigned certifies that on the 20th day of January, 2012, the foregoing pleading was electronically filed with the Court. Pursuant to Local Rule CV-5, this constitutes service on the following counsel:

James K. Lawyer
JKLawyer@PEFirm.com
PATENT ENFORCERS FIRM LLC
100 Somewhere Else, CA 00000
Phone: 800-555-1212
Fax: 866-555-1212

By: /s/ Charles B. Attorney

Charles B. Attorney (admitted *pro hac vice*)
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EXHIBIT 1

EXEMPLAR

DEFENSE FIRM, LLP

Charles B. Attorney

800-555-1212 (t)
866-555-1212 (f)
CBAttorney@DFirm.com

January 20, 2012

The Honorable Rodney Gilstrap
U.S. District Court for the Eastern District of Texas
100 East Houston Street
Marshall, TX 75670

Re: *P., Inc. v. D. Corp.*, Civil Action No. 2:12-CV-999

Dear Judge Gilstrap:

Defendant D. Corp. respectfully requests permission to file a motion for summary judgment of non-infringement of any asserted patent in the above-captioned patent infringement case.

D. Corp. is entitled to summary judgment for the following reasons . . . { }

For the foregoing reasons, D. Corp. respectfully requests permission to file a motion for summary judgment of non-infringement.

Respectfully submitted,

{ signature }

Charles B. Attorney

cc: all counsel of record (by ECF)

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

[PLAINTIFF]	§	
	§	
v.	§	Case No. 2:00-CV-000-JRG-RSP
	§	
[DEFENDANT][, et al.]	§	

SAMPLE DISCOVERY ORDER FOR PATENT CASES
ASSIGNED TO JUDGE RODNEY GILSTRAP AND JUDGE ROY PAYNE

[*Instructions: The parties are expected to meet and confer prior to submitting a proposed Discovery Order based upon this model order. Only the underlined portions (in paragraphs 5 and 12) may be modified by the parties according to the needs of the case.*]

After a review of the pleaded claims and defenses in this action, in furtherance of the management of the Court's docket under Federal Rule of Civil Procedure 16, and after receiving the input of the parties to this action, it is ORDERED AS FOLLOWS:

1. Initial Disclosures. In lieu of the disclosures required by Federal Rule of Civil Procedure 26(a)(1), each party shall disclose to every other party the following information:

(a) the correct names of the parties to the lawsuit;

(b) the name, address, and telephone number of any potential parties;

(c) the legal theories and, in general, the factual bases of the disclosing party's claims or defenses (the disclosing party need not marshal all evidence that may be offered at trial);

(d) the name, address, and telephone number of persons having knowledge of relevant facts, a brief statement of each identified person's connection with the

case, and a brief, fair summary of the substance of the information known by any such person;

(e) any indemnity and insuring agreements under which any person or entity carrying on an insurance business may be liable to satisfy part or all of a judgment entered in this action or to indemnify or reimburse for payments made to satisfy the judgment;

(f) any settlement agreements relevant to the subject matter of this action; and

(g) any statement of any party to the litigation.

2. Disclosure of Expert Testimony. A party must disclose to the other parties the identity of any witness it may use at trial to present evidence under Federal Rule of Evidence 702, 703 or 705, and:

(a) if the witness is one retained or specially employed to provide expert testimony in the case or one whose duties as the party's employee regularly involve giving expert testimony, provide the disclosures required by Federal Rule of Civil Procedure 26(a)(2)(B) and Local Rule CV-26; and

(b) for all other such witnesses, provide the disclosure required by Federal Rule of Civil Procedure 26(a)(2)(C).

3. Additional Disclosures. Without awaiting a discovery request,[1] each party will make the following disclosures to every other party:

(a) provide the disclosures required by the Patent Rules for the Eastern District of Texas with the following modifications to P.R. 3-1 and P.R. 3-3:

[1] The Court anticipates that this disclosure requirement will obviate the need for requests for production.

i. If a party claiming patent infringement asserts that a claim element is a software limitation, the party need not comply with P.R. 3-1 for those claim elements until 30 days after source code for each Accused Instrumentality is produced by the opposing party. Thereafter, the party claiming patent infringement shall identify, on an element-by-element basis for each asserted claim, what source code of each Accused Instrumentality allegedly satisfies the software limitations of the asserted claim elements.

ii. If a party claiming patent infringement exercises the provisions of Paragraph 3(a)(i) of this Discovery Order, the party opposing a claim of patent infringement may serve, not later than 30 days after receipt of a Paragraph 3(a)(i) disclosure, supplemental "Invalidity Contentions" that amend only those claim elements identified as software limitations by the party claiming patent infringement.

(b) produce or permit the inspection of all documents, electronically stored information, and tangible things in the possession, custody, or control of the party that are relevant to the pleaded claims or defenses involved in this action, except to the extent these disclosures are affected by the time limits set forth in the Patent Rules for the Eastern District of Texas; and

(c) provide a complete computation of any category of damages claimed by any party to the action, and produce or permit the inspection of documents or other evidentiary material on which such computation is based, including materials bearing on the nature and extent of injuries suffered, except that the disclosure of

the computation of damages may be deferred until the time for Expert Disclosures if a party will rely on a damages expert.

4. **Protective Orders.** The Court will enter the parties' Agreed Protective Order.

5. **Discovery Limitations.** The discovery in this cause is limited to the disclosures described in Paragraphs 1-3 together with: [40 interrogatories per side, 40 requests for admissions per side, the depositions of the parties, depositions on written questions of custodians of business records for third parties, 60 hours of nonparty depositions per side, and 3 expert witnesses per side. "Side" means a party or a group of parties with a common interest.] Any party may later move to modify these limitations for good cause.

6. **Privileged Information.** There is no duty to disclose privileged documents or information. However, the parties are directed to meet and confer concerning privileged documents or information after the Status Conference. By the deadline set in the Docket Control Order, the parties shall exchange privilege logs identifying the documents or information and the basis for any disputed claim of privilege in a manner that, without revealing information itself privileged or protected, will enable the other parties to assess the applicability of the privilege or protection. Any party may move the Court for an order compelling the production of any documents or information identified on any other party's privilege log. If such a motion is made, the party asserting privilege shall respond to the motion within the time period provided by Local Rule CV-7. The party asserting privilege shall then file with the Court within 30 days of the filing of the motion to compel any proof in the form of declarations or affidavits to support their assertions of privilege, along with the documents over which privilege is asserted for *in camera* inspection.

7. **Signature.** The disclosures required by this Order shall be made in writing and signed by the party or counsel and shall constitute a certification that, to the best of the signer's knowledge, information and belief, such disclosure is complete and correct as of the time it is made. If feasible, counsel shall meet to exchange disclosures required by this Order; otherwise, such disclosures shall be served as provided by Federal Rule of Civil Procedure 5. The parties shall promptly file a notice with the Court that the disclosures required under this Order have taken place.

8. **Duty to Supplement.** After disclosure is made pursuant to this Order, each party is under a duty to supplement or correct its disclosures **immediately** if the party obtains information on the basis of which it knows that the information disclosed was either incomplete or incorrect when made, or is no longer complete or true.

9. **Discovery Disputes.**

(a) Except in cases involving claims of privilege, any party entitled to receive disclosures ("Requesting Party") may, after the deadline for making disclosures, serve upon a party required to make disclosures ("Responding Party") a written statement, in letter form or otherwise, of any reason why the Requesting Party believes that the Responding Party's disclosures are insufficient. The written statement shall list, by category, the items the Requesting Party contends should be produced. The parties shall promptly meet and confer. If the parties are unable to resolve their dispute, then the Responding Party shall, within 14 days after service of the written statement upon it, serve upon the Requesting Party a written statement, in letter form or otherwise, which identifies (1) the requested items that will be disclosed, if any, and (2) the reasons why any requested items

will not be disclosed. The Requesting Party may thereafter file a motion to compel.

(b) An opposed discovery related motion, or any response thereto, shall not exceed 7 pages. Attachments to a discovery related motion, or a response thereto, shall not exceed 5 pages. No further briefing is allowed absent a request or order from the Court.

(c) Prior to filing any discovery related motion, the parties must fully comply with the substantive and procedural conference requirements of Local Rule CV-7(h) and (i). Within 72 hours of the Court setting any discovery motion for a hearing, each party's lead attorney (*see* Local Rule CV-11(a)) and local counsel shall meet and confer in person or by telephone, without the involvement or participation of other attorneys, in an effort to resolve the dispute without Court intervention.

(d) Counsel shall promptly notify the Court of the results of that meeting by filing a joint report of no more than two pages. Unless excused by the Court, each party's lead attorney shall attend any discovery motion hearing set by the Court (though the lead attorney is not required to argue the motion).

(e) Any change to a party's lead attorney designation must be accomplished by motion and order.

(f) Counsel are directed to contact the chambers of the undersigned for any "hot-line" disputes before contacting the Discovery Hotline provided by Local Rule CV-26(e). If the undersigned is not available, the parties shall proceed in accordance with Local Rule CV-26(e).

10. **No Excuses.** A party is not excused from the requirements of this Discovery Order because it has not fully completed its investigation of the case, or because it challenges the sufficiency of another party's disclosures, or because another party has not made its disclosures. Absent court order to the contrary, a party is not excused from disclosure because there are pending motions to dismiss, to remand or to change venue.

11. **Filings.** Only upon request from chambers shall counsel submit to the court courtesy copies of any filings.

12. **Proposed Stipulations by the Parties Regarding Discovery.** [The parties may include proposed stipulations regarding discovery here. Proposed Stipulations may not be used to modify the ordinary procedures of the Court (e.g. the requirement that an in person conference be held prior to filing a discovery-related motion.) If there are no proposed stipulations, indicate "None."]

13. **Standing Orders.** The parties and counsel are charged with notice of and are required to fully comply with each of the Standing Orders of this Court. Such are posted on the Court's website at http://www.txed.uscourts.gov/page1.shtml?location=info:judge&judge=17. The substance of some such orders may be included expressly within this Discovery Order, while others (including the Court's Standing Order Regarding Protection of Proprietary and/or Confidential Information to Be Presented to the Court During Motion and Trial Practice) are incorporated herein by reference. All such standing orders shall be binding on the parties and counsel, regardless of whether they are expressly included herein or made a part hereof by reference.

Exhibit 9

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

AMAZON WEB SERVICES, INC., and VADATA, INC.

Plaintiffs,

v.

GLOBAL EQUITY MANAGEMENT (SA) PTY. LTD.,

Defendant.

Civil Action No. 3:16cv619

JURY TRIAL DEMANDED

COMPLAINT FOR DECLARATORY JUDGMENT OF NON-INFRINGEMENT AND INVALIDITY OF PATENTS HELD BY A NON-RESIDENT PATENTEE

Plaintiffs Amazon Web Services, Inc. ("AWS") and VADATA, Inc. ("VADATA" and, collectively with AWS, the "Amazon Plaintiffs") bring this Action against Defendant Global Equity Management (SA) Pty. Ltd. ("GEMSA") and allege as follows:

NATURE OF THE ACTION

1. This is a civil action seeking a declaratory judgment of non-infringement and invalidity under 28 U.S. C. §§ 2201 and 2202.

PARTIES

2. Plaintiff AWS is a corporation organized and existing under the laws of the state of Delaware, with offices and employees throughout several of the United States, including the Commonwealth of Virginia. AWS is a wholly-owned subsidiary of Amazon.com, Inc. ("Amazon").

3. Plaintiff VADATA is a corporation organized and existing under the laws of the state of Delaware, with offices and employees throughout several of the United States, including the Commonwealth of Virginia. VADATA is a wholly-owned subsidiary of Amazon.

4. On information and belief, Defendant GEMSA is an Australian corporation with a principal place of business at 458 Morphett Road, Warradale, South Australia 5046.

JURISDICTION

5. This action arises under the Patent Laws of the United States, Title 35 of the United States Code, Sections 101 *et seq.*, and the Federal Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202. An actual, substantial, and continuing justiciable controversy exists between the Amazon Plaintiffs and GEMSA. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338.

6. Pursuant to 35 U.S.C. § 293: "Every patentee not residing in the United States may file in the Patent and Trademark Office a written designation stating the name and address of a person residing with the United States on whom may be served process or notice of proceedings affecting the patent or rights thereunder. . . . . [I]f no person has been designated, the United States District Court for the Eastern District of Virginia shall have jurisdiction . . . to take any action respecting the patent or rights thereunder that it would have if the patentee were personally within the jurisdiction of the court."

7. On information and belief, GEMSA is the owner and assignee of United States patents, and, as an Australian corporation, is a "patentee not residing in the United States" under 35 U.S.C. § 293. GEMSA has not filed with the Patent and Trademark Office a "written designation stating the name and address of a person residing within the United States on whom may be served process or notice of proceedings affecting the patent or rights thereunder." 35 U.S.C. § 293. Thus, GEMSA is subject to this Court's personal jurisdiction.

VENUE

8. Venue is proper in this district pursuant to 28 U.S.C. § 1391 and 35 U.S.C. § 293.

9. Plaintiffs have numerous large scale offices and data centers supporting AWS in the Commonwealth of Virginia with significant continued investment underway. These offices and data centers employ a large number of people in the Commonwealth. Among these employees are witnesses who may have knowledge relevant to the issues in this case, such as Kevin Miller who is a Director in EC2 Software Development.

FACTUAL ALLEGATIONS

10. Plaintiff AWS is a world-renowned provider of cloud computing services. AWS began offering its cloud services—recently proclaimed as "World-Changing"—over ten years ago. (*See* "Amazon's World-Changing Cloud Turns 10." *Fortune Magazine*, Mar. 11, 2016, *available at* http://fortune.com/2016/03/11/amazon-cloud-turns-10/.) Since then, AWS has developed a broad set of global cloud-based products and services that offer compute power, database storage, content delivery and other functionality to help businesses scale and grow.

11. Among these products and services is the Elastic Compute Cloud or EC2. EC2 is a web service designed, among other things, to make web-scale cloud computing easier for developers. It allows users to rent virtual computers to run their own computer applications providing them with flexibility to use the computing resources they need without incurring sunk costs in expensive hardware.

12. To provide this and other AWS services, AWS relies on a vast network of servers managed by Amazon-subsidiary VADATA, which has substantial operations and facilities within the Commonwealth of Virginia.

13. GEMSA purports to be the owner of U.S. Patent No. 6,690,400 (the "'400 patent"), entitled "Graphic User Interface for Resources Management of Super Operating System

Based Computers," attached hereto as **Exhibit A,** and U.S. Patent No. 7,356,677 (the "'677 patent"), entitled "Computer System Capable of Fast Switching Between Multiple Operating Systems and Applications," attached hereto as **Exhibit B** (collectively, the "GEMSA Patents").

14. On June 14, 2016, GEMSA filed twenty lawsuits against AWS customers Adroll, Inc., Alcatel-Lucent, Inc., Artek Surfin Chemicals, Ltd. (d/b/a Galata Chemicals, LLC), Ericsson, Inc., General Electric Co., Hitachi America, Ltd., Johnson & Johnson USA, Inc., Live Nation Entertainment, Inc. (d/b/a Ticketmaster, Inc.), McGraw Hill Financial, Inc. (d/b/a S&P Global and S&P Capital IQ), The Nasdaq OMX Group, Inc., NASDAQ, Inc., Netflix, Inc., Philips, Inc., SAP America, Inc., Siemens Corp., Spotify USA, Inc., Ticketleap.com LLC, Ticketleap, Inc., Uber Technologies, Inc., Ubisoft Studio, Inc. (d/b/a Ubisoft), Zillow, Inc., Zillow Group, Inc., and Zynga, Inc. (collectively, the "AWS Customer Defendants") in the United States District Court for the Eastern District of Texas.

15. In these complaints, GEMSA expressly accuses AWS, broadly alleging infringement of the GEMSA Patents by the AWS Customer Defendants through their "access[ing] AWS services" and use of AWS:

> "ADROLL, through http://www.adroll.com/ or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/adroll/. The use of http://www.adroll.com/, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. AdRoll, Inc.*, No. 16-cv-00634-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

> "ALCATEL, through http://www.alcatel.com/ or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/alcatel-lucent/. The use of http://www.alcatel.com/, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Alcatel-Lucent, Inc.*, No. 16-cv-00630-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"GALATA, through http://www.galatachemicals.com/ or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/galata-chemicals/. The use of http://www.galatachemicals.com/, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Artek Surfin Chemicals, Ltd.*, No. 16-cv-00632-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"ERICSSON, through ericsson.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/ericsson/. The use of ericsson.com, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Ericsson, Inc.*, No. 16-cv-00618-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"GE, through www.GE.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/casestudies/general-electric/. The use of www.GE.com, or one of its websites linked directly or indirectly thereto, including a least GE Digital Transformation, GE Oil & Gas, and others, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. General Electric Company*, No. 16-cv-00627-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"HITACHI, through http://www.hitachi.com/ or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/hitachi/. The use of http://www.hitachi.com/, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Hitachi America, Ltd.*, No. 16-cv-00636-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"J&J, through jnj.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/casestudies/johnson-and-johnson/. The use of jnj.com, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Johnson & Johnson USA, Inc.*, No. 16-cv-00619-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"TICKETMASTER, through www.TICKETMASTER.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/ticketmaster/. The use of www.TICKETMASTER.com, or one of

its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Live Nation Entertainment, Inc.*, No. 16-cv-00625-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"S&P, through http://www.spcapitaliq.com/ or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/sp-capital-iq/. The use of http://www.spcapitaliq.com/, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. McGraw Hill Financial, Inc.*, No. 16-cv-00628-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"NASDAQ, through www.NASDAQ.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/nasdaq-omx/. The use of www.NASDAQ.com, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. The NASDAQ OMX Group, Inc.*, et al., No. 16-cv-00623-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"NETFLIX, through http://www.netflix.com/ or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/netflix/. The use of http://www.netflix.com/, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Netflix, Inc.*, No. 16-cv-00633-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"PHILIPS, through www.usa.philips.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/philips/. The use of www.usa.philips.com, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Philips, Inc.*, No. 16-cv-00620-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"SAP, through www.usa.SAP.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/sap/. The use of www.SAP.com, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. SAP America, Inc.*, No. 16-cv-00621-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"SIEMEN, through www.SIEMEN.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/siemens/. The use of www.SIEMEN.com, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Siemens Corp.*, No. 16-cv-00622-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"SPOTIFY, through http://www.spotify.com/ or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/spotify/. The use of http://www.spotify.com/, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Spotify USA, Inc.*, No. 16-cv-00635-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"TICKETLEAP, through www.TICKETLEAP.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/ticketleap/. The use of www.TICKETLEAP.com, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Ticketleap.com LLC, et al.*, No. 16-cv-00624-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"UBER, through http://www.uber.com/ or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at http://datacenterfrontier.com/uber-data-center-expansion/. The use of http://www.uber.com/, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Uber Technologies, Inc.*, No. 16-cv-00631-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"UBISOFT, through www.UBISOFT.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/ubisoft/. The use of www.UBISOFT.com, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Ubisoft Studio, Inc.*, No. 16-cv-00626-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

"Zillow, through www.zillow.com or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/casestudies/zillow/. The use of www.zillow.com, or one of its websites linked directly or indirectly thereto, and others, and AWS infringes one or more claims of [the GEMSA Pa-

> tents]." *Global Equity Management (SA) Pty. Ltd. v. Zillow, Inc., et al.*, No. 16-cv-00637-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).
>
> "ZYNGA, through http://www.zynga.com/ or one of its websites linked directly or indirectly thereto, accesses Amazon Web Services ('AWS') as illustrated at https://aws.amazon.com/solutions/case-studies/zynga/. The use of http://www.zynga.com/, or one of its websites linked directly or indirectly thereto, and AWS infringes one or more claims of [the GEMSA Patents]." *Global Equity Management (SA) Pty. Ltd. v. Zynga, Inc.*, No. 16-cv-00629-RWS-RSP, Dkt. No. 1 at ¶ 6 (E.D. Tex. June 14, 2016).

16. GEMSA alleges that each of the AWS Customer Defendants infringes at least claim 1 of the '400 patent and claims 1, 3, and 6 of the '677 patent through their use of AWS. *See, e.g.*, *Global Equity Management (SA) Pty. Ltd. v. Ericsson, Inc.*, No. 16-cv-00618-RWS-RSP, Dkt. No. 1 at ¶¶ 17-18, 23-24 (E.D. Tex. June 14, 2016); *see generally* AWS Customer Complaints at ¶¶ 17-18, 23-24.

17. GEMSA has also asserted the GEMSA Patents against several other AWS customers in the Eastern District of Texas. On information and belief, GEMSA intends to assert infringement by these parties based, *inter alia*, on their use of AWS services. For example, GEMSA served infringement contentions against TripAdvisor LLC ("TripAdvisor") asserting infringement by the TripAdvisor website through its "use of Amazon AWS, either directly or indirectly," and identified in the accompanying claim chart AWS's EC2 service as purportedly infringing the patents. *Global Equity Management (SA) Pty. Ltd. v. TripAdvisor LLC*, No. 16-cv-00103-RWS (E.D. Tex.), Dkt. No. 12-8 (Ex. S to the Declaration of John J. Cotter in Support of TripAdvisor's Reply on Motion to Transfer Venue) at 3; *see also id.* at 7-8 (infringement claim charts noting that the TripAdvisor website "primarily operates on Amazon AWS EC2 platform").

18. On July 14, 2016, GEMSA served a subpoena on AWS in *Global Equity Management (SA) Pty. Ltd. v. Expedia, Inc., et al.*, Case No. 16-cv-00095 (E.D. Tex.) seeking "[a]ll

documents (including but not limited to invoices and reports) sent to or received from" various AWS customers. On information and belief, GEMSA seeks this discovery to identify evidence to support its allegations of infringement by AWS.

19. On information and belief, GEMSA has strategically chosen to sue AWS customers rather than the Amazon Plaintiffs themselves to avoid testing its claims against the suppliers of the accused technology, who have the greatest interest in and ability to defend against these claims, in the hopes of extracting cost of litigation settlements from scores of customers.

20. As a result of the allegations made by GEMSA against AWS customers, there is an immediate and actual case or controversy between the Amazon Plaintiffs and GEMSA regarding the non-infringement, invalidity, and enforceability of the GEMSA Patents as it pertains to the Amazon Plaintiffs' technology and services, particularly the AWS services referenced in GEMSA's complaints and infringement contentions.

21. The Amazon Plaintiffs have a direct and substantial interest in defeating any patent infringement claims relating to AWS services identified by GEMSA in its complaints and infringement contentions. Through its infringement allegations, GEMSA has specifically targeted technology of AWS and VADATA. AWS designs and develops the accused technology, including specifically the EC2 web service. The EC2 virtualization GEMSA accuses, as well as the back-end processes purportedly directed by the accused graphical user interface, is carried out by servers in AWS and VADATA centers. Thus, AWS and VADATA are directly implicated by GEMSA's infringement allegations, and each is entitled to a declaratory judgment of non-infringement.

22. The Amazon Plaintiffs deny that any of their technology, including the AWS services identified by GEMSA in its complaints and infringement contentions, infringes any claim of the GEMSA Patents, directly or indirectly.

23. This controversy is between parties having adverse legal interests and is of sufficient immediacy and reality to warrant issuance of a declaratory judgment under 28 U.S.C. § 2201(a) as to the validity and enforceability of the patents in suit and the alleged infringement of the patents in suit by the Amazon Plaintiffs or their technology.

24. Pursuant to 35 U.S.C. § 293, GEMSA is subject to suit in this district. And the Amazon Plaintiffs have therefore brought this action here in the Commonwealth of Virginia—where facilities and potential witnesses relevant to this case are located—to obtain just and speedy resolution of this dispute, to relieve their customers of the unnecessary burden of litigating GEMSA's cases targeting Amazon technology, and to once and for all remove the cloud of uncertainty that has been cast over that technology. *Goodyear Tire & Rubber Co. v. Releasomers, Inc.*, 824 F.2d 953, 956 (Fed.Cir.1987) ("the purpose of the Declaratory Judgment Act . . . in patent cases is to provide the allegedly infringing party relief from uncertainty and delay regarding its legal rights."); *Elecs. for Imaging, Inc. v. Coyle*, 394 F.3d 1341, 1347 (Fed. Cir. 2005) (where patentee's "forceful threats [against customers] created a cloud over [supplier's] business, shareholders, and customers, and [supplier's] potential liability increased as it continued to sell the allegedly infringing products," supplier "entitled under the Declaratory Judgment Act to seek a timely resolution of . . . threats of litigation and remove itself from 'the shadow of threatened infringement litigation.'") (citation omitted).

FIRST CLAIM – DECLARATION OF NON-INFRINGEMENT ('400 PATENT)

25. The Amazon Plaintiffs restate and incorporate by reference each of the allegations in the preceding paragraphs of this complaint.

26. GEMSA has alleged and continues to allege that use or incorporation of the Amazon Plaintiffs' technology infringes claims of the '400 patent.

27. The Amazon Plaintiffs have not and do not make, use, offer for sale, or import any product, service or technology that infringes or contributes to any infringement of any claim of the '400 patent either literally or under the doctrine of equivalents. The Amazon Plaintiffs further have not and do not induce any infringement of any claim of the '400 patent.

28. The '400 patent is directed to the idea that a graphical user interface can allow a user to select an operating system on a computer device and view information about that operating system and secondary storage devices. Claim 1, for example, requires a graphical user interface for "allocating a computer device's resources to multiple operating system environments, partitioned on individual virtual cabinets, on said computer device . . . ." The graphical user interface comprises (1) "a main menu bar," (2) "a cabinet selection button bar" that "graphically represent[s] at least one virtual cabinet" which "represent[s] a discreet operating system," (3) "a secondary storage partitions window," and (4) "a cabinet visible partition window" that "graphically illustrat[es] a cabinet record corresponding to a selected virtual cabinet" representing a discreet operating system.

29. AWS does not directly or indirectly, literally or under the doctrine of equivalents, infringe the '400 patent. For example, Claim 1 requires a graphical user interface for "allocating a computer device's resources to multiple operating system environments, partitioned on individual virtual cabinets, on said computer device." Accordingly, all of the claimed cabinets that are shown on the claimed graphical user interface must exist on a single physical computer. AWS does not provide such a graphical user interface. EC2 instances are different virtual machines spread across multiple computers. Further, EC2 instances are not the claimed virtual cab-

inets as defined in the specification, nor does AWS provide an interface that displays the claimed virtual cabinets. AWS also does not provide an interface for displaying partitions of storage devices, as claim 1 requires. AWS, therefore, does not meet at least the claim requirements "allocating a computer device's resource to multiple operating system environments, partitioned on individual virtual cabinets, on said computer device," "said secondary storage partitions window graphically illustrating at least one partition of at least one secondary storage device," and "cabinet visible partition window" of claim 1 and similar claim limitations in the other claims of the '400 patent. All of this information would have been readily apparent to GEMSA from even a cursory pre-filing investigation.

30. An actual and justiciable controversy exists between the Amazon Plaintiffs and GEMSA as to the Amazon Plaintiffs' non-infringement of the '400 patent.

31. Pursuant to the Federal Declaratory Judgment Act, 28 U.S.C. §§ 2201, *et seq.*, the Amazon Plaintiffs seeks a declaration that they do not infringe any claim of the '400 patent.

SECOND CLAIM – DECLARATION OF INVALIDITY ('400 PATENT)

32. The Amazon Plaintiffs restate and incorporate by reference each of the allegations in the preceding paragraphs of this complaint.

33. GEMSA has alleged and continues to allege that use or incorporation of Amazon Plaintiffs' technology infringes of claims of the '400 patent.

34. Claims of the '400 patent are invalid because they fail to comply with one or more of the conditions and requirements for patentability set forth in 35 U.S.C. § 1 *et seq.*, including but not limited to 35 U.S.C. §§ 101, 102, 103, and 112.

35. The '400 patent is invalid for failing to claim patent-eligible subject matter under 35 U.S.C. § 101. The '400 patent does not describe any new solution, system or device. Its claims are directed to a graphical user interface that can be drawn by hand with a pen and a piece

of paper, and neither the claims nor the specification recite any technological inventive concept to transform that abstract idea into a patent-eligible application. Instead, its eight-column-long specification merely refers to conventional well-known technologies and describes the claimed graphical user interface in purely functional language. The '400 patent is directed to patent-illegible subject matter.

36. The '400 patent is invalid also under 35 U.S.C. § 112 for failing to provide an enabling disclosure or adequate written description to support its claims, as it provides no special programming, algorithm, or technology for implementing the claimed graphical user interface, nor does it disclose the requisite structures for its numerous means-plus-function claim limitations.

37. The '400 patent is invalid also as anticipated or rendered obvious under 35 U.S.C. §§ 102 and/or 103, in light of prior art including, for example, U.S. Patent Nos. 6,401,183 (the "'183 patent") and 6,178,503 (the "'503 patent").

38. The '183 patent to Rafizadeh, titled "System and Method for Operating System Independent Storage Management," was filed on April 1, 1999. The '183 patent is directed to a storage manager that partitions secondary storage devices, which can be used, for example, in a computer system that contains multiple operating systems. ('183 patent at 2:10-11, 2:34, 2:57-59.) The '183 patent discloses and illustrates a nearly identical graphical user interface to that claimed in the '400 patent. With reference to Figure 20 shown below, the disclosed graphical user interface comprises a main menu (408), a selection bar (402), a secondary storage window (404), and a window providing information about the selected operating system (406). ('183 patent at FIG. 20; 11:62-13:20.)

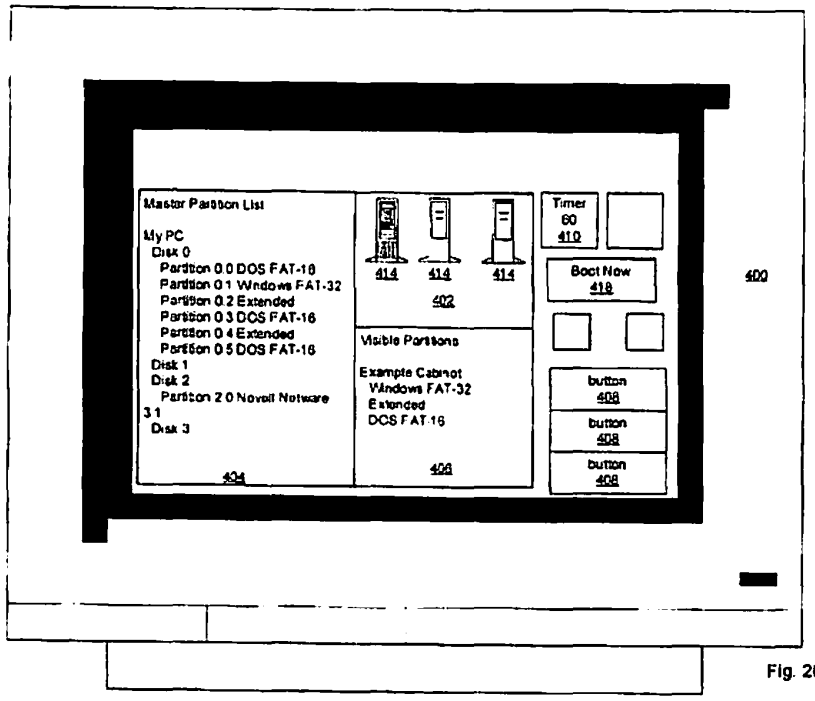

Fig. 20

39. The '503 patent to Madden et al., titled "Managing Multiple Operating Systems on a Single Computer," was filed on September 11, 1998. The '503 patent is directed to "improved boot-time support for graphical user interfaces." ('503 patent at 3:52.) This involves pre-rendering menu options and other graphical components to bitmaps before boot-time and then displaying various bitmap combinations to provide a boot-time graphical user interface. The graphics components may include text in ASCII or non-ASCII fonts." (*Id.* at 3:49-57.) More specifically, the '503 patent describes "a boot-management software program which provides users with a single menu for all available operating systems and operating system modes on a given computer." (*Id.* at 5:3-9.)

40. An actual and justiciable controversy exists between the Amazon Plaintiffs and GEMSA as to the invalidity of the claims of the '400 patent.

41. Pursuant to the Federal Declaratory Judgment Act, 28 U.S.C. §§ 2201, *et seq.*, the Amazon Plaintiffs seeks a declaration of invalidity of the '400 patent.

THIRD CLAIM – DECLARATION OF NON-INFRINGEMENT ('677 PATENT)

42. The Amazon Plaintiffs restate and incorporate by reference each of the allegations in the preceding paragraphs of this complaint.

43. GEMSA has alleged and continues to allege that use or incorporation of Amazon Plaintiffs' technology infringes of one or more claims of the '677 patent.

44. The Amazon Plaintiffs have not and do not make, use, offer for sale, or import any product, service or technology that infringes or contributes to any infringement of any claim of the '677 patent either literally or under the doctrine of equivalents. The Amazon Plaintiffs further have not and do not induce any infringement of any claim of the '677 patent.

45. The '677 patent is generally directed to a computer system and method for switching between operating systems, or virtual computing systems, utilizing a modified version of the power down suspend feature of the basic input/output system (BIOS). For example, claim 1 requires "means for selecting one of said virtual computer systems to become next operable before suspending a currently operational virtual computer system" and "means for suspending the currently operational virtual computer system in an active state."

46. AWS does not directly or indirectly, literally or under the doctrine of equivalents, infringe claim 1 or any other claim of the '677 patent for at least the following reasons. AWS does not have means to perform the functions required by the claim limitations "means for selecting one of said virtual computer systems to become next operable before suspending a currently operational virtual computer system" and "means for suspending the currently operational virtual computer system in an active state," nor does AWS provide "means for switching of the virtual computer systems using a switch flag and BIOS ACPI solutions . . . wherein the switch

flag is a flag that is set up in storage to differentiate between suspend for fast switching and power save suspend," nor does it provide its customers means to do so. Neither AWS nor its customers, therefore, provide or use the claim requirement "means for selecting one of said virtual computer systems to become next operable before suspending a currently operational virtual computer system," "means for suspending the currently operational virtual computer system in an active state," and "means for switching of the virtual computer systems using a switch flag and BIOS ACPI solutions, and without initialization of power-on self test (POST) in the BIOS, wherein the switch flag is a flag that is set up in storage to differentiate between suspend for fast switching and power save suspend" of claim 1 and similar claim limitations in the other claims of the '400 patent.

47. An actual and justiciable controversy exists between the Amazon Plaintiffs and GEMSA as to the Amazon Plaintiffs' non-infringement of the '677 patent.

48. Pursuant to the Federal Declaratory Judgment Act, 28 U.S.C. §§ 2201, *et seq.*, the Amazon Plaintiffs seeks a declaration that they do not infringe any claim of the '677 patent.

FOURTH CLAIM – DECLARATION OF INVALIDITY ('677 PATENT)

49. The Amazon Plaintiffs restate and incorporate by reference each of the allegations in the preceding paragraphs of this complaint.

50. GEMSA has alleged and continues to allege use or incorporation of Amazon Plaintiffs' technology infringes of claims of the '677 patent.

51. Claims of the '677 patent are invalid because they fail to comply with one or more of the conditions and requirements for patentability set forth in 35 U.S.C. § 1 *et seq.*, including but not limited to 35 U.S.C. §§ 101, 102, 103, and 112.

52. The '677 patent is invalid as anticipated or rendered obvious under 35 U.S.C. §§ 102 and/or 103, by prior art including, for example, U.S. Patent Publication No. 2001/0018717 (the "'717 publication") and U.S. Patent No. 6,393,560 (the "'560 patent").

53. The '717 publication to Shimotono, titled "Computer System, Operating System Switching System, Operating System Mounting Method, Operating System Switching Method, Storage Medium, and Program Transmission Apparatus" was filed on February 26, 2001 and claims priority to a foreign application filed February 29, 2000. The '717 publication is directed to providing an environment where "switching among a plurality of operating systems coexisting in a single system can be performed at high speed." ('717 publication at para. 16.) The '717 publication explains that a first operating system is running ("First, assume that OS#3 is currently running"), and then "a user employs the user-interface 432 to request a change from OS#3 to OS#1." (*Id.* at para. 114.) In response, "OS#3 is shifted to the suspended state." (*Id.*) Thereafter, "OS#1 can be restarted in the same manner as when it is resumed from a simple suspended state." (*Id.* at para. 115.) When the operating system is initiated, it "queries the BIOS concerning the memory configuration," and the "OS can be switched by using the suspend function and the resume function, without rebooting the OS." (*Id.* at paras. 116 and 135.)

54. The '560 patent to Merrill et al., titled "Initializing and Restarting Operating Systems" was filed on May 10, 1999 and claims priority to a CIP application filed April 30, 1998. The '560 patent describes "a method of enabling a computer system to run programs written for two different operating systems includes executing a first operating system. Information about the current state of the first operating system is stored to enable reinitialization. A second operating system is executed and the first operating system is reinitialized using the stored information." ('560 patent at 2:15-22.)

55. In addition to the '717 publication and the '560 patent, the '677 patent is invalid as anticipated or rendered obvious by, for example, U.S. Patent Nos. 6,385,721, 6,727,920, and Linux GRUB.

56. The '677 patent is also invalid under, *inter alia*, 35 U.S.C. §§ 101 and 112 for its purely functional claiming. For example, claim 1 recites four "means-plus-function" limitations, purporting to claim a result rather than any specific way of achieving that result. The specification does not disclose sufficient structure for performing the claimed functions.

57. An actual and justiciable controversy exists between the Amazon Plaintiffs and GEMSA as to the invalidity of the claims of the '677 patent.

58. Pursuant to the Federal Declaratory Judgment Act, 28 U.S.C. §§ 2201, *et seq.*, the Amazon Plaintiffs seeks a declaration of invalidity of the '677 patent.

PRAYER FOR RELIEF

WHEREFORE, the Amazon Plaintiffs respectfully request judgment in their favor and against GEMSA as follows:

A. A declaration that AWS and VADATA have not and do not infringe, either directly or indirectly, contributorily or by inducement, any valid and enforceable claim of the '400 patent, literally or under the doctrine of equivalents;

B. A declaration that AWS, and VADATA have not and do not infringe, either directly or indirectly, contributorily or by inducement, any valid and enforceable claim of the '677 patent, literally or under the doctrine of equivalents;

C. A declaration that the '400 patent is invalid for failure to satisfy one or more of the conditions for patentability specified in Title 35 of the United States Code, including but not limited to §§ 101, 102, 103, and 112;

D. A declaration that the '677 patent is invalid for failure to satisfy one or more of

the conditions for patentability specified in Title 35 of the United States Code, including but not limited to §§ 101, 102, 103, and 112;

C. An injunction against GEMSA, and all persons acting on its behalf or in concert with it, restraining them from further prosecuting or instituting any action alleging that any method, product, or technology of the Amazon Plaintiffs, or others' use thereof, infringes any claim of any of the GEMSA Patents;

E. A declaration that this case is exceptional and that the Amazon Plaintiffs are entitled to an award of reasonable attorneys' fees pursuant to 35 U.S.C. § 285; and

F. Any such other and further relief as the Court may deem just and fair.

Respectfully submitted,

By: _____

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Dated: July 22, 2016

Exhibit 10

CONATUR
LEGAL

1026 South Road
EDWARDSTOWN SA 5039

TEL: (08) 8177 2043
FAX: (08) 8177 2049

26 August 2016

BY EMAIL: action@eff.org; daniel@eff.org

RE: DEMAND OF APOLOGY FOR SLANDER AND DEFATORY STATEMENTS

Dear Sir,

We have been consulted by Global Equity Management (SA) Pty. Ltd. (hereinafter referred to as "Our Client"), to write you in relation to the defamatory, false and malicious slander which you and Electronic Frontier Foundation made concerning our client on EFF.ORG at http://blog.ip.com/2016/07/stupid-patent-of-the-month/ in the attached article.

The said statement was made available to the viewing of worldwide public, with the intention of portraying our client's intellectual property as stupid in addition to numerous other malicious lies and misleading statements about the '400 patent owned by Our Client.

Sequel to the above, you are requested to submit a draft letter of a clear and unqualified apology and retraction, to be copied to all users having viewed your website since the date of that publication in additional to diligent effort to removing all copies of the said published article from the internet. Furthermore, having regard to our client's position as plaintiff in litigations against infringing defendants whose interests you represent, the gravity of the allegations made and the publication in the World Wide Web, we demand your unconditional agreement to payment of all the damages your article may cause as compensation.

TAKE NOTICE that in the event of your failure / refusal to comply with the above mentioned demands within 14 days of your receipt of this letter, we have further instructions to institute a suit against you in a court of law.

Yours faithfully
CONATUR LEGAL

Pasha Mehr Principal Solicitor
pasha@conatur.com.au

Exhibit 11

Exhibit 12

Exhibit 13

Front sheet

Form 1 Front sheet

FDN

IN THE SUPREME COURT OF SOUTH AUSTRALIA

IN THE CIVIL JURISDICTION

SCCIV of

BETWEEN

GLOBAL EQUITY MANAGMENT (SA) PTY LTD

Plaintiff

and

ELECTRONIC FRONTIER FOUNDATION

Defendant

EXHIBITS TO AFFIDAVIT OF SCHUMANN RAFIZADEH

These are the exhibits marked "**SR1 to SR7**" referred to in the affidavit of Schumann Rafizadeh sworn this 30th day of September 2016.

Before me:

FASHA IRANMEHR.
A Commissioner for taking affidavits in the Supreme Court of South Australia

..... 30/9/16.

Exhibit 14

Exhibit 15

Exhibit 16

OUR BLOG

Find out what's happening at our company

10
JAN

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

GLOBAL EQUITY MANAGEMENT (SA) PTY. LTD., Plaintiff, v. ALIBABA.COM, INC., ALIBABA.COM. SINGAPORE E-COMMERCE PRIVATE LTD., AND ALIBABA GROUP HOLDING, LTD., Defendants.

Civil Action No. 2:15-CV-01702

JURY TRIAL DEMANDED

PLAINTIFF'S FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Global Equity Management (SA) Pt. Ltd. ("GEMSA") files this First Amended Complaint and demand for jury trial seeking relief from patent infringement by Alibaba.com, Inc., Alibaba.com Singapore E-commerce Private Ltd., and Alibaba Group Holding, Ltd. (collectively referred to as "Alibaba"), alleging as follows:

THE PARTIES

1. Plaintiff GEMSA is a Texas Limited Liability Company, with its principal place of business located 458 Morphett Road, Warradale, South Australia 5046.

2. Upon information and belief, Alibaba.com, Inc. is a corporation organized and existing

GEMSA Files Patent Infringement Lawsuits Against Alibaba And Four Other Companies

By: GEMSA Category: General (http://www.gemsa.com.au/category/general/) Tags: alibaba (http://www.gemsa.com.au/tag/alibaba/), gemsa (http://www.gemsa.com.au/tag/gemsa/), infringement (http://www.gemsa.com.au/tag/infringement/), lawsuit (http://www.gemsa.com.au/tag/lawsuit/), patent (http://www.gemsa.com.au/tag/patent/)

GEMSA has filed patent infringement lawsuits against Alibaba and four other major e-commerce sites in United Stated Federal Court in Eastern District of Texas.
The complaints filed by GEMSA are available on Public Access to Court Electronic Records (PACER) for download at https://www.pacer.gov/
GEMSA has patented rights to main storage virtualization technologies and intends to vigorously defends those rights against infringements by any e-commerce site.

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GEMSA Wins Court Ruling Against Alibaba, eBay, Airbnb, And Other Parties (http://www.gemsa.com.au/gemsa-wins-court-ruling-alibaba-ebay-airbnb-parties/)

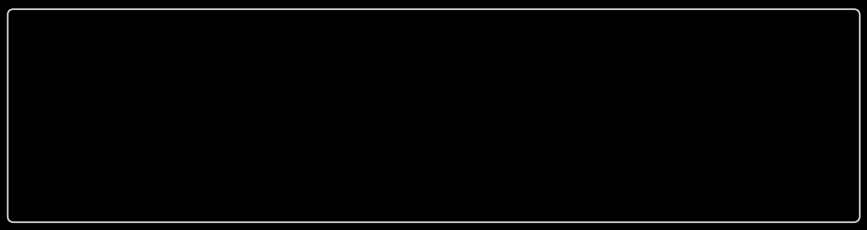
GEMSA Wins Injunction Against EFF For Defamation in SA Supreme Court (http://www.gemsa.com.au/gemsa-wins-injunction-eff-defamation-sa-supreme-court/)

GEMSA Reports Award of Innovation Patent in China (http://www.gemsa.com.au/gemsa-reports-award-of-innovation-patent-in-china/)

GEMSA Files Patent Infringement Lawsuits Against Alibaba And Four Other Companies (http://www.gemsa.com.au/gemsa-files-patent-infringement-lawsuits-against-alibaba-and-four-other-companies/)

Renovated Website Launch! (http://www.gemsa.com.au/new-website-launch-gemsa/)

RECENT COMMENTS



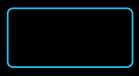


Exhibit 17

CASREF,CONSOL,MEDIATION,PATENT/TRADEMARK,RWS2,STAYED

U.S. District Court [LIVE]
Eastern District of TEXAS (Marshall)
CIVIL DOCKET FOR CASE #: 2:15-cv-01700-RWS-RSP

Global Equity Management (SA) Pty. Ltd. v. AirBNB, Inc.
Assigned to: Judge Robert W. Schroeder, III
Referred to: Magistrate Judge Roy S. Payne
Lead case: 2:16-cv-00095-RWS-RSP
Member case: (View Member Case)
Cause: 28:1338 Patent Infringement

Date Filed: 10/30/2015
Jury Demand: Both
Nature of Suit: 830 Patent
Jurisdiction: Federal Question

Mediator

Lee kaplan

represented by **Lee kaplan**
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PRO SE

Plaintiff

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V.

Consol Plaintiff

Global Equity Management (SA) Pty. Ltd.
Consolidated Civil Action 2:15cv1702 - uncolidated per order #46
TERMINATED: 05/04/2016

represented by **Buffy Kay Martines**
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V.

Defendant

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V.

Consol Defendant

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Consolidated Civil Action 2:15cv1702 - #46
TERMINATED: 05/04/2016

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Consol Defendant

Alibaba.com Singapore E-Commerce Private Ltd.
Consolidated Civil Action 2:15cv1702 - unconsolided per #46
TERMINATED: 05/04/2016

represented by **Carey Richard Ramos**
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TERMINATED: 05/04/2016
LEAD ATTORNEY

Brett Nelson Watkins
(See above for address)
TERMINATED: 05/04/2016

Gregory Blake Thompson
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TERMINATED: 05/04/2016

James Mark Mann
(See above for address)
TERMINATED: 05/04/2016

Jeffrey Stuart Gerchick
(See above for address)
TERMINATED: 05/04/2016

Consol Defendant

Alibaba Group Holding, Ltd.
Consolidated Civil Action 2:15cv1702 - unconsolidated per order #46
TERMINATED: 05/04/2016

Counter Claimant

AirBNB, Inc. represented by **Jennifer Klein Ayers**
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ATTORNEY TO BE NOTICED

V.

Counter Defendant

Global Equity Management (SA) Pty. Ltd. represented by **Buffy Kay Martines**
(See above for address)
ATTORNEY TO BE NOTICED

William P Ramey , III
(See above for address)
ATTORNEY TO BE NOTICED

Date Filed	#	Docket Text
10/30/2015	1	COMPLAINT against AirBNB, Inc. (Filing fee $ 400 receipt number 0540-5463470.), filed by Global Equity Management (SA) Pty. Ltd.. (Attachments: # 1 Exhibit Patent, # 2 Civil Cover Sheet AirBnB Civil Cover Sheet)(Ramey, William) (Entered: 10/30/2015)
11/01/2015		Case assigned to Judge Robert W. Schroeder, III. (ch,) (Entered: 11/01/2015)
11/01/2015	2	ORDER REFERRING CASE to Magistrate Judge Roy S. Payne. Signed by Judge Robert W. Schroeder, III on 11/1/2015. (ch,) (Entered: 11/01/2015)
11/01/2015		In accordance with the provisions of 28 USC Section 636(c), you are hereby notified that a U.S. Magistrate Judge of this district court is available to conduct any or all proceedings in this case including a jury or non-jury trial and to order the entry of a final judgment. The form Consent to Proceed Before Magistrate Judge is available on our website. All signed consent forms, excluding pro se parties, should be filed electronically using the event *Notice Regarding Consent to Proceed Before Magistrate Judge*. (ch,) (Entered: 11/01/2015)
11/02/2015	3	SUMMONS Issued as to AirBNB, Inc. c/o CSC Lawyers Incorporating. (nkl,) (Entered: 11/02/2015)
11/02/2015	4	AMENDED COMPLAINT *First* against AirBNB, Inc., filed by Global Equity Management (SA) Pty. Ltd.. (Attachments: # 1 Exhibit Patent)(Ramey, William) (Entered: 11/02/2015)
11/05/2015	5	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (Ramey, William) (Entered: 11/05/2015)
11/13/2015	6	NOTICE by Global Equity Management (SA) Pty. Ltd. *Certificate of Interested Persons* (Ramey, William) (Entered: 11/13/2015)
12/09/2015	7	**FILED IN ERROR** NOTICE by Global Equity Management (SA) Pty. Ltd. *Waiver of the Service of Summons* (Ramey, William) Modified on 12/9/2015 (nkl,). (Entered: 12/09/2015)
12/09/2015		*****FILED IN ERROR - attorney will send to Clerk's office. Document # 7, Notice. PLEASE IGNORE.***** (nkl,) (Entered: 12/09/2015)
12/17/2015	8	WAIVER OF SERVICE Returned Executed by Global Equity Management (SA) Pty. Ltd.. AirBNB, Inc. waiver sent on 12/7/2015, answer due 2/5/2016. (nkl,) (Entered: 12/17/2015)
01/28/2016	9	

		ORDER OF CONSOLIDATION - The cases above are CONSOLIDATED for all pretrial matters (except venue) with the Lead Case being 2:15-cv-01700-RWS-RSP. The parties shall docket all future filings (except for those relating to venue) in the Lead Case.. Signed by Magistrate Judge Roy S. Payne on 01/28/2016. (nkl,) (Entered: 01/28/2016)
02/05/2016	10	ANSWER to 4 Amended Complaint , *Affirmative Defenses*, COUNTERCLAIM against Global Equity Management (SA) Pty. Ltd. by AirBNB, Inc.. (Attachments: # 1 Exhibit A)(Ayers, Jennifer) (Entered: 02/05/2016)
02/05/2016	11	CORPORATE DISCLOSURE STATEMENT filed by AirBNB, Inc. (Ayers, Jennifer) (Entered: 02/05/2016)
02/09/2016	12	Defendant's Unopposed Second Application for Extension of Time to Answer Complaint re Global Equity Management (SA) Pty. Ltd.. (Ramey, William) (Entered: 02/09/2016)
02/09/2016	13	Defendant's Unopposed First Application for Extension of Time to Answer Complaint re Global Equity Management (SA) Pty. Ltd.. (Ramey, William) (Entered: 02/09/2016)
02/09/2016		Defendant's Unopposed Second Application for Extension of Time to Answer Complaint is granted pursuant to Local Rule CV-12 for Alibaba.com, Inc. to 3/3/2016. 15 Days Granted for Deadline Extension.(nkl,) (Entered: 02/09/2016)
02/09/2016		Defendant's Unopposed First Application for Extension of Time to Answer Complaint is granted pursuant to Local Rule CV-12 for Alibaba.com Singapore E-Commerce Private Ltd. to 3/3/2016. 24 Days Granted for Deadline Extension.(nkl,) (Entered: 02/09/2016)
02/09/2016	14	NOTICE by Global Equity Management (SA) Pty. Ltd. *Notice of Related Cases* (Ramey, William) (Entered: 02/09/2016)
02/12/2016	15	NOTICE of Attorney Appearance - Pro Hac Vice by Bryan J Sinclair on behalf of AirBNB, Inc.. Filing fee $ 100, receipt number 0540-5611305. (Sinclair, Bryan) (Entered: 02/12/2016)
02/16/2016	16	NOTICE of Attorney Appearance - Pro Hac Vice by Audrey Hsio-Chun Lo on behalf of AirBNB, Inc.. Filing fee $ 100, receipt number 0540-5613306. (Lo, Audrey) (Entered: 02/16/2016)
02/18/2016	17	NOTICE of Attorney Appearance by Buffy Kay Martines on behalf of Global Equity Management (SA) Pty. Ltd., Global Equity Management (SA) Pty. Ltd. (Martines, Buffy) (Entered: 02/18/2016)
02/18/2016	18	NOTICE of Attorney Appearance by Buffy Kay Martines on behalf of Global Equity Management (SA) Pty. Ltd., Global Equity Management (SA) Pty. Ltd. (Martines, Buffy) (Entered: 02/18/2016)
02/25/2016	19	ORDER - Scheduling Conference set for 3/15/2016 10:20 AM in Mag Ctrm (Marshall) before Magistrate Judge Roy S. Payne. Signed by Magistrate Judge Roy S. Payne on 02/25/2016. (nkl,) (Entered: 02/25/2016)
02/25/2016	20	AMENDED COMPLAINT *Second Amended Complaint* against AirBNB, Inc., filed by Global Equity Management (SA) Pty. Ltd.. (Attachments: # 1 Exhibit Exhibit A, # 2 Exhibit Exhibit B)(Ramey, William) (Entered: 02/25/2016)
02/25/2016	21	*Original* ANSWER to 10 Answer to Amended Complaint, Counterclaim by Global Equity Management (SA) Pty. Ltd..(Ramey, William) (Entered: 02/25/2016)
03/03/2016	22	NOTICE of Attorney Appearance by James Mark Mann on behalf of Alibaba.com Singapore E-Commerce Private Ltd., Alibaba.com, Inc. (Mann, James) (Entered: 03/03/2016)
03/03/2016	23	NOTICE of Attorney Appearance by Gregory Blake Thompson on behalf of Alibaba.com Singapore E-Commerce Private Ltd., Alibaba.com, Inc. (Thompson, Gregory) (Entered: 03/03/2016)
03/03/2016	24	NOTICE of Attorney Appearance by Carey Richard Ramos on behalf of Alibaba.com Singapore E-Commerce Private Ltd., Alibaba.com, Inc. (Ramos, Carey) (Entered: 03/03/2016)
03/03/2016	25	NOTICE of Attorney Appearance by Brett Nelson Watkins on behalf of Alibaba.com Singapore E-Commerce Private Ltd., Alibaba.com, Inc. (Watkins, Brett) (Entered: 03/03/2016)
03/03/2016	26	NOTICE of Attorney Appearance by Jeffrey Stuart Gerchick on behalf of Alibaba.com Singapore E-Commerce Private Ltd., Alibaba.com, Inc. (Gerchick, Jeffrey) (Entered: 03/03/2016)
03/14/2016	27	AMENDED COMPLAINT *Second Amended Complaint for Patent Infringement* against Alibaba Group Holding, Ltd., Alibaba.com Singapore E-Commerce Private Ltd., Alibaba.com, Inc., filed by Global Equity Management (SA) Pty. Ltd.. (Attachments: # 1 Exhibit Ex A, # 2 Exhibit Ex B)(Ramey, William) (Entered: 03/14/2016)
03/14/2016	28	Unopposed MOTION for Extension of Time to File Answer re 20 Amended Complaint by AirBNB, Inc.. (Attachments: # 1 Text of Proposed Order)(Ayers, Jennifer) (Entered: 03/14/2016)
03/15/2016		Minute Entry for proceedings held before Magistrate Judge Roy S. Payne: Scheduling Conference held on 3/15/2016. Counsel for the parties appeared and were asked if they consented to a trial before Judge Payne. The parties were then given Markman and jury selection dates. The parties were directed to meet and confer regarding any changes to the Courts scheduling order and discovery order, and the parties are to submit the proposed orders within 14 days of the conference. (Court Reporter Jill McFadden.) (bga,) (Entered: 03/15/2016)
03/18/2016	29	NOTICE by Global Equity Management (SA) Pty. Ltd. *Notice of Mediation* (Ramey, William) (Entered: 03/18/2016)
03/21/2016	30	ORDER REFERRING CASE to Mediator. Lee Kaplan is hereby appointed as mediator in the above referenced case. Signed by Magistrate Judge Roy S. Payne on 03/21/2016. (nkl,) (Entered: 03/21/2016)
03/23/2016	31	Unopposed MOTION for Extension of Time to File *Answer or Otherwise Respond to Plaintiff's Second Amended Complaint for Patent Infringement* by Alibaba.com Singapore E-Commerce Private Ltd., Alibaba.com, Inc.. (Attachments: # 1 Text of Proposed Order)(Thompson, Gregory) (Entered: 03/23/2016)

03/29/2016	32	Submission of Unopposed Docket Control Order by Global Equity Management (SA) Pty. Ltd.. (Ramey, William) (Entered: 03/29/2016)
03/29/2016	33	Submission of Opposed Discovery Order as to Section 5(c) by Global Equity Management (SA) Pty. Ltd.. (Ramey, William) (Entered: 03/29/2016)
03/31/2016	34	Opposed MOTION to Change Venue ,*Transfer Venue to the Northern District of California* by AirBNB, Inc.. (Attachments: # 1 Declaration of James Mayfield, # 2 Declaration of Bryan Sinclair, # 3 Exhibit A to Sinclair Decl., # 4 Exhibit B to Sinclair Decl., # 5 Exhibit C to Sinclair Decl., # 6 Text of Proposed Order)(Sinclair, Bryan) (Entered: 03/31/2016)
04/04/2016	35	Submission of Opposed Docket Control Order by Global Equity Management (SA) Pty. Ltd.. (Ramey, William) (Entered: 04/04/2016)
04/05/2016	36	NOTICE by Alibaba.com Singapore E-Commerce Private Ltd., Alibaba.com, Inc. *of Objection to Docket Control Order* (Mann, James) (Entered: 04/05/2016)
04/05/2016	37	Submission of Stipulated Protective Order by Global Equity Management (SA) Pty. Ltd.. (Ramey, William) (Entered: 04/05/2016)
04/05/2016	38	NOTICE of Discovery Disclosure by AirBNB, Inc. *regarding Compliance with Initial and Additional Disclosures* (Lo, Audrey) (Entered: 04/05/2016)
04/05/2016	39	Opposed MOTION for Leave to File *Plaintiff's Motion to Enter Opposed Docket Control Order (Doc. No. 35)* by Global Equity Management (SA) Pty. Ltd.. (Attachments: # 1 Text of Proposed Order Proposed Order, # 2 Exhibit Ex 1, # 3 Affidavit Ramey Declaration, # 4 Exhibit Ramey Ex A)(Ramey, William) (Entered: 04/05/2016)
04/07/2016	40	Unopposed MOTION for Extension of Time to File Answer re 20 Amended Complaint by AirBNB, Inc.. (Attachments: # 1 Text of Proposed Order)(Sinclair, Bryan) (Entered: 04/07/2016)
04/12/2016	41	ORDER granting 40 Motion for Extension of Time to Answer. Signed by Magistrate Judge Roy S. Payne on 04/11/2016. (nkl,) (Entered: 04/12/2016)
04/12/2016		Answer Due Deadline Updated for AirBNB, Inc. to 4/28/2016. (nkl,) (Entered: 04/12/2016)
04/18/2016	42	RESPONSE to Motion re 34 Opposed MOTION to Change Venue ,*Transfer Venue to the Northern District of California filed by Global Equity Management (SA) Pty. Ltd.* . (Attachments: # 1 Text of Proposed Order Proposed Order, # 2 Affidavit Ramey Declaration, # 3 Exhibit Exhibit 1, # 4 Exhibit Exhibit 2)(Ramey, William) (Additional attachment(s) added on 4/19/2016: # 5 Revised Proposed Order) (nkl,). (Entered: 04/18/2016)
04/22/2016	43	RESPONSE to Motion re 39 Opposed MOTION for Leave to File *Plaintiff's Motion to Enter Opposed Docket Control Order (Doc. No. 35) filed by Alibaba.com Singapore E-Commerce Private Ltd., Alibaba.com, Inc.*. (Attachments: # 1 Text of Proposed Order)(Mann, James) (Entered: 04/22/2016)
04/28/2016	44	REPLY to Response to Motion re 34 Opposed MOTION to Change Venue ,*Transfer Venue to the Northern District of California filed by AirBNB, Inc.* . (Sinclair, Bryan) (Entered: 04/28/2016)
04/28/2016	45	ANSWER to 20 Amended Complaint by AirBNB, Inc..(Sinclair, Bryan) (Entered: 04/28/2016)
05/04/2016	46	CONSOLIDATION ORDER - The Court previously entered a Consolidation Order consolidating multiple related cases with Lead Case No. 2:16-cv-95. (Dkt. No. 9). The Court now enters this additional Consolidation Order to consolidate additional cases with the Lead Case. The above-captioned cases are hereby ORDERED to be CONSOLIDATED for all pretrial issues (except venue) under Global Equity Management (SA) Pty. Ltd. v. Expedia, Inc. et. al., (Civil Action No. 2:16-cv-0095-RWS-RSP) (the Lead Case). Signed by Magistrate Judge Roy S. Payne on 5/4/16. (ch,) (Entered: 05/04/2016)
05/09/2016	47	SUR-REPLY to Reply to Response to Motion re 34 Opposed MOTION to Change Venue ,*Transfer Venue to the Northern District of California filed by Global Equity Management (SA) Pty. Ltd.* . (Ramey, William) (Entered: 05/09/2016)
01/06/2017	48	ORDER finding as moot 28 Motion for Extension of Time to Answer in light of the Answer filed at 45 . Signed by Magistrate Judge Roy S. Payne on 1/6/2017. (rsp3,) (Entered: 01/06/2017)
01/06/2017	49	ORDER finding as moot 31 Motion for Extension of Time to File in light of the 3rd Amended Complaint filed in Dkt. No. 134 of Lead Case No. 2:16-cv-95. Signed by Magistrate Judge Roy S. Payne on 1/6/2017. (rsp3,) (Entered: 01/06/2017)
01/12/2017	50	**FILED IN ERROR PER CHAMBERS** ORDER finding as moot 34 Motion to Change Venue in light of the latest Joint Docket Control Order at Dkt. No. 235 in Lead Case No. 2:16-cv-95. Signed by Magistrate Judge Roy S. Payne on 1/12/2017. (rsp3,) Modified on 1/13/2017 (nkl,). (Entered: 01/12/2017)
01/12/2017	51	ORDER finding as moot 39 Motion for Leave to File in light of the latest Joint Docket Control Order at Dkt. No. 235 in Lead Case No. 2:16-cv-95. Signed by Magistrate Judge Roy S. Payne on 1/12/2017. (rsp3,) (Entered: 01/12/2017). Signed by Magistrate Judge Roy S. Payne on 1/12/2017. (rsp3,) (Entered: 01/12/2017)
01/13/2017		***FILED IN ERROR PER CHAMBERS. Document # 50, Order. PLEASE IGNORE.*** (nkl,) (Entered: 01/13/2017)

PACER Service Center			
Transaction Receipt			
04/11/2017 10:31:39			
PACER Login:	levine049:2590515:0	**Client Code:**	
Description:	Docket Report	**Search Criteria:**	2:15-cv-01700-RWS-RSP
Billable Pages:	8	**Cost:**	0.80

CASREF,CONSOL,JURY,PATENT/TRADEMARK,RWS2

U.S. District Court [LIVE]
Eastern District of TEXAS (Marshall)
CIVIL DOCKET FOR CASE #: 2:16-cv-00637-RWS-RSP

Global Equity Management (SA) Pty. Ltd. v. Zillow, Inc. et al
Assigned to: Judge Robert W. Schroeder, III
Referred to: Magistrate Judge Roy S. Payne
Lead case: 2:16-cv-00618-RWS-RSP
Member case: (View Member Case)
Cause: 35:183 Patent Infringement

Date Filed: 06/14/2016
Jury Demand: Plaintiff
Nature of Suit: 830 Patent
Jurisdiction: Federal Question

Plaintiff

Global Equity Management (SA) Pty. Ltd.

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V.

Defendant

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Defendant

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ATTORNEY TO BE NOTICED

Jennifer Haltom Doan
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ATTORNEY TO BE NOTICED

Jeffrey Randall Roeser
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Defendant

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represented by **J David Hadden**
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ATTORNEY TO BE NOTICED

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Defendant

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Saina Shamilov
(See above for address)
ATTORNEY TO BE NOTICED

Date Filed	#	Docket Text
06/14/2016	1	COMPLAINT *Plaintiff's Original Complaint for Patent Infringement* against Zillow Group, Inc., Zillow, Inc. (Filing fee $ 400 receipt number 0540-5787225.), filed by Global Equity Management (SA) Pty. Ltd.. (Attachments: # 1 Exhibit Ex A, # 2 Exhibit Ex B, # 3 Civil Cover Sheet Civil Cover Sheet, # 4 Supplement Form AO 120)(Ramey, William) (Entered: 06/14/2016)
06/14/2016		Case assigned to Judge Robert W. Schroeder, III. (ch,) (Entered: 06/14/2016)
06/14/2016	2	ORDER REFERRING CASE to Magistrate Judge Roy S. Payne. Signed by Judge Robert W. Schroeder, III on 6/14/2016. (ch,) (Entered: 06/14/2016)
06/14/2016		In accordance with the provisions of 28 USC Section 636(c), you are hereby notified that a U.S. Magistrate Judge of this district court is available to conduct any or all proceedings in this case including a jury or non-jury trial and to order the entry of a final judgment. The form Consent to Proceed Before Magistrate Judge is available on our website. All signed consent forms, excluding pro se parties, should be filed electronically using the event *Notice Regarding Consent to Proceed Before Magistrate Judge*. (ch,) (Entered: 06/14/2016)
06/21/2016	3	SUMMONS Issued as to Zillow Group, Inc., Zillow, Inc.. (Attachments: # 1 Summons(es))(ch,) (Entered: 06/21/2016)
06/23/2016	4	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (Ramey, William) (Entered: 06/23/2016)
07/28/2016	5	AMENDED COMPLAINT *Plaintiff's First Amended Complaint for Patent Infringement* against Zillow Group, Inc., Zillow, Inc., Amazon Web Services, Inc., Vadata, Inc., filed by Global Equity Management (SA) Pty. Ltd.. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Ramey, William) (Entered: 07/28/2016)
08/03/2016	6	SUMMONS Issued as to Amazon Web Services, Inc., Vadata, Inc.. (Attachments: # 1 Summons(es))(ch,) (Entered: 08/03/2016)
08/04/2016	7	Opposed MOTION to Dismiss *Or, In the Alternative, Transfer Claims Against Amazon Web Services, Inc. and VADATA, Inc. Under the First-To-File Rule and to Stay Claims Against Customer Defendants Zillow, Inc. and Zillow Group, Inc. Pending Resolution of the First-Filed Action in the Eastern District of Virginia* by Amazon Web Services, Inc., Vadata, Inc.. (Attachments: # 1 Affidavit of Ravi Ranganath in Support of Motion to Dismiss Or, in the Alternative, Transfer Claims, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J,

		# 12 Exhibit K, # 13 Exhibit L, # 14 Text of Proposed Order Granting Motion to Dismiss Or, In the Alternative, Transfer Claims)(Shamilov, Saina) (Entered: 08/04/2016)
08/04/2016	8	CORPORATE DISCLOSURE STATEMENT filed by Amazon Web Services, Inc., Vadata, Inc. (Shamilov, Saina) (Entered: 08/04/2016)
08/22/2016	9	RESPONSE in Opposition re 7 Opposed MOTION to Dismiss *Or, In the Alternative, Transfer Claims Against Amazon Web Services, Inc. and VADATA, Inc. Under the First-To-File Rule and to Stay Claims Against Customer Defendants Zillow, Inc. and Zillow Group, Inc. Pending Resolution o filed by Global Equity Management (SA) Pty. Ltd. . (Attachments:* *# 1 Affidavit Dec. Ramey,* *# 2 Exhibit Ex. 1, Witness List,* *# 3 Exhibit Ex. 2, Sales Records,* *# 4 Exhibit Ex. 3, Patent 1st Page,* *# 5 Exhibit Ex. 4, Invalidity Contentions,* *# 6 Exhibit Ex. 5, '400 Patent,* *# 7 Exhibit Ex. 6, '677 Patent,* *# 8 Text of Proposed Order Proposed Order,* *# 9 Text of Proposed Order Proposed Order)(Ramey, William) (Entered: 08/22/2016)*
08/30/2016	10	NOTICE by Global Equity Management (SA) Pty. Ltd. *Notice of Related Cases* (Ramey, William) (Entered: 08/30/2016)
09/01/2016	11	REPLY to Response to Motion re 7 Opposed MOTION to Dismiss *Or, In the Alternative, Transfer Claims Against Amazon Web Services, Inc. and VADATA, Inc. Under the First-To-File Rule and to Stay Claims Against Customer Defendants Zillow, Inc. and Zillow Group, Inc. Pending Resolution o f the First-Filed Action in the Eastern District of Virginia filed by Amazon Web Services, Inc., Vadata, Inc.. (Attachments:* *# 1 Affidavit of Ravi Ranganath ISO Reply,* *# 2 Exhibit A,* *# 3 Exhibit B,* *# 4 Exhibit C,* *# 5 Exhibit D)(Shamilov, Saina) (Entered: 09/01/2016)*
09/07/2016	12	NOTICE by Global Equity Management (SA) Pty. Ltd. *Certificate of Interested Persons* (Ramey, William) (Entered: 09/07/2016)
09/12/2016	13	SUR-REPLY to Reply to Response to Motion re 7 Opposed MOTION to Dismiss *Or, In the Alternative, Transfer Claims Against Amazon Web Services, Inc. and VADATA, Inc. Under the First-To-File Rule and to Stay Claims Against Customer Defendants Zillow, Inc. and Zillow Group, Inc. Pending Resolution o filed by Global Equity Management (SA) Pty. Ltd. . (Ramey, William) (Entered: 09/12/2016)*
09/27/2016	14	NOTICE of Attorney Appearance by Jennifer Haltom Doan on behalf of Zillow Group, Inc., Zillow, Inc. (Doan, Jennifer) (Entered: 09/27/2016)
09/27/2016	15	NOTICE of Attorney Appearance by Jeffrey Randall Roeser on behalf of Zillow Group, Inc., Zillow, Inc. (Roeser, Jeffrey) (Entered: 09/27/2016)
09/27/2016	16	***FILED IN ERROR, PLEASE IGNORE***Defendant's Unopposed First Application for Extension of Time to Answer Complaint re Zillow Group, Inc., Zillow, Inc..(Doan, Jennifer) Modified on 9/28/2016 (sm,). (Entered: 09/27/2016)
09/27/2016	17	***FILED IN ERROR, PLEASE IGNORE***Unopposed MOTION for Extension of Time to File Answer by Zillow Group, Inc., Zillow, Inc.. (Hadden, J) Modified on 9/28/2016 (sm,). (Entered: 09/27/2016)
09/27/2016	18	Defendant's Unopposed First Application for Extension of Time to Answer Complaint re Zillow Group, Inc., Zillow, Inc.. - [TO REPLACE DKT 17)Hadden, J) (Entered: 09/27/2016)
09/27/2016	19	NOTICE OF JOINDER - by Zillow Group, Inc., Zillow, Inc. re 11 Reply to Response to Motion,, 7 Opposed MOTION to Dismiss *Or, In the Alternative, Transfer Claims Against Amazon Web Services, Inc. and VADATA, Inc. Under the First-To-File Rule and to Stay Claims Against Customer Defendants Zillow, Inc. and Zillow Group, Inc. Pending Resolution o f the First-Filed - OF JOINDER (Hadden, J) Modified on 9/28/2016 (ch,). (Entered: 09/27/2016)*
09/28/2016		***FILED IN ERROR, PER ATTORNEY. Document # 16, Application to Extend Time and #17 Motion to extend time. #17 Motion is now Terminated. PLEASE IGNORE. (SEE #18 FOR CORRECTED DOCUMENT.)*** (sm,) (Entered: 09/28/2016)
09/28/2016		Defendant's Unopposed First Application for Extension of Time to Answer Complaint is GRANTED pursuant to Local Rule CV-12 for Zillow Group, Inc. to 10/27/2016; Zillow, Inc. to 10/27/2016. 30 Days Granted for Deadline Extension.(sm,) (Entered: 09/28/2016)
09/30/2016	20	Unopposed MOTION for Hearing re 7 Opposed MOTION to Dismiss *Or, In the Alternative, Transfer Claims Against Amazon Web Services, Inc. and VADATA, Inc. Under the First-To-File Rule and to Stay Claims Against Customer Defendants Zillow, Inc. and Zillow Group, Inc. Pending Resolution o f the First-Filed Action in the Eastern District of Virginia by Amazon Web Services, Inc., Vadata, Inc.. (Hadden, J) (Additional attachment(s) added on 10/3/2016:* *# 1 Text of Proposed Order) (ch,). (Entered: 09/30/2016)*
10/06/2016	21	CONSOLIDATION ORDER - The above-captioned cases are hereby ORDERED to be CONSOLIDATED for all pretrial issues (except venue) with the LEAD CASE, Cause No. 2:16-cv-00618. All parties are instructed to file any future filings (except relating to venue) in the LEAD CASE., Cases associated.. Signed by Magistrate Judge Roy S. Payne on 10/05/2016. (nkl,) (Entered: 10/06/2016)
01/25/2017	22	ORDER granting 7 Motion to Dismiss Or, In the Alternative, Transfer Claims Against Amazon Web Services, Inc. and VADATA, Inc. Under the First-To-File Rule and to Stay Claims Against Customer Defendants Zillow, Inc. and Zillow Group, Inc. Pending Resolution

		of the First-Filed Action in the Eastern District of Virginia. Signed by Magistrate Judge Roy S. Payne on 1/24/2017. (nkl,) (Entered: 01/25/2017)
01/25/2017	23	ORDER finding as moot 20 Motion for Hearing in light of Order 22 granting Motion 7 . Signed by Magistrate Judge Roy S. Payne on 1/25/2017. (rsp3,) (Entered: 01/25/2017)

PACER Service Center			
Transaction Receipt			
04/11/2017 10:36:03			
PACER Login:	levine049:2590515:0	**Client Code:**	
Description:	Docket Report	**Search Criteria:**	2:16-cv-00637-RWS-RSP
Billable Pages:	5	**Cost:**	0.50

Exhibit 18

FDN:

IN THE SUPREME COURT OF SOUTH AUSTRALIA

IN THE CIVIL JURISDICTION

SCCIV 1280 of 2016

Between:

GLOBAL EQUITY MANAGEMENT (SA) PTY LTD

Plaintiff

and

ELECTRONIC FRONTIER FOUNDATION

Defendant

ORDER WITH INJUNCTION

Filed on behalf of the Plaintiff, GLOBAL EQUITY MANAGEMENT (SA) PTY LTD by

Conatur Legal
1026 South Road
Edwardstown SA 5039

Telephone: 08 8177 2043
Mobile:
Facsimile: 08 8177 2049

Email: info@conatur.com.au

'L' Code: L2529
'P' Code: P11257

Settled by: Sean Richter

Date and time of filing or transmission:

Judicial Officer:	Her Honour Judge Bochner
Date of application:	4 October 2016
Application made by:	Plaintiff
Date of hearing:	31 October 2016
Date of order:	31 October 2016
Appearances:	Mr S Richter counsel for the Plaintiff No appearance for the Defendant

Undertaking

The Plaintiff by its solicitor/counsel undertaking to:

(a) submit to such order (if any) as the Court may consider to be just for the payment of compensation, to be assessed by the Court or as it may direct, to any person (whether or not a party) affected by the operation of the interlocutory order or undertaking or any continuation (with or without variation) of the order or undertaking; and

(b) pay the compensation referred to in (a) to the person or persons referred to in the order.

THE COURT ORDERS that:

1 The Defendant immediately remove the article entitled 'Stupid Patent of the Month: Storage Cabinets on a Computer' written by Daniel Nazer and published on 30 June 2016 through the website '*Electronic Frontier Foundation – Defending Your rights in the Digital World*'.

2. The Defendant be restrained from publishing, selling, or otherwise disseminating the article titled 'Stupid Patent of the Month: Storage Cabinets on a Computer' written by Daniel Nazer and published on 30 June 2016 through the website '*Electronic Frontier Foundation – Defending Your rights in the Digital World*'.

3 Until further order the Defendant be restrained from publishing any content with respect to the Plaintiff's intellectual property.

4. The Defendant has liberty to apply within 28 days of service of these orders

SE DEPUTY REGISTRAR

NOTE: If the within named Defendant does not comply with this order its assets may by seized and it directors and other officers may be liable to be imprisoned for contempt of Court.

Form 1 Front sheet

FDN

IN THE SUPREME COURT OF SOUTH AUSTRALIA

IN THE CIVIL JURISDICTION

SCCIV 1280 of 2016

BETWEEN

GLOBAL EQUITY MANAGEMENT (SA) PTY LTD

Plaintiff

and

ELECTRONIC FRONTIER FOUNDATION

Defendant

REQUEST FOR SERVICE ABROAD OF JUDICIAL DOCUMENTS AND CERTIFICATE OF SERVICE

Filed on behalf of the Plaintiff,
GLOBAL EQUITY MANAGEMENT
(SA) PTY LTD by

Conatur Legal
1026 South Road
Edwardstown SA 5039

Telephone: 08 8177 2043
Mobile:
Facsimile: 08 8177 2049

Email: info@conatur.com.au

'L' Code: L2529
'P' Code: P11257

Settled by: Sean Richter

Date and time of filing or transmission:

Rules 41D(2)(a) and 41F(2)(a)

Form 13 Request for service abroad of judicial documents and certificate of service

REQUEST FOR SERVICE ABROAD OF JUDICIAL DOCUMENTS AND CERTIFICATE OF SERVICE

PART 1 Request for service abroad of judicial documents

Convention on the Service Abroad of Judicial and Extrajudicial Documents in Civil or Commercial Matters, done at The Hague, the 15th of November 1965

Identity and address of the applicant on whose behalf the forwarding authority requests service:	Identity and address of receiving authority (*Central Authority/additional authority*)
GLOBAL EQUITY MANAGEMENT (SA) PTY LTD c/- Conatur Legal, 1026 South Road Edwardstown, SA, 5039 Australia	U.S. Department of Justice Civil Division Office of International Judicial Assistance Benjamin Franklin Station P.O. Box 14360 Washington, D.C. 20004 United States of America tel.: +1 202-514-6700 fax: +1 202-514-6584 Contact person: Ms Jeanne Davidson, Director (language of communication: English)

The undersigned forwarding authority has the honour to transmit – in duplicate – the documents listed below and, in conformity with Article 5 of the above-mentioned Convention, requests prompt service of one copy thereof on the addressee, Electronic Frontier Foundation of 815 Eddy Street San Francisco CA 94109 USA.

(a) in accordance with the provisions of sub-paragraph (a) of the first paragraph of Article 5 of the Convention;

The receiving authority (*Central Authority/additional authority*) is requested to return or to have returned to the applicant a copy of the following documents with a certificate of service as provided in Part 2 of this Form.

1. Order with Injunction made by Her Honour Judge Bochner on 31 October 2016

Done at Ade the 22 November 2016

(E.G. SURMAN)

or stamp (or both) of forwarding authority

Form 1 Front sheet

FDN

IN THE SUPREME COURT OF SOUTH AUSTRALIA

IN THE CIVIL JURISDICTION

SCCIV 1280 of 2016

BETWEEN

GLOBAL EQUITY MANAGEMENT (SA) PTY LTD

Plaintiff

and

ELECTRONIC FRONTIER FOUNDATION

Defendant

SUMMARY OF THE DOCUMENT TO BE SERVED

Filed on behalf of the Plaintiff,
GLOBAL EQUITY MANAGEMENT
(SA) PTY LTD by

Conatur Legal
1026 South Road
Edwardstown SA 5039

Telephone: 08 8177 2043
Mobile:
Facsimile: 08 8177 2049

Email: info@conatur.com.au

'L' Code: L2529
'P' Code: P11257

Settled by: Sean Richter

Date and time of filing or transmission

Form 14 Summary of the document to be served

SUMMARY OF THE DOCUMENT TO BE SERVED

Convention on the Service Abroad of Judicial and Extrajudicial Documents in Civil or Commercial Matters, done at The Hague, the 15th November 1965

(Article 5, fourth paragraph)

Identity and address of the addressee (*Central Authority/additional authority*)

U.S. Department of Justice
Civil Division
Office of International Judicial Assistance
Benjamin Franklin Station
P.O. Box 14360
Washington, D.C. 20004
United States of America
tel.: +1 202-514-6700
fax: +1 202-514-6584
Contact person: Ms Jeanne Davidson, Director
(language of communication: English)

IMPORTANT

The enclosed document is of a legal nature and may affect your rights and obligations. The summary of the document to be served will give you some information about its nature and purpose. You should however read the document itself carefully. It may be necessary to seek legal advice.

If your financial resources are insufficient, you should seek information on the possibility of obtaining legal aid or advice either in the country where you live or in the country where the document was issued.

Enquiries about the availability of legal aid or advice in the country where the document was issued may be directed to

SUMMARY OF THE DOCUMENT TO BE SERVED

Name and address of the forwarding authority:

Supreme Court of South Australia
1 Gouger Street
Adelaide SA 5000
Australia

Particulars of the parties:

Plaintiff:	Global Equity Management (SA) Pty Ltd c/- Conatur Legal, 1026 South Road Edwardstown SA 5039, Australia
Defendant	Electronic Frontier Foundation of 815 Eddy Street San Francisco CA 94109 USA.

JUDICIAL DOCUMENT

Nature and purpose of document:

Order with Injunction

Nature and purpose of the proceeding and, when appropriate, the amount in dispute:

Interlocutory Application Ordering that:

1. The Defendant immediately remove the article entitled 'Stupid Patent of the Month: Storage Cabinets on a Computer' written by Daniel Nazer and published on 30 June 2016 through the website '*Electronic Frontier Foundation – Defending Your rights in the Digital World'*.

2. The Defendant be restrained from publishing, selling, or otherwise disseminating the article titled 'Stupid Patent of the Month: Storage Cabinets on a Computer' written by Daniel Nazer and published on 30 June 2016 through the website '*Electronic Frontier Foundation – Defending Your rights in the Digital World'*.

3. Until further order the Defendant be restrained from publishing any content with respect to the Plaintiff's intellectual property.

4. The defendant has liberty to apply within 28 days of service of these orders.

Date and place for entering appearance: N/A

Court in which proceeding pending/judgment given: Supreme Court of South Australia

Date of judgment: 31 October 2016

Time limits stated in the document:
The Defendant has liberty to apply within 28 days of service of the order

PART 2 Certificate of service

Convention on the Service Abroad of Judicial and Extrajudicial Documents in Civil or Commercial Matters, done at The Hague, the 15th of November 1965

The undersigned authority has the honour to certify, in conformity with Article 6 of the Convention:

that the documents listed in Part 1 have been served

on

at

in one of the following methods authorised by Article 5:

(a) in accordance with the provisions of sub-paragraph (a) of the first paragraph of Article 5 of the Convention,

The documents referred to in the request have been delivered to

2. that the documents have not been served, by reason of the following facts:

In conformity with the second paragraph of Article 12 of the Convention, the forwarding authority is requested to pay or reimburse the expenses detailed in the attached statement.

Annexes

Documents returned:

In appropriate cases, documents establishing the service:

Done at , on the

Signature or stamp (or both) of forwarding authority

Exhibit 19

CONATUR
LEGAL

1026 South Road
EDWARDSTOWN SA 5039

TEL: (08) 8177 2043
FAX: (08) 8177 2049

20 January 2017

815 Eddy Street
San Francisco
CA 94109 USA

BY POST & EMAIL: info@eff.org

Dear Sir/Madam

RE: GLOBAL EQUITY MANAGEMENT (SA) PTY LTD -V- ELECTRONIC FRONTIER FOUNDATION

This law firm represents Global Equity Management (SA) Pty Ltd. If you are represented by legal counsel, please direct this letter to your attorney immediately and have your attorney notify us of such representation.

Your company was duly served on 12 December 2016 with an order of the Supreme Court of South Australia made by Judge Bochner on 4 October 2016.

As you should be aware, the order required your company to immediately remove the article entitled 'Stupid Patent of the Month: Storage Cabinets on a Computer' ("the Article") to be removed from your website 'Electronic Frontier Foundation – Defending Your Rights in the Digital World'.

We observe that as at the date of this letter your company has failed to comply with the Court Order and the article remains in publication.

Your recalcitrant actions constitute a continued violation of Australian Laws which act to preclude the negligent dissemination of fact and the publication of materials that are likely to mislead or deceive the global public throughout the world wide web. If you do not comply with the order to take town the article, you may be liable for contempt of Court.

Our client continues to suffer financial damage through the permanent publication and dissemination of material that is grossly inaccurate and defamatory to our client's legitimate interests in the global intellectual property sector.

CONATUR
LEGAL

We further draw your attention to the recent decision further establishing the legitimacy of our client's patents as set down in the United States District Court for the Eastern District of Texas and available at the Justicia website.[1]

We demand that you immediately take down the article from your website as ordered by Judge Bocher on 4 October 2016.

We further demand that you make immediate arrangements for any links to the article to be removed from the world wide web including any and all other websites which references the infringing material. If you do not do this, we will be forced to do so at your expense.

In addition to the above, we submit that your company should pay compensation to our client to wholly address the significant damages sustained by it through the dissemination of your negligent misstatements.

At present, we reasonably estimate that the sum of damages sustained by our client is likely to be in the vicinity of $750,000.00.

We demand that you make payment within 21 days and this can be made directly to: -

Conatur Legal Pty Ltd Statutory Trust Account
BSB: 085-458
Account Number: 748141719
Swift Code: NATAAU3303M

If you do not comply with this demand within the nominated time period, our client is entitled to use your failure to comply as evidence and will seek full monetary damages and equitable relief for your infringement.

Failure by you to comply will result in our client pursuing all available legal remedies to it, including seeking compensatory damages, punitive damages, interest as allowed by law, legal costs and any other relief as the relevant court may deem just and proper.

WITHOUT PREJUDICE SAVE AS TO COSTS

Yours faithfully
CONATUR LEGAL

Pasha Mehr
Principal Solicitor
pasha@conatur.com.au

[1] https://docs.justia.com/cases/federal/district-courts/texas/txedce/2:2016cv00095/165786/232

Exhibit 20

LSKS LEVINE SULLIVAN KOCH & SCHULZ, LLP

1760 Market Street
Suite 1001
Philadelphia, PA 19103
(215) 988-9778 | Phone
(215) 988-9750 | Fax

Michael Berry
(215) 988-9773
mberry@lskslaw.com

February 10, 2017

VIA E-MAIL

Pasha Mehr
Principal Solicitor
Conatur Legal
1026 South Road
Edwardstown, SA 5039
Australia
pasha@conatur.com.au

Re: Correspondence to Electronic Frontier Foundation Dated January 20, 2017

Dear Mr. Mehr:

This firm serves as United States counsel for the Electronic Frontier Foundation ("EFF"). EFF has received the correspondence dated January 20, 2017, that you sent on behalf of Global Equity Management (SA) Pty Ltd. ("GEMSA") concerning EFF's June 30, 2016 commentary titled "Stupid Patent of the Month: Storage Cabinets on a Computer," an order entered by an Australian court in a proceeding initiated there by GEMSA, and GEMSA's demand that EFF pay it $750,000.

Regardless of whether EFF was properly served in the Australian proceeding, whether the Australian court has jurisdiction over EFF, or whether that court is the appropriate venue to hear GEMSA's claims regarding speech concerning a United States patent and proceedings in United States federal courts (none of which EFF concedes), EFF will not be bullied into paying GEMSA, having its speech muzzled, or censoring itself. The court's order, which runs contrary to longstanding United States law and the U.S. Constitution, is unenforceable. Moreover, GEMSA's claims against EFF are baseless. Among other things, EFF's commentary includes substantially true facts, protected opinion, and rhetorical hyperbole, and is privileged under the law and the First Amendment of the U.S. Constitution.

EFF and its members are firmly committed to helping courts and policymakers strike the appropriate balance between the protection of intellectual property and the public interest in innovation. To that end, EFF has consistently stood up for the right to innovate and promoted improvements to the patent system. *See* https://www.eff.org/patent. Those efforts include litigation, "friend of the court" briefs, and public education initiatives, including the "stupid

patent of the month" series that helps draw attention to what EFF sees as fundamental flaws in the patent system.

EFF's mission, however, extends beyond promoting innovation. EFF has worked for more than 25 years to defend and enhance rights and liberties in the digital world. *See* https://www.eff.org/about. It has dedicated itself to ensuring robust protections for freedom of expression, both as guaranteed by the First Amendment in the United States and as enshrined in the Universal Declaration of Human Rights.

GEMSA's attempts to silence EFF are not well taken. Indeed, if GEMSA seeks to enforce the Australian court's order, or if it continues the Australian proceeding and later seeks to enforce any judgment entered by that court, EFF will hold GEMSA accountable for its attorneys' fees. *E.g.*, 28 U.S.C. §§ 4102, 4105.

Finally, we note your correspondence's drawing EFF's attention to a "recent decision further establishing the legitimacy of [GEMSA's] patents as set down in the United District Court for the Eastern District of Texas." While we question the relevance of that decision to EFF's commentary, the correspondence appears to misapprehend the nature of that court's "claim construction" ruling, which merely concerned the interpretation of patent claim terms. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996). In any event, as the public docketing system of the U.S. federal courts shows, many of the lawsuits GEMSA has filed in the Eastern District of Texas subsequently were stayed pending the resolution of an action in the Eastern District of Virginia "seeking a declaration of non-infringement and invalidity of the '400 . . . patent[]." *Global Equity Management (SA) Pty. Ltd. v. Ericsson, Inc.*, No. 2:16-cv-00618, 2017 WL 365398, at *2, *10-11 (E.D. Tex. Jan. 25, 2017); *see also In re Global Equity Management (SA) Pty. Ltd.*, No. 2017-112 (Fed. Cir. Feb. 8, 2017) (denying GEMSA's petition for a writ of mandamus challenging the January 25, 2017 ruling by the court in the Eastern District of Texas).

We trust that GEMSA will not seek to take any further action with respect to EFF's commentary. Nevertheless, EFF reserves all of its rights, remedies, and defenses.

Sincerely,

LEVINE SULLIVAN KOCH & SCHULZ, LLP

By: _____
Michael Berry

Exhibit 21

https://support.google.com/legal/answer/3110420

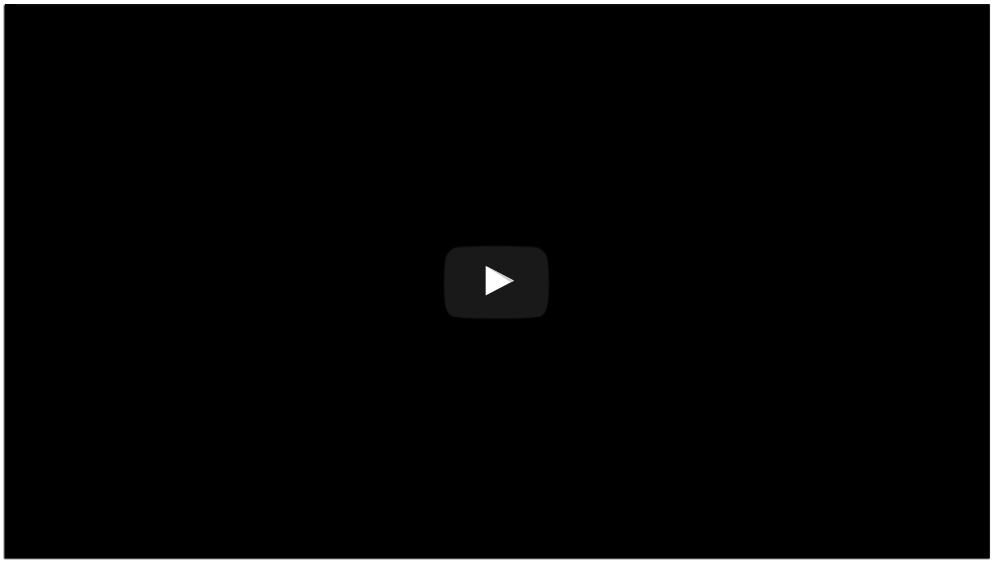
Google

Sign in

Legal Help

LEGAL

Legal Removal Requests



If you've come across content on Google that may violate the law, let us know, and we'll carefully review the material and consider blocking, removing or restricting access to it. Abusive content on Google's services may also violate Google's product policies, so before sending us a legal request, consider flagging the post, image, or video for one of our content teams to review. For more information on our product and privacy policies, our commitment to transparency, and how to submit a valid legal notice to Google, read on below.

- Finding support for your issue
- Protecting your information
- Transparency in our process
- Understanding copyright
- Submit a Legal Request

Understanding Content Removal

- Frequently Asked Questions
- Copyright Help Center
- Privacy Troubleshooter

CIVIL COVER SHEET

The JS-CAND 44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved in its original form by the Judicial Conference of the United States in September 1974, is required for the Clerk of Court to initiate the civil docket sheet. *(SEE INSTRUCTIONS ON NEXT PAGE OF THIS FORM.)*

I. (a) PLAINTIFFS

Electronic Frontier Foundation

(b) County of Residence of First Listed Plaintiff: San Francisco
(EXCEPT IN U.S. PLAINTIFF CASES)

(c) Attorneys *(Firm Name, Address, and Telephone Number)*

(see attached)

DEFENDANTS

Global Equity Management (S.A.) Pty. Ltd.

County of Residence of First Listed Defendant
(IN U.S. PLAINTIFF CASES ONLY)

NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED.

Attorneys *(If Known)*

II. BASIS OF JURISDICTION *(Place an "X" in One Box Only)*

- ☐ 1 U.S. Government Plaintiff
- ☒ 3 Federal Question *(U.S. Government Not a Party)*
- ☐ 2 U.S. Government Defendant
- ☐ 4 Diversity *(Indicate Citizenship of Parties in Item III)*

III. CITIZENSHIP OF PRINCIPAL PARTIES *(Place an "X" in One Box for Plaintiff and One Box for Defendant)*

(For Diversity Cases Only)

	PTF	DEF		PTF	DEF
Citizen of This State	☐ 1	☐ 1	Incorporated *or* Principal Place of Business In This State	☐ 4	☐ 4
Citizen of Another State	☐ 2	☐ 2	Incorporated *and* Principal Place of Business In Another State	☐ 5	☐ 5
Citizen or Subject of a Foreign Country	☐ 3	☐ 3	Foreign Nation	☐ 6	☐ 6

IV. NATURE OF SUIT *(Place an "X" in One Box Only)*

CONTRACT
- ☐ 110 Insurance
- ☐ 120 Marine
- ☐ 130 Miller Act
- ☐ 140 Negotiable Instrument
- ☐ 150 Recovery of Overpayment Of Veteran's Benefits
- ☐ 151 Medicare Act
- ☐ 152 Recovery of Defaulted Student Loans (Excludes Veterans)
- ☐ 153 Recovery of Overpayment of Veteran's Benefits
- ☐ 160 Stockholders' Suits
- ☐ 190 Other Contract
- ☐ 195 Contract Product Liability
- ☐ 196 Franchise

TORTS

PERSONAL INJURY
- ☐ 310 Airplane
- ☐ 315 Airplane Product Liability
- ☐ 320 Assault, Libel & Slander
- ☐ 330 Federal Employers' Liability
- ☐ 340 Marine
- ☐ 345 Marine Product Liability
- ☐ 350 Motor Vehicle
- ☐ 355 Motor Vehicle Product Liability
- ☐ 360 Other Personal Injury
- ☐ 362 Personal Injury - Medical Malpractice

PERSONAL INJURY
- ☐ 365 Personal Injury – Product Liability
- ☐ 367 Health Care/ Pharmaceutical Personal Injury Product Liability
- ☐ 368 Asbestos Personal Injury Product Liability

PERSONAL PROPERTY
- ☐ 370 Other Fraud
- ☐ 371 Truth in Lending
- ☐ 380 Other Personal Property Damage
- ☐ 385 Property Damage Product Liability

FORFEITURE/PENALTY
- ☐ 625 Drug Related Seizure of Property 21 USC § 881
- ☐ 690 Other

LABOR
- ☐ 710 Fair Labor Standards Act
- ☐ 720 Labor/Management Relations
- ☐ 740 Railway Labor Act
- ☐ 751 Family and Medical Leave Act
- ☐ 790 Other Labor Litigation
- ☐ 791 Employee Retirement Income Security Act

IMMIGRATION
- ☐ 462 Naturalization Application
- ☐ 465 Other Immigration Actions

BANKRUPTCY
- ☐ 422 Appeal 28 USC § 158
- ☐ 423 Withdrawal 28 USC § 157

PROPERTY RIGHTS
- ☐ 820 Copyrights
- ☐ 830 Patent
- ☐ 840 Trademark

SOCIAL SECURITY
- ☐ 861 HIA (1395ff)
- ☐ 862 Black Lung (923)
- ☐ 863 DIWC/DIWW (405(g))
- ☐ 864 SSID Title XVI
- ☐ 865 RSI (405(g))

FEDERAL TAX SUITS
- ☐ 870 Taxes (U.S. Plaintiff or Defendant)
- ☐ 871 IRS–Third Party 26 USC § 7609

OTHER STATUTES
- ☐ 375 False Claims Act
- ☐ 376 Qui Tam (31 USC § 3729(a))
- ☐ 400 State Reapportionment
- ☐ 410 Antitrust
- ☐ 430 Banks and Banking
- ☐ 450 Commerce
- ☐ 460 Deportation
- ☐ 470 Racketeer Influenced and Corrupt Organizations
- ☐ 480 Consumer Credit
- ☐ 490 Cable/Sat TV
- ☐ 850 Securities/Commodities/ Exchange
- ☒ 890 Other Statutory Actions
- ☐ 891 Agricultural Acts
- ☐ 893 Environmental Matters
- ☐ 895 Freedom of Information Act
- ☐ 896 Arbitration
- ☐ 899 Administrative Procedure Act/Review or Appeal of Agency Decision
- ☐ 950 Constitutionality of State Statutes

REAL PROPERTY
- ☐ 210 Land Condemnation
- ☐ 220 Foreclosure
- ☐ 230 Rent Lease & Ejectment
- ☐ 240 Torts to Land
- ☐ 245 Tort Product Liability
- ☐ 290 All Other Real Property

CIVIL RIGHTS
- ☐ 440 Other Civil Rights
- ☐ 441 Voting
- ☐ 442 Employment
- ☐ 443 Housing/ Accommodations
- ☐ 445 Amer. w/Disabilities–Employment
- ☐ 446 Amer. w/Disabilities–Other
- ☐ 448 Education

PRISONER PETITIONS

Habeas Corpus:
- ☐ 463 Alien Detainee
- ☐ 510 Motions to Vacate Sentence
- ☐ 530 General
- ☐ 535 Death Penalty

Other:
- ☐ 540 Mandamus & Other
- ☐ 550 Civil Rights
- ☐ 555 Prison Condition
- ☐ 560 Civil Detainee–Conditions of Confinement

V. ORIGIN *(Place an "X" in One Box Only)*

- ☒ 1 Original Proceeding
- ☐ 2 Removed from State Court
- ☐ 3 Remanded from Appellate Court
- ☐ 4 Reinstated or Reopened
- ☐ 5 Transferred from Another District *(specify)*
- ☐ 6 Multidistrict Litigation–Transfer
- ☐ 8 Multidistrict Litigation–Direct File

VI. CAUSE OF ACTION

Cite the U.S. Civil Statute under which you are filing ***(Do not cite jurisdictional statutes unless diversity)***:
28 U.S.C. §§ 4101-05; 28 U.S.C. §§ 2201-02

Brief description of cause:
Plaintiff seeks a declaratory judgment that a foreign order enjoining its speech is repugnant to the laws and Constitution of the United States.

VII. REQUESTED IN COMPLAINT:

☐ CHECK IF THIS IS A **CLASS ACTION** UNDER RULE 23, Fed. R. Civ. P.

DEMAND $ Declaratory judgment

CHECK YES only if demanded in complaint:

JURY DEMAND: ☐ Yes ☒ No

VIII. RELATED CASE(S), IF ANY *(See instructions):*

JUDGE

DOCKET NUMBER

IX. DIVISIONAL ASSIGNMENT (Civil Local Rule 3-2)

(Place an "X" in One Box Only)

☒ **SAN FRANCISCO/OAKLAND** ☐ **SAN JOSE** ☐ **EUREKA-MCKINLEYVILLE**

DATE: April 12, 2017

SIGNATURE OF ATTORNEY OF RECORD: /s Ashley Kissinger

ATTACHMENT

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