

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Good Technology Software, Inc.
Petitioner

v.

MobileIron, Inc.
Patent Owner

Case: *Not Assigned*
U.S. Patent No. 8,340,633

**EXPERT DECLARATION OF DR. ROBERT AKL
IN SUPPORT OF PETITION FOR
INTER PARTES REVIEW OF U.S. PATENT 8,340,633**

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I. MANDATORY NOTICES

1. My name is Robert Akl. I have been retained as an expert witness for the *Inter Partes* Review (“IPR”) of U.S. Patent No. 8,340,633 (“the ‘633 Patent”; Ex. 1001), filed by Good Technology Software, Inc. (“Petitioner”). I have been asked to provide my opinions and views on the materials I have reviewed in this case related to the ‘633 Patent, and the scientific and technical knowledge regarding the same subject matter before and for a period following the date of the first application for the ‘633 patent was filed. I have been asked to render opinions for this IPR as to the patentability of Claims 1-4, 6-25, 27, and 28 (the “Challenged Claims”) of the ‘633 Patent, as explained in the Petition for *Inter Partes* Review (“Petition”) submitted herewith.

II. QUALIFICATIONS AND COMPENSATION

2. I am over the age of eighteen and I am a citizen of the United States.

3. I have summarized in this section my educational background, career history, and other relevant qualifications. My curriculum vitae, including my qualifications, a list of the publications that I have authored during my technical career, and a list of the cases in which, during the previous four years, I have testified as an expert at trial or by deposition, is attached to this declaration as Exhibit 1008 [Akl CV].

4. I earned my Bachelor of Science degrees in Electrical Engineering and Computer Science summa cum laude with a ranking of first in my undergraduate class from Washington University in Saint Louis in 1994. I earned my Master of Science degree in Electrical Engineering from Washington University in Saint Louis in 1996. I earned my Doctorate of Science in Electrical Engineering from Washington University in Saint Louis in 2000, with my dissertation on “Cell Design to Maximize Capacity in Cellular Code Division Multiple Access (CDMA) Networks.”

5. After obtaining my Doctorate of Science degree, I worked as a Senior Systems Engineer at Comspace Corporation from October of 2000 to December of 2001. In this position, I designed and developed advanced data coding and modulation methods for improving the reliability and increasing the available data rates for cellular communications.

6. In January of 2002, I joined the faculty of the University of New Orleans in Louisiana as an Assistant Professor in the Department of Electrical Engineering. While on this faculty, I designed and taught two new courses called “Computer Systems Design I and II.” I also developed a Computer Engineering Curriculum with strong hardware-design emphasis, formed a wireless research group, and advised graduate and undergraduate students.

7. In September of 2002, I received an appointment as an Assistant Professor in the Department of Computer Science and Engineering at the University of North Texas, in Denton, Texas. In May of 2008, I became a Tenured Associate Professor in the Department of Computer Science and Engineering. As a faculty member, I have taught courses and directed research in wireless communications, including 2G, 3G, 4G, CDMA/WCDMA, GSM, UMTS, LTE, wireless sensors, VoIP, multi-cell network optimization, call admission control, channel coding, ad-hoc networks, and computer architecture.

8. I have authored and co-authored approximately 65 journal publications, conference proceedings, technical articles, technical papers, book chapters, and technical presentations, in a broad array of communications-related technology, including networking and wireless communication. I have also developed and taught over 70 courses related to communications and system designs, including a number of courses on wireless communication, communications systems, VoIP, networking, computer systems design, and computer architecture. These courses have included introductory courses on communication systems and networks, as well as more advanced courses on wireless communications.

9. I am being compensated for my time at my normal consulting rate of \$600 per hour for my work in connection with this matter. The compensation is not dependent in any way on the contents of this Declaration, the substance of any

further opinions or testimony that I may provide, or the ultimate outcome of this matter.

III. MATERIALS CONSIDERED

10. In developing my opinions for the Petition, I have reviewed the following materials:

Exhibit #	Exhibit Description
Ex. 1001	U.S. Patent No. 8,340,633
Ex. 1002	File History of U.S. Patent No. 8,340,633
Ex. 1003	U.S. Patent No. 7,817,983 (“Cassett”)
Ex. 1004	U.S. Patent No. 6,925,160 (“Stevens”)
Ex. 1005	U.S. Patent Publication No. 2009-0005002 (“Agarwal”)
Ex. 1006	U.S. Patent No. 7,310,511 (“Barnea”)

IV. SUMMARY OF OPINIONS

11. For the purposes of my opinions related to the issue of patentability of the ‘633 Patent, I have used the claim constructions set forth in the Petition. It is my understanding that for purposes of an *Inter Partes* Review, a claim should be given its broadest reasonable construction in light of the specification of the patent in which it appears. It is my understanding that this standard differs from the standard for claim construction during litigation in a district court.

12. To the extent that a specific claim construction is not provided in the Petition for a particular claim term or element, I have used the broadest reasonable construction of the word(s) in light of the specification of the '633 Patent, as would be understood by one of the ordinary skill in the art in the context of the field of the invention at the time of the invention.

13. For the reasons explained below, it is my opinion that each of the claims of the '633 Patent are unpatentable as anticipated and/or rendered obvious by prior art.

14. Specifically, Claims 1-4, 6-10, 12-19, 21, 22, 25, 27, and 28 of the '633 Patent are obvious over the combined teachings of U.S. Patent No. 7,817,983 ("Cassett") (Ex. 1003) and U.S. Patent No. 6,925,160 ("Stevens") (Ex. 1004).

15. Claims 6, 20, 23, and 24 of the '633 Patent are obvious over Cassett/Stevens and further in view of U.S. Patent Publication No. 2009-0005002 ("Agarwal") (Ex. 1005).

16. Claim 11 of the '633 Patent is obvious over Cassett/Stevens and further in view of U.S. Patent No. 7,310,511 ("Barnea").

17. I reserve the right to amend and/or supplement this declaration in light of additional relevant evidence, arguments, or testimony presented, for example, during discovery for this IPR.

V. LEVEL OF ORDINARY SKILL

18. I understand that a person having ordinary skill in the art may be defined by factors such as: (a) the levels of education and experience of the inventor and other persons actively involved in the field; (b) the types of problems encountered in the field; (c) prior art solutions to those problems; (d) rapidity with which innovations are made; and (e) the sophistication of the technology. In determining the characteristics of a hypothetical person of ordinary skill in the art of the '633 patent at the time of the claimed invention, I considered all these things. Finally, I recalled my experiences at the time of the claimed invention, and considered the engineers and software developers who I had taught and with whom I had worked.

19. It is my opinion that a person of ordinary skill in the relevant art of the '633 Patent would have had at least a Bachelor's degree in computer science, electrical engineering or a similar field, plus around four years of experience designing and implementing wireless communication systems and/or computer networking systems, or the equivalent.

VI. LEGAL STANDARDS

20. I understand that a patent claim can be unpatentable under the United States patent laws for various reasons, including, for example, anticipation or

obviousness in light of the prior art. In arriving at my opinions, I have applied the following legal standards and analyses regarding patentability.

A. Burden of Proof

21. I understand that Petitioners have the burden to prove a proposition of unpatentability by a preponderance of the evidence. I also understand that this is a lower standard than the clear and convincing evidence standard that is required to prove invalidity in patent litigation before a district court.

22. I understand that there are two ways in which prior art may render a patent claim unpatentable. First, the prior art can be shown to “anticipate” the claim. Second, the prior art can be shown to have made the claim “obvious” to a person of ordinary skill in the art at the time the invention was made. My understanding of these two legal doctrines is set forth below.

B. Anticipation

23. I understand that “prior art” includes patents and printed publications that existed before the earliest filing date (the “effective filing date”) of the claim in the patent. I also understand that a patent will be prior art if it was filed before the effective filing date of the claimed invention, while a printed publication will be prior art if it was publicly available before that date.

24. I understand that a claim is anticipated by a prior art reference, item, or device if the prior art reference, item, or device discloses every element in the claim.

Such a disclosure can be express (it says or shows it), or it can be inherent (the element must necessarily be there even if the prior art does not say it or show it). If the claim is anticipated, the claim is unpatentable.

25. I understand that the first step in an anticipation analysis is to construe the claim, and the second step is to compare the construed claim to the prior art reference.

C. Obviousness

26. I understand that a patent claim may be unpatentable for obviousness even if it is not anticipated by the prior art. I understand that a patent claim is obvious if the differences between the claimed intervention and the prior art are such that the subject matter of the claimed invention, as a whole, would have been obvious to one of ordinary skill in the art at the time the invention was made. If the claim is obvious, the claim is unpatentable.

27. I understand that before an obviousness determination is made, the level of ordinary skill in the art must be considered, and the scope and content of the prior art must be considered, as well. I understand that to determine the scope and content of prior art, one must determine what prior art is reasonably pertinent to the particular problem the inventor faced. I understand that prior art is reasonable pertinent if it is in the same field as the claimed invention, or is from another field that a person of ordinary skill in the art would look to in trying to solve the problem.

28. I understand that a patent claim maybe be obvious if the prior art would have suggested to, motivated, or provided a reason to one of ordinary skill in the art to combine or modify certain prior art references to arrive at the invention recited in the claim. I also understand that one can look at interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art—all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

29. I further understand that a person of ordinary skill is a person of ordinary creativity, not an automaton. This person of ordinary creativity works in the contexts of a community of inventors and of the marketplace. The obviousness inquiry needs to reflect these realities within which inventions and patents function. In order to arrive at a conclusion that an invention is obvious, it can be helpful to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed invention does.

30. I understand that the following standards govern the determination of whether a claim in a patent is obvious. I have applied these standards in my evaluation of whether claims 1-4, 6-25, 27, and 28 of the '633 patent would have been obvious.

31. I understand that to find a claim in a patent obvious, one must make certain findings regarding the claimed invention and the prior art. Specifically, I understand that the obviousness question requires consideration of four factors (although not necessarily in the following order):

- The scope and content of the prior art;
- The differences between the prior art and the claims at issue;
- The knowledge of a person of ordinary skill in the pertinent art; and
- Whatever objective factors indicating obviousness or non-obviousness may be present in any particular case.

32. In addition, I understand that the obviousness inquiry should not be done in hindsight, but must be done using the perspective of a person of ordinary skill in the relevant art at the time the invention was made.

33. I understand the objective factors indicating obviousness or non-obviousness may include: commercial success of products covered by the patent claims; a long-felt need for the invention; failed attempts by others to make the invention; copying of the invention by others in the field; unexpected results achieved by the invention; praise of the invention by the infringer or others in the field; the taking of licenses under the patent by others; expressions of surprise by experts and those skilled in the art at the making of the invention; and the patentee proceeded contrary to the accepted wisdom of the prior art.

34. I understand the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. I also understand that an example of a known solution in one field of endeavor may make that solution obvious in another related field. I also understand that market demands or design considerations may prompt variations of a prior art system or process, either in the same field or a different one, and that these variations will ordinarily be considered obvious variations of what has been described in the prior art.

35. I also understand that if, at the time of invention, a person of ordinary skill could have implemented a predictable variation, that variation would have been considered obvious. I understand that for similar reasons, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using that technique to improve the other device would have been obvious unless its actual application yields unexpected results or challenges in implementation.

36. I understand that sometimes it will be necessary to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art. I understand that all these issues may be

considered to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

37. I understand that the obviousness analysis cannot be confined by a formalistic conception of the words “teaching, suggestion, and motivation.” It is my understanding that any motivation that would have been known to a person of skill in the art at the time of invention, including common sense, or derived from the nature of the problem to be solved, can be sufficient to explain why references would have been combined.

38. I understand that in analyzing obviousness, common sense teaches that familiar items may have obvious uses beyond the particular application being described in a reference, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.

39. I understand that an invention that might be considered an obvious variation or modification of the prior art may be considered non-obvious if one or more prior art references discourages or lead away from the line of inquiry disclosed in the reference(s). A reference does not “teach away” from an invention simply because the reference suggests that another embodiment of the invention is better or preferred. My understanding of the doctrine of teaching away requires a clear indication that the combination should not be attempted (e.g., because it would not work or explicit statements saying the combination should not be made).

VII. OPINIONS

A. Background

40. In my opinion, technology related to management of wireless and mobile devices, including tracking of usage of such devices has been around for many years.

41. Further, such usage information of devices has been important for many years to network service providers to provide competitive services and market their strength over competitors, and to users to decide which network service providers to use.

B. Overview of the ‘633 Patent

42. The ‘633 Patent was originally filed as U.S. Patent Application No. 12/421,517 (“the ‘517 Application”) on April 9, 2009. It is my understanding that the ‘517 Application did not claim any domestic benefit or foreign priority to any other application. Accordingly, it is my understanding that the actual filing date is the same as the effective filing date for the purposes of prior art determinations.

43. The ‘633 Patent describes systems and methods for receiving mobile device usage data from a plurality of mobile devices, aggregating the usage data, and generating reports based on the aggregated data. Based on my experiences in the field around the time at which the ‘633 Patent was filed, it was well-known among

persons of ordinary skill in the art to gather usage data from mobile devices, aggregate the data, and generate reports based on the aggregated data.

44. The '633 Patent describes embodiments that may include a process by which data usage information (e.g., call data, SMS, or email usage) is received from a mobile phone, aggregated, and a report generated from the aggregated data. In particular, the process flow shown in Figure 8 of the '633 Patent, and the associated description at 23:17-62 describes how call data is collected by a client service running in the background on a mobile device. The mobile device then sends the collected data directly to a server over a network. Further, the '633 Patent at 24:6-7 describes that using a similar process other data usage such as SMS text usage and email usage may be collected by the client running on the mobile device client. The '633 Patent at 24:22-23 goes on to describe that such the collected data sent from the mobile devices to the server may then be aggregated and/or otherwise processed.

45. The '633 Patent describes at 24:30-31 that reports may be generated by the server using the data collected from the mobile devices. For example, the '633 Patent at 24:60-64 discloses that carrier to carrier reports may be generated using the collected data. These carrier to carrier reports may provide information regarding a number of calls made from one network service provider (e.g., AT&T) and the number of calls made from another network service provider (e.g., Verizon).

46. I have reviewed the prosecution history of the ‘517 Application. During the prosecution of the ‘517 Application, the Applicant amended the claims to narrow “mobile device usage data” to “mobile device network traffic usage data” as described in a December 16, 2011 Response to Non-Final Office Action. In that same response, the applicant argued that the amended claims were allowable over the art because the art did not disclose this feature.

47. Further, during the prosecution of the ‘517 Application, the Applicant amended the claims to narrow “aggregating the usage data from each of the plurality of mobile devices” to “aggregating the usage data from each of the plurality of mobile devices according to characterized actions performed on each of the mobile devices” as described in an April 26, 2012 Response to Non-Final Office Action. In that same response, the applicant argued that the amendment was supported by the disclosure of the ‘517 Application, which recites “the control client logs man-machine interface (MMI) data, file system commands, and other data characterizing usage of, and/or the actions performed on, the mobile device.”

C. Claim Construction

48. It is my understanding that for purposes of an *Inter Partes* Review, a claim should be given its broadest reasonable construction in light of the specification of the patent in which it appears.

49. The phrase “*mobile device network traffic usage data*” is recited in Claims 1 and 28 of the ‘633 Patent. In my opinion, a person of ordinary skill in the art in the context of the ‘633 Patent would understand the broadest reasonable construction of “*mobile device network traffic usage data*” to mean information regarding usage by a mobile device of a network for sending and/or receiving data.

50. The phrase “*characterized actions performed on each of the mobile devices*” appears in Claims 1 and 28 of the ‘633 Patent. In my opinion, a person of ordinary skill in the art in the context of the ‘633 Patent would understand the broadest reasonable construction of “*characterized actions performed on each of the mobile devices*” to mean identifiable usage of and/or actions performed on a mobile device.

51. It is my opinion that the other terms in the claims of the ‘633 Patent should be given their broadest reasonable interpretation consistent with their plain and ordinary meaning.

D. Disclosure and Teachings of the Prior Art

1. U.S. Patent No. 7,817,983 (“Cassett”)

52. It is my understanding that U.S. Patent No. 7,817,983 (“Cassett”) was filed on March 13, 2006, and claims the benefit of U.S. Provisional Application No. 60/660,965, filed March 14, 2005.

53. It is also my understanding that Cassett was published as U.S. Patent Publication No. 2006/0223495 on October 5, 2006.

54. It is thus my understanding that even without the benefit of the provisional application, Cassett is prior art to the '633 Patent under 35 U.S.C. § 102(a) (pre-AIA), 102(b) (pre-AIA), and 102(e) (pre-AIA).

55. It is my understanding that Cassett has not previously been considered by the USPTO in its examination of the '633 Patent.

56. Like the '633 Patent, Cassett discloses apparatus and methods for monitoring usage patterns of a wireless device that may include a usage monitoring and reporting module operable to monitor and log usage on a wireless device.

57. In Cassett, "cellular telephones" (i.e., *mobile devices*) and other such mobile devices are typically referred to as "wireless devices" as depicted and described with respect to Figure 1.

58. Like the '633 Patent, Cassett discloses wireless devices are configured to collect usage pattern data that includes any information relating to activating on the wireless device. Cassett discloses that this information may include "what activity is occurring, when the activity occurs, and how often the activity occurs" as described in Cassett 4:25-28. Accordingly, information regarding when (i.e., *corresponding time of usage*) an activity occurs is correlated with the activity occurring.

59. Like the '633 Patent, Cassett discloses the type of activity for which usage pattern data (i.e., *mobile device network traffic usage data*) is collected includes “a call-related activity, a messaging-related activity, a browser-related activity and a software application-related activity” as described in Cassett 4:29-31.

60. Further, Cassett discloses the “usage pattern data may track information relating to voice calls [(i.e., *call usage information*)], text messages [(i.e., *SMS text usage information*)], uploading and downloading of content [(i.e., *web browser information and/or data usage*)], and execution and usage of the content and/or applications [(i.e., *web browser information and/or application usage information*)]” (i.e., which are *characterized actions performed on each of the mobile devices*) as described in Cassett 4:32-35.

61. Further, Cassett discloses at 4:41-48 the “usage pattern data may include, but are not limited to ... cell site info such as pseudo noise (PN) offset, system identification (SID), network identification (ND) and base station identification (BSID).” Accordingly, a call made (i.e., *usage data*) is correlated with the BSID, which identifies a *cellular tower* used to make the call.

62. Further, whether the call is made while roaming (i.e., *roaming information*) usage is tracked based on the logged ND, which would inherently indicate if a call is made on a roaming network.

63. Like the '633 Patent, Cassett discloses the wireless devices may be in communication with a usage pattern manager server (i.e., *a first server or a central server*) and directly report the usage (i.e., *mobile device network traffic usage data*) to the usage pattern manager server, via a network as described in Cassett 7:49-50, 8:47-51. This server is not described as being affiliated with any enterprise.

64. Cassett at 7:59-61 further discloses that in some instances, the wireless device may ensure only certain identified data is logged, and therefore the wireless devices filters the raw data regarding usage before sending it to the server.

65. In addition, Cassett discloses at 8:9-14 logs may be transmitted from the wireless device to the server on the occurrence of predetermined events (i.e., *on an event driven basis*) or at a predetermined interval (i.e., *on a periodic basis*).

66. Like the '633 Patent, Cassett discloses a server may include an analyzer that may “deriv[e] wireless device usage patterns from the collected usage data in usage logs” (i.e., *aggregating the usage data*) as described in Cassett 9:23-25.

67. Further, the analyzer generates a usage pattern report (i.e., *generating based on the aggregated usage data one or more mobile device usage reports*) as described in Cassett 9:26-30. The reports ... “may be generated comparing the usage pattern of devices associated with different network service providers” (i.e., *a first network service provider and a second network service provider*) as described in Cassett 9:48-50. For a report to compare network service providers, there must

information collected from at least two wireless devices associated with at least two network service providers.

68. Cassett at 15:51-55 discloses that reports are generated from information in the information repository. Since the report contains information from a plurality of wireless devices, the information repository must aggregate and store usage data from the plurality of wireless devices.

69. In addition, Cassett at 10:31-37 discloses that initiating an upload of usage logs on a wireless device may prevent downloading a new configuration. Accordingly, based on the logs (i.e., *usage data*) being uploaded (i.e., *received*) from the wireless device, the wireless device is prevented (i.e., *disabling a portion of the usage capabilities of a particular mobile device or changing a security policy*) from downloading a new configuration. In particular, changing whether or not a new configuration can be downloaded is both *disabling a portion of the usage capabilities* of the mobile device and a *change in a security policy*.

70. Further, Cassett at 8:19-25 discloses that the log stored on the wireless device may be automatically deleted upon uploading to the server. Accordingly, Cassett discloses that based on the log (i.e., *usage data*) being uploaded (i.e., *received*), the log (i.e., *a portion of the memory of a particular mobile device*) is deleted (i.e., *wiped*) from the wireless device.

71. Casset at 9:34-40 discloses that the generated reports may be used to determine products and services to offer to the wireless device, and/or to determine changes in the associated network to better suit the observed usage patterns. Accordingly, Cassett discloses that the reports, generated based on collected usage data, may be used to determine services to offer the wireless device, such as a particular service plan.

72. Cassett also discloses at 11:64-66 that reports may have details of usage of wireless devices including call and messaging habits, which is a type of *call summary report* with respect to the calls, and *an SMS summary report* with respect to the messaging.

73. The citations to portions of Cassett given in the preceding paragraphs are merely exemplary, and my opinions with regard to Cassett are based on the Cassett reference as a whole.

2. U.S. Patent No. 6,925,160 (“Stevens”)

74. It is my understanding that U.S. Patent No. 6,925,160 to Stevens was filed on August 21, 2003, and claims the benefit of U.S. Provisional Application No. 60/404,748, filed August 21, 2002.

75. It is also my understanding that Stevens was patented on August 2, 2005.

76. It is thus my understanding that even without the benefit of the provisional application, Stevens is prior art to the '633 Patent under 35 U.S.C. § 102(a) (pre-AIA), 102(b) (pre-AIA), and 102(e) (pre-AIA).

77. It is my understanding that Stevens has not previously been considered by the USPTO in its examination of the '633 Patent.

78. Like the '633 Patent, Stevens relates to a convenient way for companies to manage cellular telephone costs associated with cellular telephone usage by employees by providing tools for receiving billing and usage information from various wireless service providers and providing reports regarding such billing and usage information.

79. Like the '633 Patent, Stevens discloses cellular telephones (i.e., *mobile devices*) are used by employees and that a server, referred to as a system, (i.e., *a first server*) “receives usage information related to the usage and charges associated with employees of [a] company” (i.e., *mobile device network traffic usage*) as described by Stevens at 3:16-25, 4:23-27.

80. Stevens at 4:25-26 discloses the system discussed will run on a business equipment or server, meaning any collected usage information would be received at the business equipment, which is an *enterprise server*.

81. Further, Stevens discloses that the “information received from carriers generally is related to billing statements, phone usage [(i.e., *call usage information*)],

and other phone-related information” (i.e., *characterized actions performed on each of the mobile devices*) as described by Stevens at 12:57-59.

82. In addition, Stevens discloses that the system generates reports based on the usage and charges information received from the carriers, where the reports can be “used by managers to analyze employees’ phone usage across various carriers [(i.e., *a first network service provider and a second network service provider*)], companies [(i.e., *at least two different enterprises*)], divisions, and departments” (i.e., *generating based on the aggregated usage data one or more mobile device usage reports*) as described in Stevens 10:37-39. In particular, in order for reports to be generated that analyze usage of all the carriers at least some of the usage information (and phones) must be associated with a first carrier (i.e., *first service provider*) and other usage information (and phones) must be associated with a second carrier (i.e., *second service provider*) that is different than the first carrier.

83. Further, in order for reports to be generated that analyze usage of multiple companies by a server, the server must receive and aggregate information from phones associated with multiple different companies. Therefore, the server must not be affiliated with at least one of those companies, as it would only be affiliated with one company and not all the companies since it is the server of a particular business.

84. Stevens at 10:48-50 discloses the generated reports may be directed to details of various individual employees. In order for the report to have details of various employees, the usage data from the devices of each employee must be aggregated to generate the report.

85. In addition, Stevens at 11:2-5 discloses that the generated reports may be used to assist in understanding employees' cost per minute and how to optimize the different available rate plans based on employees' usage. Therefore, Stevens discloses optimizing rate plans (i.e., *service plans*), similar to the '633 Patent at 18:19-27, based on the reports, which is a form of *changing a service plan of a particular mobile device based on usage data received from the particular mobile device*.

86. Stevens also discloses at 10:51-55 that generated reports may include information such as an employee's names, carrier, total charge, airtime charges 814, roaming charges, long distance charges, UCPM charges, total minutes, minutes over/under 824, and plan type, which is a type of *call summary report*. Further, to include roaming charges, the *characterized actions* for which usage information is received by Stevens must include *roaming information*.

87. Further, Stevens discloses at 3:63-64 collected information may be sent from the business's equipment or server to a computer that is affiliated with the employee (e.g., a personal computer/server) and *not affiliated with the particular*

enterprise, so the employee can see what information is being collected about his phone usage.

88. In addition, Stevens discloses at 13:19-33 that collected information may be inserted into tables into a database. This database may be a central database.

89. The citations to portions of Stevens given in the preceding paragraphs are merely exemplary, and my opinions with regard to Stevens are based on the reference as a whole.

3. U.S. Patent Publication No. 2009/0005002 (“Agarwal”)

90. It is my understanding that U.S. Patent Publication No. 2009/0005002 to Agarwal was filed on June 28, 2007, and claims the benefit of U.S. Provisional Application No. 60/779,148, filed on Oct. 2, 2006.

91. It is also my understanding that Agarwal was published on January 1, 2009.

92. It is my understanding that even without the benefit of the provisional application, Agarwal is prior art to the ‘633 Patent under 35 U.S.C. § 102(a) (pre-AIA) and 35 U.S.C. § 102(e) (pre-AIA).

93. It is my understanding that Agarwal has not previously been considered by the USPTO in its examination of the ‘633 Patent.

94. Like the ‘633 Patent, Agarwal discloses portable devices (e.g., “mobile phones,”) (i.e., *mobile devices*) “incorporate many new technologies and features ...

[including] data messaging in the form of SMS or MMS... [and] internet connectivity over cellular networks and wireless internet access points (e.g., using Wi-Fi, etc.) [which] has enabled internet browsing, content downloading, mobile commerce transactions, email activity, and the like” (i.e., *characterized actions performed on each of the mobile devices*) as described in Agarwal at ¶ [0002].

95. Agarwal further discloses “usage information” (i.e., *mobile device network traffic usage data*) “collected from each portable device may be communicated over [a] network to [an] information processor [(i.e., *first server*)] for processing and/or storage in [a] database” as described in Agarwal at ¶ [0026] (reference numerals removed).

96. Like the ‘633 Patent, Agarwal discloses that “on-network usage (e.g., interaction over a network of a carrier providing wireless service for the cellular phone [(i.e., *a first network service provider*))] and/or off-network usage (e.g., interaction over a network which is not affiliated with the carrier [(i.e., *a second network service provider*))] of the portable device may be monitored” as described in Agarwal at ¶ [0029].

97. Like the ‘633 Patent, Agarwal discloses that “the collected information ... may be processed [by the portable device] ... [which] may comprise cleaning, organizing, filtering, sorting, encoding, encrypting, applying time and/or location stamps to, etc. the data” as described in Agarwal at ¶ [0031]. Agarwal thus discloses

since the processing, which includes *filtering raw data*, is performed on the portable device, it is performed before any transmission or reception of the collected information (i.e., *usage data*) to a server.

98. Like the ‘633 Patent, Agarwal at ¶ [0039] discloses that usage data may be collected in real-time, which also may inherently be on a continuous basis.

99. The citations to portions of Agarwal given in the preceding paragraphs are merely exemplary, and my opinions with regard to Agarwal are based on the reference as a whole.

4. U.S. Patent No. 7,310,511 (“Barnea”)

100. It is my understanding that U.S. Patent No. 7,310,511 (“Barnea”) was filed on February 14, 2005, and claims the benefit of U.S. Provisional Application No. 60/543,910, filed February 13, 2004.

101. It is also my understanding that Barnea was published as U.S. Patent Publication No. 2005/0186939 on August 25, 2005.

102. It is my understanding that even without the benefit of the provisional application or priority applications, Barnea is prior art to the ‘633 Patent under 35 U.S.C. § 102(a) (pre-AIA), 102(b) (pre-AIA), and 102(e) (pre-AIA).

103. It is my understanding that Barnea has not previously been considered by the USPTO in its examination of the ‘633 Patent.

104. Barnea discloses at 5:50-53 that usage level information of telephones (i.e., *mobile device network traffic usage data*) is used to send text messages with advertisements, reminders and offers (i.e., *alerts*) in order to encourage a user to take advantage of the available roaming services. In particular, Barnea discloses at 6:1-6 that a certain text message may be sent to a telephone when the record, say in the form of an activity log, indicates lack of activity over a certain amount of time. Similarly, noticeably large amounts of activity may trigger different messages, and average amounts of activity may trigger yet further messages. Such messages/advertisements to entice usage of roaming services are inherently a type of alert.

105. Barnea at 7:14-17 discloses that the activity monitored may include “usage attributes” used by a “usage attribute unit” that analyzes the roamers’ services usage behavior during a visit (e.g., voice calls generating, sending SMS etc.). Barnea at 7:17-19 discloses this usage activity may be derived from substitutive sources including signaling probing and TAP analyzers.

106. In addition, Barnea discloses at 10:47-57 that in some instances a user may be registered on a foreign hosting GSM network that has an established GSM roaming agreement, but not an established GPRS roaming agreement, and therefore cannot activate a data connection over the GPRS connection. Accordingly, Barnea discloses at 10:66-11:4 that a “GPRS alert [(i.e., *alert*)] is sent to users who register

successfully on a roaming network [(i.e., *mobile device network traffic usage data*)] which does not have a GPRS roaming agreement with the home network (i.e. where GPRS will not work) and provides a list of networks in that country which do have a GPRS roaming agreement with the applicable home network.”

107. The citations to portions of Barnea given in the preceding paragraphs are merely exemplary, and my opinions with regard to Barnea are based on the reference as a whole.

E. Claims 1-4, 6-10, 12-19, 21, 22, 25, 27, and 28 Obvious under Section 103 over the Combined Teachings of U.S. Patent No. 7,817,983 (“Cassett”) and U.S. Patent No. 6,925,160 (“Stevens”)

108. In my opinion, to the extent that Cassett does not anticipate Claims 1-4, 6-25, 27, and 28 of the ‘633 Patent, a person of ordinary skill in the art would have found it obvious at the time the ‘633 Patent was filed to combine the teachings of Cassett and Stevens to form the embodiments set forth in those claims.

109. Further, in my opinion, to the extent that Stevens does not anticipate Claims 1-4, 6-25, 27, and 28 of the ‘633 Patent, a person of ordinary skill in the art would have found it obvious at the time the ‘633 Patent was filed to combine the teachings of Stevens and Cassett to form the embodiments set forth in those claims.

110. The Cassett and Stevens references are both in the same field of endeavor as the ‘633 Patent, namely the field of gathering usage data for mobile devices to provide insight into such usage.

111. The Cassett and Stevens references disclose analogous methods and apparatuses for receiving usage information (e.g., phone usage information) regarding wireless devices and generating reports based on the usage information.

112. Cassett arguably does not explicitly discuss that the discussed wireless devices are *associated with a particular enterprise* or company. However, one of ordinary skill in the art would recognize design incentives to adapt the embodiments disclosed in Cassett to be like those of Stevens and the '633 Patent, where the design incentive is to expand the scenarios in which the systems and methods of Cassett could be used to also include tracking usage information of devices specifically associated with enterprises or companies. Doing so would allow for the systems and methods taught by Cassett to be used in additional contexts without changing how they function as taught by Cassett.

113. The arguable differences between the claimed invention in the '633 Patent and the Cassett reference are encompassed in known variations, such as those disclosed in Stevens. For example, Stevens makes clear that it was known in the prior art to gather usage information from employer-supplied mobile phones and generate reports related to the usage of mobile phones within a company and across companies, which are particular enterprises.

114. One of ordinary skill in the art could have combined the elements of Cassett and Stevens as in the claimed embodiments using known methods at that

time, such as using the teachings of Cassett in an additional business context (i.e., *an enterprise*).

115. One of ordinary skill in the art would have recognized that the results of the combination of Cassett and Stevens were predictable because the references seek to solve the same problem using the same functions.

116. The combination of Cassett and Stevens would involve simply using the teachings of Cassett in another context involving monitoring usage of employees' phones of a company (i.e., *particular enterprise*) as taught by Stevens. Accordingly, the results of substituting known elements would be predictable to one of ordinary skill in the art.

117. In sum, one of ordinary skill in the art would have recognized that the usage information collected in Cassett could be collected from "employer-supplied" mobile phones as taught by Stevens in order to generate reports related to usage within and across companies. This enhancement of Cassett would merely be additional business context in which the systems and methods of Cassett could generally be used. The motivation, as provided by Stevens, a known work in the same field of endeavor, would be to be able to generate such reports, which may be useful to managers. Additionally, a person of ordinary skill in the art would be independently motivated to modify Cassett according to the teachings of Stevens because it would be within their knowledge and capability to seek to utilize the

systems and methods of Cassett in additional situations including enterprise situations. A person of ordinary skill in the art could accomplish these modifications according to readily known techniques in order to predictably yield systems and methods such as those claimed in the '633 Patent.

118. Stevens arguably does not explicitly discuss to receive the mobile device network traffic usage *directly from each of a plurality of mobile device*. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Stevens to collect and receive information related to employee phone usage directly from the phone, as opposed to receiving the information from the carriers that provide service to the phones. Stevens discloses that since information is received from the carriers, and not from the phones themselves, the system of Stevens needs to convert the information from a carrier-specific format to a common format so that the reports comparing usage can incorporate information from the various carriers. A skilled artisan would, therefore, have been motivated to modify Stevens in view of Cassett to receive such information directly from the phones in a common format in order to avoid the conversion of information from a carrier-specific format to a common format, which requires extra processing. Implementing this modification of Stevens could have been achieved using well-known programming techniques, and would have been well within the capabilities of a skilled artisan at the time the invention was made

F. Claims 6, 20, 23 and 24 are Obvious under Section 103 over Cassett/Stevens and further in view of U.S. Patent Publication No. 2009/0005002 (“Agarwal”)

119. A person of ordinary skill in the art would find it obvious to combine the known desire to monitor the use of an e-mail application on a mobile device with the teachings to monitor the use of applications generally on a mobile device of Cassett, as motivated by Agarwal, a known work in the same field of endeavor, in order to expand the usage scenarios using the systems and methods already taught by Cassett. In particular, Agarwal emphasizes the need to monitor email activity of wireless devices, and Cassett provides a platform for doing so. A person of ordinary skill in the art could accomplish these modifications according to readily known techniques in order to predictably yield systems such as those claimed in the ‘633 Patent. Thus, a person of ordinary skill in the art would have naturally looked from Cassett to Agarwal in order to gather additional tracking usage data for different types of mobile device applications.

120. Further, Agarwal at ¶¶ [0039] and [0040] teaches collecting mobile device usage information in real-time. Accordingly, a person of ordinary skill in the art would be motivated by Cassett’s teaching regarding the “timing of log transmission is non-limiting” to look for other techniques for transmitting collected usage data, such as the real-time transmission taught by Agarwal. The motivation for such a combination would be to provide “complete and representative

information regarding interactions of the portable device...” as taught by Agarwal at ¶ [0010]. This would allow, for the combined system to effectively monitor and generate reports related to the activity of wireless devices.

G. Claim 11 is Obvious under Section 103 over Cassett/Stevens and further in view of U.S. Patent No. 7,310,511 (“Barnea”)

121. A person of ordinary skill in the art would find it obvious to combine the known process to send text messages with advertisements, reminders and offers in order to encourage a user to take advantage of the available roaming services based on usage level recorded per-telephone with the teachings to collect information from a wireless device of Cassett, as motivated by Barnea, a known work in the same field of endeavor, in order to provide targeted advertising based on information received from the wireless devices as already taught by Cassett. A person of ordinary skill in the art could accomplish these modifications according to readily known techniques in order to predictably yield systems such as those claimed in the ‘633 Patent.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. This declaration is executed on March 2, 2015, at Denton, Texas.

A handwritten signature in blue ink, reading "Robert Akl.", is positioned above a horizontal line.

Dr. Robert Akl, D.Sc.