IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

PORTAL COMMUNICATIONS, LLC, Plaintiff, V. SOUNDHOUND, INC., Defendant.	§ § § § § § § § §	Civil Action No. _____ **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Pursuant to Fed. R. Civ. P. 15(a), Plaintiff, Portal Communications, LLC ("Portal" or "Plaintiff"), by and through its undersigned counsel, hereby respectfully submits this Original Complaint against the above-named Defendant, as follows:

NATURE OF THE ACTION

1. This is a patent infringement action to stop Defendant's infringement of United States Patent Nos. 7,376,645 (the "'645 patent"), 7,873,654 (the "'654 patent"), and 8,150,872 (the "'872 patent") (collectively, the "patents-in-suit").

THE PARTIES

2. Plaintiff, Portal Communications, LLC, is a Texas Limited Liability Company with an office and place business at 1400 Preston Road, Suite 400, Plano, TX 75093.

3. Upon information and belief, SoundHound, Inc. ("SoundHound"), is a corporation established under the laws of the State of Delaware, with its principal place of business at 5400 Betsy Ross Drive, Santa Clara, California 95054. SoundHound may be served via its registered agent, Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19808.

JURISDICTION AND VENUE

4. This action arises under the patent laws of the United States, 35 U.S.C. § 1 et seq., including 35 U.S.C. §§ 271, 281, 283, 284, and 285. This Court has subject matter jurisdiction

over this case for patent infringement pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. This Court has personal jurisdiction over SoundHound, including because SoundHound is incorporated in the State of Delaware. Further, this Court has specific jurisdiction over SoundHound, including because SoundHound has minimum contacts within the State of Delaware; SoundHound has purposefully availed itself of the privileges of conducting business in the State of Delaware; SoundHound deliberately and regularly conducts continuing and ongoing business within the State of Delaware; and Plaintiff's cause of action arises directly from SoundHound's business contacts and other activities in the State of Delaware, including at least by virtue of SoundHound's infringing systems, devices, and methods, which are at least sold, practiced, and/or used in the State of Delaware. Further, on information and belief, SoundHound is subject to the Court's jurisdiction, including because SoundHound has committed patent infringement in the State of Delaware. Further, this Court has general jurisdiction over SoundHound, including due to its continuous and systematic contacts with the State of Delaware.

6. Venue is proper for SoundHound in the District of Delaware pursuant to 28 U.S.C. §§ 1391 and 1400. Without limitation, on information and belief, SoundHound is incorporated in the State of Delaware.

7. More specifically, without limitation, on information and belief, SoundHound is subject to venue in this District, including because SoundHound has committed patent infringement in this District. Pursuant to 35 U.S.C. § 271, SoundHound infringes the patents-in-suit by the infringing acts described herein in this District. Further, SoundHound solicits and induces customers/users in this District, including via its apps and websites at www.soundhound.com and/or www.houndify.com. On information and belief, SoundHound has customers/users who are residents of this District and who purchase, acquire, and/or use SoundHound's infringing

products in this District.

INTRODUCTION

A. Portal Communications, LLC

8. Plaintiff refers to, and incorporates herein, the allegations in the above paragraphs.

9. The technologies owned by Portal comprise those related to distributed systems and methods that comprise (1) returning search results responsive to natural language voice and audio (hereinafter "voice") queries that are improved over search results of prior art system and methods, including because location information of the person or device making the query is used in a new and unconventional way in connection with determining the meaning of the query; (2) returning improved search results to voice queries without the need for time-consuming, and often inaccurate, imprecise, and unreliable, legacy voice training systems; and (3) improved, faster, more efficient and more accurate search and database technology, achieved at least in part by more accurate, narrowed and streamlined queries. The patents-in-suit were developed and patented by the named inventor, Dave Bernard, an accomplished businessman and inventor, and a visionary in this field.

10. Portal is the current assignee of the patents-in-suit and has standing to bring this lawsuit, including the right to recover damages for past, present, and future infringement of the Patents-in-Suit.

B. The Patents-In-Suit

11. Plaintiff refers to, and incorporates herein, the allegations in the above paragraphs.

12. Mr. Bernard filed provisional patent application 60/631,339 with the United States Patent and Trademark Office ("USPTO") on November 29, 2004. The '645 patent was filed as application No. 11/041,605 on January 24, 2005 and issued on May 20, 2008. A true and correct copy of the '645 Patent is attached hereto as Exhibit A. The '654 patent is a continuation-in-part

of the application '605 application that issued as the '645 patent. The '654 patent was filed as application No. 12/048,434 on March 14, 2008 and issued on January 18, 2011. A true and correct copy of the '654 Patent is attached hereto as Exhibit B. The '872 patent is a continuation-in-part of the '434 application, which issued as the '654 patent. The '872 patent was filed as application No. 12/979,758 on December 28, 2010 and issued on April 3, 2012. A true and correct copy of the '872 Patent is attached hereto as Exhibit C. The asserted claims of the patents-in-suit are entitled to a priority date of at least November 29, 2004. Further, the statements herein would also be applicable if the priority date of the patents-in-suit was merely their earliest non-provisional filing date of at least January 24, 2005.

13. The claims of the patents-in-suit, including the asserted claims, when viewed as a whole, including as an ordered combination, are not merely the recitation of well-understood, routine, or conventional technologies or components. The claimed inventions were not well-known, routine, or conventional at the time of the invention, over ten years ago, and represent specific improvements over the prior art and prior existing systems and methods.

14. At the time of the patented inventions, voice-based searching from a mobile device was time-consuming, single-modal, and often inaccurate, imprecise, and unreliable.

15. At the time of the priority date of the patents-in-suit (November 2004), before the world's first prominent mobile "smartphone" was released, and during a time where broadband (*e.g.*, DSL) Internet access was just becoming more widespread (*see* History of the iPhone on Wikipedia at https://en.wikipedia.org/wiki/History_of_iPhone & History Internet Access on Wikipedia at https://en.wikipedia.org/wiki/Internet_access#History), user interaction with PCs, PDAs, Web-enabled phones, wireline and wireless networks, the Internet, Web-based query systems and engines, and the like was primarily non-voice-based, through keyboards, mice, intelligent electronic pads, monitors, printers, and the like, which was cumbersome and resulted

in limited adoption and use of these devices. '645/1:34-56. [1]

16. As of the priority date of the patents-in-suit, user interaction with PCs, PDAs, Web-enabled phones, wireline and wireless networks, the Internet, Web-based query systems and engines, and the like had been primarily non-voice-based, through keyboards, mice, intelligent electronic pads, monitors, printers, and the like. '645/1:44-49. This had limited the adoption and use of these devices and systems somewhat, and it has long been felt that allowing for accurate, precise, and reliable voice-based user interaction, including mimicking normal human interaction, would be advantageous. '645/1:49-53. As inventor Bernard envisioned, and as has come to fruition since, allowing for accurate, precise, and reliable voice-based user interaction would certainly draw more users to e-commerce, e-support, e-learning, etc., and reduce learning curves. '645/1:53-56.

17. The existing voice-based searches at the time of the inventions of the patents-in-suit were limited and single-modal, meaning that a user may interact with each of the prior-existing products in only one way. '645/3:55-57. In other words, each product utilizes only a single voice-based input. '645/3:57-58. As a result of this single-modality, there is no context or environment within which a voice-based search is performed and several of the systems, apparatuses, software products, and methods must perform multiple iterations to pinpoint a result or answer related to the voice-based search. '645/3:58-63. These products were further limited to only a single user's input, and only after time-consuming, and often inaccurate, imprecise, and unreliable, voice training. '645/2:11-13. Their accuracy rates are inextricably tied to a single user that has provided the voice training. '645/2:13-15. Multi-modal, context-based voice searching

[1] Because the patents-in-suit are all related, and, thus, share much of their specifications, for simplicity and clarity, unless otherwise noted, the references to the specification herein are to the '645 patent specification, and such references are equally applicable to each of the patents-in-suit.

via a natural language query system was not developed until the inventions of the patents-in-suit.

18. Including as of the priority date of the patents-in-suit, there have been many, albeit vastly inferior, means outside of the claimed invention for achieving the ends of voice-based searching via a natural language query system, including via the Internet. For example, as noted in the specification,

> Several software products currently allow for limited voice-based user interaction with PCs, PDAs, and the like. Such software products include, for example, Via Voice™ by International Business Machines Corp. and Dragon NaturallySpeaking™ by Scansoft, Inc. These software products, however, allow a user to perform dictation, voice-based command-and-control functions (opening files, closing files, etc.), and voice-based searching (using previously-trained uniform resource locators (URLs)), only after time-consuming, and often inaccurate, imprecise, and unreliable, voice training. Their accuracy rates are inextricably tied to a single user that has provided the voice training.

See, e.g., '645/2:3-15. Other inferior methods are presented in the specification, including methods presented and described in prior art patent publications, including U.S. Pat. No. 5,802,526, to Fawcett et al. (Sep. 1, 1998) ("Fawcett"); U.S. Pat. No. 5,819,220, to Sarukkai et al. (Oct. 6, 1998) ("Sarukkai"); U.S. Pat. No. 6,446,064, to Livowsky (Sep. 3, 2002) ("Livowsky"); U.S. Pat. No. 6,615,172, to Bennett et al. (Sep. 2, 2003) ("Bennett '172"); U.S. Patent Application Publication No. 2001/0039493, to Pustejovsky et al. (Nov. 8, 2001) ("Pustejovsky"); U.S. Patent Application Publication No. 2003/0115192, to Kil et al. (Jun. 19, 2003) ("Kil"); U.S. Patent Application Publication No. 2004/0044516, to Kennewick et al. (Mar. 4, 2004) ("Kennewick"); and U.S. Patent Application Publication No. 2004/0117189, to Bennett (Jun. 17, 2004) ("Bennett '189"). *See* '645/2:16-3:49.

19. However, as noted in the specification, each of these prior art systems, apparatuses, software products, and methods which proceeded the priority of the patents-in-suit is inferior, including because, described above suffers from several shortcomings: prior art systems required time-consuming, and often inaccurate, imprecise, and unreliable, voice training; prior art systems

were single-modal, and lacked context or environment within which a voice-based search is performed; and prior art systems needed to perform multiple iterations to pinpoint a result or answer related to the voice-based search. '645/3:50-63.

20. These time-consuming, inaccurate, imprecise, and unreliable voice trainings were further limited to solely a single user of the device, requiring the same inefficient voice training to be repeated for each additional user of the prior art system. Such constant and inefficient voice trainings would lead to many users simply not performing the training, resulting in poor search performance, or entirely avoiding the prior art system. These single-modal systems permitted only a single input for searching, which resulted in poor search performance relative to the user, including because the single input search results may present results which are unrelated to the user's interest, location, or other context or environment of the user. Similarly, these multi-iterative systems were inefficient and often required long waits for results, where the results may only be tangentially relevant to the user's search.

21. As noted by inventor Bernard during the prosecution of the '645 patent, the inventions of the patents-in-suit narrow and streamline a formal database query associated with a voice-based query which utilizes both the voice-based query and the location to narrow the voice-based query. This narrowing and streamlining enables the claimed inventions to provide more tailored, accurate, and relevant results based on the context and environment of the user, such as where that user is located. Further, inventor Bernard wanted to create a system which converts spoken word into text in searchable form and parse the text using lexicons and grammar rules to parse the spoken sentences and determine underlying meanings, including determining the underlying meanings responsive to the user's location from the location/proximity module and/or via the use of a database lookup module. This parsing and determination of the underlying meaning of the user's voice-based search results in a more efficient system because the back-end programming

and analysis does not require each user to spend time setting up the system as in prior art systems. Thus, the inventions of the patents-in-suit permit a more cross-platform, cross-user experience without the necessity of voice-training or customization for any specific user.

22. In view of these issues and others, there was a need for natural language query systems, architectures, and methods for processing voice and proximity-based queries that do not require time-consuming, and often inaccurate, imprecise, and unreliable, voice training. '645/3:64-67. What was also needed were natural language query systems, architectures, and methods that are multimodal, including that they utilize multiple inputs (*e.g.*, voice input and location input, for example from a GPS) in order to create and take into consideration a context or environment within which a voice and/or proximity-based search or the like is performed. '645/4:1-10. In other words, what was needed, and what among other things the claimed technology achieved, was natural language query systems, architectures, and methods that comprised attributing meaning to words based on the context or environment within which they are spoken. '645/4:10-14. What was further needed, and what among other things the claimed technology achieved, were natural language query systems, architectures, and methods that performed only a single iteration to pinpoint a result or answer related to a voice and/or proximity-based search or the like. '645/4:14-17.

23. Among other things, inventor Bernard wanted to solve the issues of the prior art systems, including by providing a natural language query system, architecture, and method for processing voice and proximity-based queries that do not require time-consuming, and often inaccurate, imprecise, and unreliable, voice training; are multimodal, meaning that a user may interact with the natural language query system, architecture, and method in a number of ways simultaneously and that the natural language query system, architecture, and method utilize multiple inputs in order to create and take into consideration a context or environment within which a voice and/or

proximity-based search or the like is performed; and perform only a single iteration to pinpoint a result or answer related to a voice and/or proximity-based search or the like. '645/4:20-44.

24. In other words, the inventions of the patents-in-suit provide a natural language query system, architecture, and method that mimic normal human communications by attributing meaning to words based on the context or environment within which they are spoken. '645/4:32-38. This context or environment may be prior information-based, domain knowledge-based, user-specific profile data-based, and/or, preferably, location or proximity-based. '645/4:38-40. But existing technology offered only unacceptably inferior solutions of voice-based searching without such context or environment.

a. '645 Patent.

25. Plaintiff refers to, and incorporates herein, the allegations in the above paragraphs.

26. The Abstract of the '645 patent states the following:

> The present invention provides a wireless natural language query system, architecture, and method for processing multimodally-originated queries, including voice and proximity-based queries. The natural language query system includes a Web-enabled device including a speech input module for receiving a voice-based query in natural language form from a user and a location/proximity module for receiving location/proximity information from a location/proximity device. The natural language query system also includes a speech conversion module for converting the voice-based query in natural language form to text in natural language form and a natural language processing module for converting the text in natural language form to text in searchable form. The natural language query system further includes a semantic engine module for converting the text in searchable form to a formal database query and a database-look-up module for using the formal database query to obtain a result related to the voice-based query in natural language form from a database.

27. Among other things claimed, the '645 technology provides a natural language query system, architecture, and method for processing voice and proximity-based queries that do not require time-consuming, and often inaccurate, imprecise, and unreliable, voice training. '645/4:21-25. Among other things claimed, the '645 technology also provides a natural language query system, architecture, and methods that are multimodal, including that the natural language

query system, architecture, and methods that utilize multiple inputs in order to create and take into consideration a context or environment within which a voice and/or proximity-based search or the like is performed. '645/4:25-33. Among other things, embodiments of the claimed '645 technology comprise natural language query systems, architectures, and methods that comprise attributing meaning to words based on the context or environment within which they are spoken. '645/4:33-38. In some embodiments, this context or environment may be prior information-based, domain knowledge-based, user-specific profile data-based, and/or, preferably, location or proximity-based. '645/4:38-40. Some embodiments also comprise a natural language query system, architecture, and method that performs only a single iteration to pinpoint a result or answer related to a voice and/or proximity-based search or the like. '645/4:41-44.

28. The claimed inventions of the '645 patent comprise providing natural language query systems, architectures, and methods that do more than simply convert speech to text, use this text to search a database, and convert text to speech. '645/4:44-48. While off-the-shelf tools may be used to incorporate and combine speech recognition, natural language processing and speech synthesis technologies. '645/4:51-55, the combined claimed invention is more than just a combination of off the shelf tools. Without limitation, the claimed systems and methods include improvements to any pre-existing technology comprising (1) returning search results responsive to natural language voice queries that are improved over search results of prior art systems and methods, including because location information of the person or device making the query is used in a new and unconventional way in connection with determining the meaning of the query; (2) returning improved search results to voice queries without the need for time-consuming, and often inaccurate, imprecise, and unreliable, voice training; and (3) improved, faster, more efficient and more accurate search and database technology, achieved at least in part by more accurate, narrowed and streamlined queries.

29. The '645 patent invention further provides for a natural language query method for processing voice and proximity-based queries by providing a device including a speech input module for receiving a voice-based query in natural language form from a user and a location/proximity module for receiving location/proximity information from a location/proximity device. '645/5:26-32. The natural language query method also includes converting the voice-based query in natural language form to text in natural language form using a speech conversion module and converting the text in natural language form to text in searchable form using a natural language processing module. '645/5:32-37. The natural language query method further includes converting the text in searchable form to a formal database query using a semantic engine module and obtaining a result related to the voice-based query in natural language form from a database using the formal database query and a database-look-up module. '645/5:37-42.

30. Including as noted in the '645 patent, the technologies of the asserted claims of the '645 patent improved prior voice query, natural language processing, search, and database technology, including in connection with:

a. Utilizing multiple inputs in order to create a context or environment within which a voice and/or proximity-based search or the like is performed. *See, e.g.*, '645/4:1-10 & 4:25-33.

b. Taking into consideration a context or environment when performing a voice and/or proximity-based search or the like. *See, e.g.*, '645/4:1-10 & 4:25-33.

c. Attributing meaning to words based on the context or environment within which they are spoken. *See, e.g.*, '645/4:10-14 & 4:33-38.

d. Performing only a single iteration search to pinpoint a result or answer related to a voice and/or proximity-based search or the like, while doing more than simply convert speech to text, use this text to search a database, and convert text to speech. *See, e.g.*, '645/4:14-17 & 4:41-48.

e. Processing voice and proximity-based queries without requiring time-consuming, and often inaccurate, imprecise, and unreliable, voice training.

See, e.g., '645/4:21-25.

f. Permitting users to interact with a natural language query system in multiple ways, simultaneously, including via multiple inputs. *See, e.g.*, '645/4:25-33.

g. Returning search results responsive to natural language voice queries that are improved over search results of prior art system and methods, including because location information of the person or device making the query is used in a new way in connection with determining the meaning of the query. *See, e.g.*, '645/6:37-7:4.

h. Returning improved search results to voice queries without the need for time-consuming, and often inaccurate, imprecise, and unreliable, voice training; *See, e.g.*, '645/3:50-55 & 4:21-34.; and

i. Providing improved, faster, more efficient, and more accurate search and database technology, achieved at least in part by more accurate, narrowed and streamlined queries. *See, e.g.*, '645/9:23-30 & 10:30-37.

31. The inventions of the asserted claims also provide computer, voice query, natural language processing, search, and database efficiency at least because they allow voice-based query systems, apparatuses, and methods to have the useful and improved claimed relevant, context and environment based search results functionality without the need for time-consuming, inaccurate, imprecise, and unreliable voice-training on a user-by-user basis. Inventor Bernard did more than simply apply current technology to an existing problem. Inventor Bernard's invention, as embodied in the asserted claims, was a significant advancement in voice query, natural language processing, search, and database technology. The inventions covered by the asserted claims comprise utilization of the mobile Internet to create a novel architecture enabling a multimodal input for a voice-based search to be parsed and used for searching a database to provide the most relevant, context and environment based results.

32. These and other improvements over the prior art represent meaningful limitations and/or inventive concepts based upon the state of the art over a decade ago. Thus, the technology recited in the claims of the '645 patent provides meaningful limitations and/or inventive concepts and

does not claim an abstract idea.

33. Including due to the inventive combination of elements the claimed inventions achieve many benefits over prior art systems and methods, including the benefits noted above. Further, including in view of these specific improvements, the inventions of the asserted claims, when such claims are viewed as a whole and in ordered combination, are not routine, well-understood, conventional, generic, existing, commonly used, well known, previously known, typical, and the like over a decade ago, including because, until inventions of the asserted claims of the '645 patent, the claimed inventions were not existing or even considered in the field. The claimed inventive concepts greatly enhance and facilitate technological systems, architectures, and methods which comprise receiving and processing voice and proximity-based queries, including from a device which receives a voice-based query in natural language form from a user and location/proximity information from a location/proximity device; converting the voice-based query in natural language form to text in natural language form; converting the text in natural language form to text in searchable form; determining the meaning of the voice-based query, including based on lexicon and grammar rules and the location/proximity information; converting the text in searchable form to a formal database query; narrowing and streamlining the database query, including based on the location/proximity information; and using the formal database query to obtain a result related to the voice-based query in natural language form from a database.

34. The technology recited in the claims of the '645 patent improves the functioning of computers and databases, it improves computer and database capabilities, efficiencies, and usability, and it improves over existing technological processes, including with respect to voice and location-based searches and natural language processing and searching, wherein the natural language processing and searching is performed by breaking down the voice-based search into a

database query, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, performing a database search based on the narrowed and streamlined query in a single iteration, and returning the context and environment specific result to the user's device.

35. The asserted claims of the '645 patent, including as a whole, and, where applicable, in ordered combination, comprise, *inter alia*, a non-conventional and non-generic arrangement of communications between a multimodal input device and a database server that is a technical improvement to the communications between the devices, inputs, and network/web services, including those improvements noted above.

36. The inventions of the asserted claims are necessarily rooted in computer technology, *i.e.*, database and search query processing technology, and comprise improvements over prior technologies in order to overcome the problems, including those shortcomings noted above, specifically arising in the realm of computer databases, search queries, and natural language processing systems, architectures, and methods. One inventive component of the '645 claimed inventions is improving voice and location-based searching and efficiency and natural language processing, searching, and efficiencies in ways that are necessarily rooted in computer technology for these same reasons. The claimed solutions amount to an inventive concept for resolving the particular problems and inefficiencies noted above, including in connection with providing relevant, context and environment based search results.

37. Including as noted above, the claims recite inventions that were not merely a routine or conventional use of conventional devices and technologies. The inventions of the asserted claims are not well-known, fundamental economic or conventional business practices, nor were they practices to which general-purpose computer components were added after the fact. Nor, as noted in the patent, were the specifically disclosed and claimed combination of devices, steps,

and processes existing in the art prior to the '645 invention. *See* '645/3:50-4:17.

38. Independent claim 1 of the '645 patent covers the following:

> A natural language query system processing voice and proximity-based queries, comprising:
> a device, comprising:
> a speech input module receiving a voice-based query in natural language form from a user; and
> a location/proximity module receiving location/proximity information from a location/proximity device;
> a speech conversion module converting the voice-based query in natural language form to text in natural language form;
> a natural language processing module converting the text in natural language form to text in searchable form using lexicons and grammar rules to parse sentences and determine underlying meanings of the voice-base query, wherein the underlying meanings are further determined responsive to the location/proximity information from the location/proximity module;
> a semantic engine module converting the text in searchable form to a formal database query; and
> a database-look-up module using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is responsive to the location/proximity information.

39. Claim 11 comprises architecture stored on a computer readable storage media comprising the components of claim 1. Claim 21 comprises a method for providing the devices and performing the operations described in claim 1. Independent claims 1, 11, and 21 of the '645 patent have multiple similarities with each other, and are each unconventional and not directed to any abstract idea, including for at least the reasons noted herein, including with respect to claim 1. Further, independent claims 1, 11, and 21 of the '645 patent have multiple similarities with each other, and each comprise meaningful limitations, inventive concepts, and technological benefits, including for at least the same reasons noted herein, including with respect to claim 1.

40. Neither claim 1, nor any other claims, of the '645 patent preempt any abstract idea or otherwise preempt anything that would render them unpatentable. For example, one is free to

practice the prior art of record and the prior art referenced in the specification. The '645 claims do not improperly inhibit further discovery by tying up any building blocks of human ingenuity or technological work.

41. The '645 patent claims cannot be practiced by a human alone. Although the '645 invention involves natural language processing, its methods are far different from human methods used in connection with responding to natural language queries. There exists no human analogue to the methods, architecture, or systems claimed in the '645 patent. The '654 claims are specifically directed to, *inter alia*, voice and location-based searches and natural language processing and searching, wherein the natural language processing and searching is performed by breaking down the voice-based search into a database query, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, performing a database search based on the narrowed and streamlined query in a single iteration, and returning the context and environment specific result to the user's device. These things exist only in the context of computers, and, specifically, computer databases and natural language processing systems.

42. The claims of the '645 patent cover, among other things, specific applications of specific methods, specific computer architectures, and computer systems for voice and location-based searches and natural language processing and searching, wherein the natural language processing and searching is performed by breaking down the voice-based search into a database query, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, and returning the context and environment specific result to the user's device, as noted above. The claims comprise, among other things, specific applications or improvements to technologies in the marketplace, including improvements to the existing voice and location-based searching and

natural language processing methods, architecture, and systems. Properly understood, the claimed technology constitutes the application of certain inventive ideas, not previously existing or obvious, and it necessitates the use of discrete computer hardware and software components configured and programmed in a particular way that enable performance of the specified functions.

43. Including as noted in the '645 patent, the technologies of the asserted claims comprise innovative systems, apparatuses, methods, and processes which are more accurate, less time-consuming, and improve usability of the claimed inventions than those existing at the time, and allow for multiple efficiencies resulting in a better user experience and reduced costs. The '645 patent thus provides concrete applications that improved voice query, natural language processing, search, and database technology, including for returning relevant search results based on multimodal input and the context and environment of the user.

44. Claim 1 also contains additional unconventional, non-routine, novel, meaningful, and inventive claim limitations, including when the claim is viewed as a whole, which comprise natural language query systems. Claim 1 of the '645 patent covers, among other things, natural language processing systems comprising specific applications of specific architecture and processes by a specialized computer for voice and location-based searches and natural language processing and searching, wherein the natural language processing and searching is performed by breaking down the voice-based search into a database query, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, performing a database search based on the narrowed and streamlined query in a single iteration, and returning the context and environment specific result to the user's device, as noted above, including in order to achieve the aims of the invention as stated above, and to overcome the shortcomings in the prior art,

including prior art voice and location-based searching and natural language processing systems, architectures, and methods, including as noted above.

45. Claim 1 comprises, among other things, specific applications or improvements to technologies in the marketplace, including improvements to the existing voice and location-based searching and natural language processing methods, architecture, and systems. Properly understood, the claimed technology constitutes the application of certain inventive ideas, not previously existing or obvious, and it necessitates the use of discrete computer hardware and software components configured and programmed in a particular way that enable performance of the specified functions, including in order to achieve the aims of the invention as stated above, including through computer architecture stored on computer readable storage media, and to overcome the shortcomings in the prior art, including prior art voice and location-based searching and natural language processing systems, architectures, and methods, including as noted above.

46. Further, including when claim 1 is viewed as a whole, including at the time of the invention, there are sufficient unconventional, non-routine, novel, meaningful, and inventive claim limitations to claim 1 that are sufficient to ensure that the claim, in practice, amounts to significantly more than merely a patent on any abstract idea or patent ineligible concept. Those unconventional, non-routine, novel, meaningful, and inventive claim limitations comprise the following: receiving and processing voice and proximity-based queries, including from a device, comprising: a speech input module receiving a voice-based query in natural language form from a user; a location/proximity module receiving location/proximity information from a location/proximity device; a speech conversion module converting the voice-based query in natural language form to text in natural language form; a natural language processing module converting the text in natural language form to text in searchable form using lexicons and

grammar rules to parse sentences and determine underlying meanings of the voice-base query, wherein the underlying meanings are further determined responsive to the location/proximity information from the location/proximity module; a semantic engine module converting the text in searchable form to a formal database query; and a database-look-up module using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is responsive to the location/proximity information.

47. The invention of claim 1 comprises using computer technology to overcome the shortcomings of prior art systems, architectures, and methods, including as noted above, including state of the art voice and location-based searching and natural language processing systems, architectures, and methods, which lacked, among other things, the ability to perform the foregoing steps. As such, claim 1 overcomes specific technical problems, including those discussed in the '645 patent, and noted above, and effects improvements to specific technologies or technical fields, namely computer technologies, such as voice and location-based searching and natural language processing and searching. One such inventive component of the '645 patent is improving voice and location-based searching and natural language processing and searching in ways that are necessarily rooted in computer technology to overcome problems specifically arising in the realm of computer voice and location-based searching and natural language processing and computer networking, including the Internet, including the mobile Internet. However, the claims recite inventions that were not merely routine or conventional uses of the Internet, including in view of the specifically disclosed and claimed solutions noted above.

48. Claim 1 is not directed to a longstanding commercial practice, nor does it merely apply

generic or general-purpose computers to prior art systems, architectures, or methods. Including as noted above, prior art systems, architectures, and methods were incapable of the functionality and disclosed improvements of the method of claim 1, including those limitations of the prior art specifically noted in the '645 patent, noted above. The technology claimed in the '645 patent does unduly or improperly preempt other voice and location-based searching or natural language processing or searching, or anything else. For example, the prior art cited on the face of the '645 patent remains available for practice by SoundHound, and the '645 patent claims do not preempt practice of those prior art systems, architectures, or methods.

b. '654 Patent.

49. Plaintiff refers to, and incorporates herein, the allegations in the above paragraphs.

50. The Abstract of the '654 patent, which, as noted, is a continuation-in-part of the '645 patent, and thus shares a similar specification, states the following:

> The present invention provides a natural language query system and method for processing and analyzing multimodally-originated queries, including voice and proximity-based queries. The natural language query system includes a Web-enabled device including a speech input module for receiving a voice-based query in natural language form from a user and a location/proximity module for receiving location/proximity information from a location/proximity device. The query system also includes a speech conversion module for converting the voice-based query in natural language form to text in natural language form and a natural language processing module for converting the text in natural language form to text in searchable form. The query system further includes a semantic engine module for converting the text in searchable form to a formal database query and a database-look-up module for using the formal database query to obtain a result related to the voice-based query in natural language form from a database.

51. In addition to the disclosures of the '645 patent, noted above, which are incorporated herein, the '654 patent provides additional unconventional, non-routine, novel, meaningful, and inventive concepts and disclosures. As inventor Bernard envisioned, and as has come to fruition since, the '654 patent invention further provides for a natural language query method for processing and analyzing voice and proximity-based queries includes providing a device with a

speech input module for receiving a voice-based query in natural language form from a user and a location/proximity module for receiving location/proximity information from a location/proximity device; converting the voice-based query in natural language form to text in natural language form using a speech conversion module; converting the text in natural language form to text in searchable form using a natural language processing module configured to use lexicons and grammar rules to parse sentences and determine underlying meanings of the voice-based query; converting the text in searchable form to a formal database query using a semantic engine module; narrowing the formal database query responsive to the location/proximity information from the location/proximity module, wherein the location/proximity module is configured to provide a context and environment for narrowing and streamlining the formal database query associated with the voice-based query; and obtaining a result related to the voice-based query in natural language form from a database using the formal database query and a database-look-up module. '654/6:9-32.

52. The device may be selected from the group consisting of a Web-enabled portable personal computer, a Web-enabled laptop computer, a Web-enabled personal digital assistant, and a Web-enabled phone; the speech input module includes a speech plug-in and a microphone; the location/proximity module includes a location/proximity module selected from the group consisting of a radio frequency identification reader and a global positioning system; and the location/proximity device includes a location/proximity device selected from the group consisting of a radio frequency identification tag and a satellite. '654/6:32-44. The speech conversion module, the natural language processing module, the semantic engine module, and the database-look-up module may reside in one or more servers located remotely from the device; and natural language query method further includes transmitting the voice-based query from the device to the one or more servers. '654/6:44-49. The natural language query method

can further include delivering the result related to the voice-based query in natural language form to the user using a speech output module. '654/6:49-52. The natural language query method may further include storing data from the speech conversion module, the natural language processing module, the semantic engine module, and the database-look-up module in a user database, wherein the data includes information related to the voice-based query. '654/6:52-57. The natural language query method can further include analyzing the data in the user database to provide analysis of a plurality of voice-based queries. '654/6:56-60.

53. Including as with the '645 patent noted above, technologies of the asserted claims of the '654 patent comprised improving prior voice query, natural language processing, search, and database technology, including in connection with:

a. Utilizing multiple inputs in order to create a context or environment within which a voice and/or proximity-based search or the like is performed. *See, e.g.*, '654/4:1-10 & 4:25-33.

b. Taking into consideration a context or environment when performing a voice and/or proximity-based search or the like. *See, e.g.*, '654/4:1-10 & 4:25-33.

c. Attributing meaning to words based on the context or environment within which they are spoken. *See, e.g.*, '654/4:10-14 & 4:33-38.

d. Performing only a single iteration search to pinpoint a result or answer related to a voice and/or proximity-based search or the like, while doing more than simply convert speech to text, use this text to search a database, and convert text to speech. *See, e.g.*, '654/4:14-17 & 4:41-48.

e. Processing voice and proximity-based queries without requiring time-consuming, and often inaccurate, imprecise, and unreliable, voice training. *See, e.g.*, '654/4:21-25.

f. Permitting users to interact with a natural language query system in multiple ways, simultaneously, including via multiple inputs. *See, e.g.*, '654/4:25-33.

g. Returning search results responsive to natural language voice queries that are improved over search results of prior art system and methods, including because location information of the person or device making the query is used in a new way in connection with determining the meaning of

the query. *See, e.g.*, '645/6:37-7:4.

h. Returning improved search results to voice queries without the need for time-consuming, and often inaccurate, imprecise, and unreliable, voice training; *See, e.g.*, '645/3:50-55 & 4:21-34.

i. Providing improved, faster, more efficient and more accurate search and database technology, achieved at least in part by more accurate, narrowed and streamlined queries. *See, e.g.*, '645/9:23-30 & 10:30-37.

j. Removing obstacles to capture very interesting and never before measured behaviors and insights into user's thinking, including via performing frequency analysis on questions and results to get an idea of what kinds of information people in an organization are looking for the most, including for optimization of searching. *See, e.g.*, '654/12:34-41.; and

k. Enabling the discovery of "interesting" questions that someone deep down in the organization is asking, which may not have been noticed before, including leading to more of an atmosphere of "information democratization," where more people in the organization become more valuable because the cost to test their ideas goes to almost zero. *See, e.g.*, '654/12:41-47.

54. The claimed inventions also provide computer, voice query, natural language processing, search, and database efficiency at least because they allow voice-based query systems, apparatuses, and methods to have the useful and improved claimed relevant, context and environment based search results functionality without the need for time-consuming, inaccurate, imprecise, and unreliable voice-training on a user-by-user basis. Inventor Bernard did more than simply apply current technology to an existing problem. Inventor Bernard's invention, as embodied in the asserted claims, was a significant advancement in voice query, natural language processing, search, and database technology. The inventions covered by the asserted claims comprise utilization of the mobile Internet to create a novel architecture enabling a multimodal input for a voice-based search to be parsed and used for searching a database to provide the most relevant, context and environment based results.

55. These and other improvements over the prior art represent meaningful limitations and/or inventive concepts based upon the state of the art over a decade ago. Thus, the technology recited

in the claims of the '654 patent provides meaningful limitations and/or inventive concepts and does not claim an abstract idea.

56. Including due to the inventive combination of elements the claimed inventions achieve many benefits over prior art systems and methods, including the benefits noted above. Further, including in view of these specific improvements, the inventions of the asserted claims, when such claims are viewed as a whole and in ordered combination, are not routine, well-understood, conventional, generic, existing, commonly used, well known, previously known, typical, and the like over a decade ago, including because, until inventions of the asserted claims of the '654 patent, the claimed inventions were not existing or even considered in the field. The claimed inventive concept greatly enhances and facilitates technological systems, devices, and methods which comprise receiving, processing, and analyzing voice and proximity-based queries, including from a device which receives a voice-based query in natural language form from a user and location/proximity information from a location/proximity device; and one or more servers connected to the device comprising converting the voice-based query in natural language form to text in natural language form; converting the text in natural language form to text in searchable form; determining the meaning of the voice-based query, including based on lexicon and grammar rules and the location/proximity information; converting the text in searchable form to a formal database query; narrowing and streamlining the database query, including based on the location/proximity information; and using the formal database query to obtain a result related to the voice-based query in natural language form from a database.

57. The technology recited in the claims of the '654 patent improves the functioning of computers and databases, it improves computer and database capabilities, efficiencies, and usability, and it improves over existing technological processes, including with respect to voice and location-based searches and natural language processing, analyzing, and searching, wherein

the natural language processing, analyzing, and searching is performed by breaking down the voice-based search into a database query performed on a server, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, performing a database search based on the narrowed and streamlined query in a single iteration, and returning the context and environment specific result to the user's device.

58. The asserted claims of the '654 patent, including as a whole, and, where applicable, in ordered combination, comprise, *inter alia*, a non-conventional and non-generic arrangement of communications between a multimodal input device and a database server that is a technical improvement to the communications between the devices, inputs, and network/web services, including those improvements noted above.

59. The inventions of the asserted claims are necessarily rooted in computer technology, *i.e.*, database and search query processing technology, and comprise improvements over prior technologies in order to overcome the problems, including those shortcomings noted above, specifically arising in the realm of computer databases, search queries, and natural language processing and analyzing systems, devices, and methods. One inventive component of the '654 claimed inventions is improving voice and location-based searching and efficiency and natural language processing, analyzing, searching, and efficiencies in ways that are necessarily rooted in computer technology for these same reasons. The claimed solutions amount to an inventive concept for resolving the particular problems and inefficiencies noted above, including in connection with providing relevant, context and environment based search results.

60. Including as noted above, the claims recite inventions that were not merely a routine or conventional use of conventional devices and technologies. The inventions of the asserted claims are not a well-known, fundamental economic or conventional business practices, nor were they

practices to which general-purpose computer components were added after the fact. Nor, as noted in the patent, were the specifically disclosed and claimed combination of devices, steps, and processes existing in the art prior to the '654 invention. *See* '654/3:50-4:17.

61. Independent claim 1 of the '654 patent covers the following:

> A natural language query system for processing and analyzing voice and proximity-based queries, comprising:
> a device, comprising:
> a speech input module for receiving a voice-based query in natural language form from a user; and
> a location/proximity module for receiving location/proximity information from a location/proximity device;
> one or more servers connected to the device, wherein the one or more servers comprise:
> a speech conversion module for converting the voice-based query in natural language form to text in natural language form;
> a natural language processing module for converting the text in natural language form to text in searchable form using lexicons and grammar rules to parse sentences and determine underlying meanings of the voice-base query;
> a semantic engine module for converting the text in searchable form to a formal database query; and
> a database-look-up module for using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module for narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is responsive to the location/proximity information.

62. Claim 15 comprises a method for providing the devices and performing the operations described in claim 1. Independent claims 1, 8, and 15 of the '654 patent have multiple similarities with each other, and are each unconventional and not directed to any abstract idea, including for at least the same reasons noted herein, including with respect to claim 1. Further, independent claims 1, 8, and 15 of the '654 patent have multiple similarities with each other, and each comprise meaningful limitations, inventive concepts, and technological benefits beyond any alleged abstract idea, including for at least the same reasons noted herein, including with respect to claim 1.

63. Neither claim 1, nor any other claims, of the '654 patent preempt any abstract idea or otherwise preempt anything that would render them unpatentable. For example, one is free to practice the prior art of record and the prior art referenced in the specification. The '654 claims do not improperly inhibit further discovery by tying up any building blocks of human ingenuity or technological work.

64. The '654 patent claims cannot be practiced by a human alone. Although the '654 invention comprises natural language processing, its methods are far different from human methods used in connection with responding to natural language queries. There exists no human analogue to the methods, devices, or systems claimed in the '654 patent. The claims are specifically directed to, *inter alia*, voice and location-based searches and natural language processing, analyzing, and searching, wherein the natural language processing, analyzing, and searching is performed by breaking down the voice-based search into a database query to be performed at a server, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query and returning the context and environment specific result to the user's device. These things exist only in the context of computers, and, specifically, computer databases and natural language processing and analyzing systems.

65. The claims of the '654 patent cover, among other things, specific applications of specific methods, specific computer devices, and computer systems for voice and location-based searches and natural language processing, analyzing, and searching, wherein the natural language processing, analyzing, and searching is performed by breaking down the voice-based search into a database query, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, performing a database search based on the narrowed and streamlined query in a single

iteration, and returning the context and environment specific result to the user's device, as noted above. The claims comprise, among other things, specific applications or improvements to technologies in the marketplace, including improvements to the existing voice and location-based searching and natural language processing and analyzing methods, devices, and systems. Properly understood, the claimed technology constitutes the application of certain inventive ideas, not previously existing or obvious, and it necessitates the use of discrete computer hardware and software components configured and programmed in a particular way that enable performance of the specified functions.

66. Including as noted in the '654 patent, the technologies of the asserted claims comprise innovative systems, apparatuses, methods, and processes which are more accurate, less time-consuming, and improve usability of the claimed inventions than those existing at the time, and allow for multiple efficiencies resulting in a better user experience and reduced costs. The '654 patent thus provides concrete applications that improved voice query, natural language processing, search, and database technology, including for returning relevant search results based on multimodal input and the context and environment of the user.

67. Claim 1 also contains additional unconventional, non-routine, novel, meaningful, and inventive claim limitations, including when the claim is viewed as a whole, which comprise natural language query system. Claim 1 of the '654 patent covers, among other things, natural language processing and analyzing systems comprising specific applications of specific device and processes by a specialized computer for voice and location-based searches and natural language processing, analyzing, and searching, wherein the natural language processing, analyzing, and searching is performed by breaking down the voice-based search into a database query to be performed at a server, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and

streamline the database query, performing a database search based on the narrowed and streamlined query in a single iteration, and returning the context and environment specific result to the user's device, as noted above, including in order to achieve the aims of the invention as stated above, and to overcome the shortcomings in the prior art, including prior art voice and location-based searching and natural language processing and analyzing systems, devices, and methods, including as noted above.

68. Claim 1 comprises, among other things, specific applications or improvements to technologies in the marketplace, including improvements to the existing voice and location-based searching and natural language processing and analyzing methods, devices, and systems. Properly understood, the claimed technology constitutes the application of certain inventive ideas, not previously existing or obvious, and it comprises the use of discrete computer hardware and software components configured and programmed in a particular way that enable performance of the specified functions, including in order to achieve the aims of the invention as stated above, including through computer device stored on computer readable storage media, and to overcome the shortcomings in the prior art, including prior art voice and location-based searching and natural language processing and analyzing systems, devices, and methods, including as noted above.

69. Further, including when claim 1 is viewed as a whole at the time of the invention, there are sufficient unconventional, non-routine, novel, meaningful, and inventive claim limitations to claim 1 that are sufficient to ensure that the claim, in practice, amounts to significantly more than merely a patent on any abstract idea or patent ineligible concept. Those unconventional, non-routine, novel, meaningful, and inventive claim limitations comprise the following: receiving, processing, and analyzing voice and proximity-based queries, including from a device, comprising: a speech input module for receiving a voice-based query in natural language form

from a user; and a location/proximity module for receiving location/proximity information from a location/proximity device; and one or more servers connected to the device, wherein the one or more servers comprise: a speech conversion module for converting the voice-based query in natural language form to text in natural language form; a natural language processing module for converting the text in natural language form to text in searchable form using lexicons and grammar rules to parse sentences and determine underlying meanings of the voice-base query; a semantic engine module for converting the text in searchable form to a formal database query; and a database-look-up module for using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module for narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is responsive to the location/proximity information.

70. The invention of claim 1 comprises using computer technology to overcome the shortcomings of prior art overcome the shortcomings of prior art systems, devices, and methods, including as noted above, including state of the art voice and location-based searching and natural language processing and analyzing systems, devices, and methods, which lacked, among other things, the ability to perform the foregoing steps. As such, claim 1 overcomes specific technical problems, including those discussed in the '654 patent, and noted above, and effects improvements to specific technologies or technical fields, namely computer technologies, such as voice and location-based searching and natural language processing, analyzing, and searching. One such inventive component of the '654 patent is improving voice and location-based searching and natural language processing, analyzing, and searching in ways that are necessarily rooted in computer technology to overcome problems specifically arising in the realm of computer voice and location-based searching and natural language processing and analyzing, and

computer networking, including the Internet. However, this claim and the other '654 claims recite inventions that were not merely routine or conventional uses of the Internet, including in view of the specifically disclosed and claimed solutions noted above. Moreover, the distributed architecture of claim 1, including in combination with the other claimed elements, provides substantial benefits including the ability to store and process large amounts of software and data in one or more centralized locations, which decreases the cost, storage and capabilities necessary for the user device

71. Claim 1 is not directed to a longstanding commercial practice, nor does it merely apply generic or general-purpose computers to prior art systems, devices, or methods. Including as noted above, prior art systems, devices, and methods were incapable of the functionality and disclosed improvements of the method of claim 1, including those limitations of the prior art specifically noted in the '654 patent, noted above. The technology claimed in the '654 patent does not unduly or improperly preempt other types of voice and location-based searching or natural language processing, analyzing, or searching, or anything else. For example, the prior art cited on the face of the '654 patent remains available for practice by SoundHound, and the '654 patent claims do not preempt practice of those prior art systems, devices, or methods.

c. '872 Patent.

72. Plaintiff refers to, and incorporates herein, the allegations in the above paragraphs.

73. The Abstract of the '872 patent, which, as noted above, is a continuation-in-part of the '654 patent, which is a continuation-in-part of the '645 patent, and thus in part it shares a similar specification with both the '645 and '654 patents, and it states the following:

> The present disclosure provides a natural language query system and method for processing and analyzing multimodally-originated queries, including voice and proximity-based queries. The natural language query system includes a Web-enabled device including a speech input module for receiving a voice-based query in natural language form from a user and a location/proximity module for receiving location/proximity information from a location/proximity device. The

> query system also includes a speech conversion module for converting the voice-based query in natural language form to text in natural language form and a natural language processing module for converting the text in natural language form to text in searchable form. The query system further includes a semantic engine module for converting the text in searchable form to a formal database query and a database-look-up module for using the formal database query to obtain a result related to the voice-based query in natural language form from a database.

74. In addition to what is stated herein relative to the'645 and '654 patents, which is incorporated herein, the '872 patent provides additional unconventional, non-routine, novel, meaningful, and inventive concepts and disclosures. As inventor Bernard envisioned, and as has come to fruition since, claimed inventions of the '872 patent invention further provide functionality comprising a query method, including receiving an audio query from a user; determining location information of the user based on Global Positioning Satellite functionality or Radio Frequency Identification readings; transmitting the audio query and the location information to a server; and receiving a plurality of responses to the audio query from the server, each of the plurality of responses is ranked by the server using an accuracy algorithm. '872/5:29-37.

75. Including as with the '645 and '654 patents noted above, the technologies of the asserted claims of the '872 patent improved prior voice query, natural language processing, search, and database technology, including in connection with:

a. Utilizing multiple inputs in order to create a context or environment within which a voice and/or proximity-based search or the like is performed. *See, e.g.*, '872/4:1-10 & 4:25-33.

b. Taking into consideration a context or environment when performing a voice and/or proximity-based search or the like. *See, e.g.*, '872/4:1-10 & 4:25-33.

c. Attributing meaning to words based on the context or environment within which they are spoken. *See, e.g.*, '872/4:10-14 & 4:33-38.

d. Performing only a single iteration search to pinpoint a result or answer related to a voice and/or proximity-based search or the like, while doing

more than simply convert speech to text, use this text to search a database, and convert text to speech. *See, e.g.*, '872/4:14-17 & 4:41-48.

e. Processing voice and proximity-based queries without requiring time-consuming, and often inaccurate, imprecise, and unreliable, voice training. *See, e.g.*, '872/4:21-25.

f. Permitting users to interact with a natural language query system in multiple ways, simultaneously, including via multiple inputs. *See, e.g.*, '872/4:25-33.

g. Returning search results responsive to natural language voice queries that are improved over search results of prior art system and methods, including because location information of the person or device making the query is used in a new way in connection with determining the meaning of the query. *See, e.g.*, '872/6:37-7:4.

h. Returning improved search results to voice queries without the need for time-consuming, and often inaccurate, imprecise, and unreliable, voice training; *See, e.g.*, '872/3:50-55 & 4:21-34.

i. Providing improved, faster, more efficient and more accurate search and database technology, achieved at least in part by more accurate, narrowed and streamlined queries. *See, e.g.*, '872/9:23-30 & 10:30-37.

j. Removing obstacles to capture very interesting and never before measured behaviors and insights into user's thinking, including via performing frequency analysis on questions and results to get an idea of what kinds of information people in an organization are looking for the most, including for optimization of searching. *See, e.g.*, '872/11:64-12:4.

k. Enabling the discovery of "interesting" questions that someone deep down in the organization is asking, which may not have been noticed before, including leading to more of an atmosphere of "information democratization," where more people in the organization become more valuable because the cost to test their ideas goes to almost zero. '872/12:4-9.

l. Providing unique ways of presenting analytics, including via a standard visual "dashboard" in which each metric is represented by an English language question/query, displaying multiple metrics at once in separate panes, often in the form of charts and graphs, computer-based techniques used in spotting, digging-out, and analyzing business data, such as sales revenue by products and/or departments, or by associated costs and incomes, including providing a front-end interface to various BI systems. '872/12:14-35.

m. Tracing the "steps" of a person's search in chronological order, which can

render the "decision tree" they used to get to their answer, including via refinement of search criteria, use of clinical pathways, a large standard decision tree used by physicians to analyze patient conditions and come to a diagnosis, and/or anaphoric referencing (meaning that you can refer to earlier queries), to help make the query session more natural to a human. '872/12:36-56.

n. Providing a process, such as the use of a middleware layer or accuracy algorithm, for analyzing an incoming question and automatically routing it to one or more constrained semantic models simultaneously to determine which of the attempts returned the best answer instead of using a broad database, including to determine accuracy on an individual domain query, and "scorecarding" and ranking results from multiple domains and returning the best results to the user. '872/12:57-13:5.

76. The inventions of the asserted claims also provide computer, voice query, natural language processing, search, and database efficiency at least because they allow voice-based query systems, apparatuses, and methods to have the useful and improved claimed relevant, context and environment based search results functionality without the need for time-consuming, inaccurate, imprecise, and unreliable voice-training on a user-by-user basis. Inventor Bernard did more than simply apply current technology to an existing problem. Inventor Bernard's invention, as embodied in the asserted claims, was a significant advancement in voice query, natural language processing, search, and database technology. The inventions covered by the asserted claims comprise utilization of the mobile Internet to create a novel architecture enabling a multimodal input for a voice-based search to be parsed and used for searching a database to provide the most relevant, context and environment based results.

77. These noted improvements over the prior art represent meaningful limitations and/or inventive concepts based upon the state of the art over a decade ago. Thus, the technology recited in the claims of the '872 patent provides meaningful limitations and/or inventive concepts and does not claim an abstract idea.

78. Including due to the inventive combination of elements the claimed inventions achieve many benefits over prior art systems and methods, including the benefits noted above. Further,

including in view of these specific improvements, the inventions of the asserted claims, when such claims are viewed as a whole and in ordered combination, are not routine, well-understood, conventional, generic, existing, commonly used, well known, previously known, typical, and the like over a decade ago, including because, until inventions of the asserted claims of the '872 patent, the claimed inventions were not existing or even considered in the field. The claimed inventive concept greatly enhances and facilitates technological systems and methods which comprise receiving, processing, analyzing, and ranking voice and proximity-based queries, including from a device which receives a voice-based query in natural language form from a user and location/proximity information from a location/proximity device; converting the voice-based query in natural language form to text in natural language form; converting the text in natural language form to text in searchable form; determining the meaning of the voice-based query, including based on lexicon and grammar rules and the location/proximity information; converting the text in searchable form to a formal database query; narrowing and streamlining the database query, including based on the location/proximity information; and using the formal database query to obtain a result related to the voice-based query in natural language form from a database, and ranking the responses using an accuracy algorithm.

79. Technology recited in the claims of the '872 patent improves the functioning of computers and databases, it improves computer and database capabilities, efficiencies, and usability, and it improves over existing technological processes, including with respect to voice and location-based searches and natural language processing and searching, wherein the natural language processing and searching is performed by breaking down the voice-based search into a database query, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, performing a database search based on the narrowed and streamlined query in a single

iteration, ranking the search results using an accuracy algorithm, and returning the ranked, context and environment specific result to the user's device.

80. The asserted claims of the '872 patent, including as a whole, and, where applicable, in ordered combination, comprise, *inter alia*, a non-conventional and non-generic arrangement of communications between a multimodal input device and a database server that is a technical improvement to the communications between the devices, inputs, and network/web services, including those improvements noted above.

81. The inventions of the asserted claims are necessarily rooted in computer technology, *i.e.*, database and search query processing technology, and comprise improvements over prior technologies in order to overcome the problems, including those shortcomings noted above, specifically arising in the realm of computer databases and natural language processing systems and methods. One inventive component of the '872 claimed inventions is improving voice and location-based searching and efficiency and natural language processing, searching, and efficiencies in ways that are necessarily rooted in computer technology for these same reasons. The claimed solutions amount to an inventive concept for resolving the particular problems and inefficiencies noted above, including in connection with providing relevant, context and environment based search results.

82. Including as noted above, the claims recite inventions that were not merely routine or conventional uses of conventional devices and technologies. The inventions of the asserted claims are not a well-known, fundamental economic or conventional business practice, nor were they a practice to which general-purpose computer components were added after the fact. Nor, as noted in the patent, were the specifically disclosed and claimed combination of devices, steps, and processes existing in the art prior to the '872 invention. *See* '872/3:50-4:17.

83. Independent claim 1 of the '872 patent covers the following:

A query system, comprising:
a computing device communicatively coupled to a network and configured to receive audio input comprising a query and determine location information; and
a server communicatively coupled to the computing device via the network, wherein the server is configured to:
receive the query from the computing device;
perform natural language processing on the query using lexicons and grammar rules to parse sentences and determine a meaning of the query, wherein the natural language processing comprises converting text in natural language form to text in searchable form using the lexicons and grammar rules to determine the meaning of the query;
utilize location information to further determine the meaning of the query;
perform a database look up based on the determined meaning of the query, wherein the database look up is provided with a context and environment for narrowing and streamlining the database look up utilizing the location information; and
rank responses of the database lookup using an accuracy algorithm.

84. Claim 12 comprises a method for performing the steps of claim 1. Independent claims 1 and 12 of the '872 patent have multiple similarities with each other, and are each unconventional and not directed to any abstract idea, including for at least the same reasons noted herein, including with respect to claim 1. Further, independent claims 1 and 12 of the '872 patent have multiple similarities with each other, and each comprise meaningful limitations, inventive concepts, and technological benefits beyond any alleged abstract idea, including for at least the same reasons noted herein, including with respect to claim 1.

85. Neither claim 1, nor any other claims, of the '872 patent preempt any abstract idea or otherwise preempt anything that would render them unpatentable. For example, one is free to practice the prior art of record and the prior art referenced in the specification. The '872 claims do not improperly inhibit further discovery by tying up any building blocks of human ingenuity or technological work.

86. The '872 patent claims cannot be practiced by a human alone. Although the '872 inventions comprise natural language processing, its methods are far different from human methods used in connection with responding to natural language queries. There exists no human

analogue to the methods or systems claimed in the '872 patent. The claims are specifically directed to, *inter alia*, voice and location-based searches and natural language processing and searching, wherein the natural language processing and searching is performed by breaking down the voice-based search into a database query, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, performing a database search based on the narrowed and streamlined query in a single iteration, and returning the context and environment specific result to the user's device. These things exist only in the context of computers, and, specifically, computer databases and natural language processing systems.

87. The claims of the '872 patent cover, among other things, specific applications of specific methods and computer systems for voice and location-based searches and natural language processing and searching, wherein the natural language processing, analyzing, ranking, and searching is performed by breaking down the voice-based search into a database query to be performed by a server, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, ranking the results of a database search using an accuracy algorithm, and returning the ranked, context and environment specific result to the user's device, as noted above. The claims comprise, among other things, specific applications or improvements to technologies in the marketplace, including improvements to the existing voice and location-based searching and natural language processing methods and systems. Properly understood, the claimed technology constitutes the application of certain inventive ideas, not previously existing or obvious, and it necessitates the use of discrete computer hardware and software components configured and programmed in a particular way that enable performance of the specified functions.

88. Including as noted in the '872 patent, the technologies of the asserted claims comprise innovative systems, apparatuses, methods, and processes which are more accurate, less time-consuming, and improve usability of the claimed inventions than those existing at the time, and allow for multiple efficiencies resulting in a better user experience and reduced costs. The '872 patent thus provides concrete applications that improved voice query, natural language processing, search, and database technology, including for returning relevant search results based on multimodal input and the context and environment of the user.

89. Claim 1 also contains additional unconventional, non-routine, novel, meaningful, and inventive claim limitations, including when the claim is viewed as a whole, which comprise a natural language query system. Claim 1 of the '872 patent covers, among other things, natural language processing systems comprising specific applications of specific processes by a specialized computer for voice and location-based searches and natural language processing and searching, wherein the natural language processing, analyzing, ranking, and searching is performed by breaking down the voice-based search into a database query to be performed at a server, including by determining the meaning of the user's search, using context and environment information, such as location information, to narrow and streamline the database query, performing a database search based on the narrowed and streamlined query in a single iteration, ranking the results using an accuracy algorithm, and returning the ranked, context and environment specific result to the user's device, as noted above, including in order to achieve the aims of the invention as stated above, and to overcome the shortcomings in the prior art, including prior art voice and location-based searching and natural language processing systems and methods, including as noted above.

90. Claim 1 comprises, among other things, specific applications or improvements to technologies in the marketplace, including improvements to the existing voice and location-

based searching and natural language processing methods and systems. Properly understood, the claimed technology constitutes the application of certain inventive ideas, not previously existing or obvious, and it necessitates the use of discrete computer hardware and software components configured and programmed in a particular way that enable performance of the specified functions, including in order to achieve the aims of the invention as stated above, including through computer systems and methods, and to overcome the shortcomings in the prior art, including prior art voice and location-based searching and natural language processing systems and methods, including as noted above.

91. Further, including when claim 1 is viewed as a whole at the time of the invention, there are sufficient unconventional, non-routine, novel, meaningful, and inventive claim limitations to claim 1 that are sufficient to ensure that the claim, in practice, amounts to significantly more than merely a patent on any abstract idea or patent ineligible concept. Those unconventional, non-routine, novel, meaningful, and inventive claim limitations comprise the following: receiving, processing, analyzing, and ranking voice and proximity-based queries, including from a computing device communicatively coupled to a network and configured to receive audio input comprising a query and determine location information; and a server communicatively coupled to the computing device via the network, wherein the server is configured to: receive the query from the computing device; perform natural language processing on the query using lexicons and grammar rules to parse sentences and determine a meaning of the query, wherein the natural language processing comprises converting text in natural language form to text in searchable form using the lexicons and grammar rules to determine the meaning of the query; utilize location information to further determine the meaning of the query; perform a database look up based on the determined meaning of the query, wherein the database look up is provided with a context and environment for narrowing and streamlining the database look up utilizing the

location information; and rank responses of the database lookup using an accuracy algorithm.

92. The invention of claim 1 comprises using computer technology to overcome the shortcomings of prior art systems and methods, including as noted above, including state of the art voice and location-based searching and natural language processing systems and methods, which lacked, among other things, the ability to perform the foregoing steps. Claim 1 overcomes specific technical problems, including those discussed in the '872 patent, and noted above, and effects improvements to specific technologies or technical fields, namely computer technologies, such as voice and location-based searching and natural language processing and searching. One such inventive component of the '872 claimed inventions is improving voice and location-based searching and natural language processing and searching in ways that are necessarily rooted in computer technology to overcome problems specifically arising in the realm of computer voice and location-based searching and natural language processing and computer networking, including the Internet. The claims recite inventions that were not merely routine or conventional uses of the Internet, including in view of the specifically disclosed and claimed solutions noted above. Moreover, the distributed architecture of claim 1, including in combination with the other claimed elements, provides substantial benefits including the ability to store and process large amounts of software and data in one or more centralized locations, which decreases the cost, storage and capabilities necessary for the user device.

93. Claim 1 is not directed to a longstanding commercial practice, nor does it merely apply generic or general-purpose computers to prior art systems or methods. Including as noted above, prior art systems and methods were incapable of the functionality and disclosed improvements of the method of claim 1, including those limitations of the prior art specifically noted in the '872 patent, noted above. The technology claimed in the '872 patent does not preempt all types of voice and location-based searching or natural language processing or searching, or anything else.

For example, the prior art cited on the face of the '872 patent remains available for practice by SoundHound, and the '872 patent claims do not preempt practice of those prior art systems or methods.

COUNT I – INFRINGEMENT OF U.S. PATENT NO. 7,376,645

94. Plaintiff refers to, and incorporates herein, the allegations in the above paragraphs.

95. The '645 patent, entitled "Multimodal Natural Language Query System and Architecture for Processing Voice and Proximity-Based Queries," was duly and legally issued by the USPTO on May 20, 2008 after full and fair examination.

96. The claims of the '645 patent cover, *inter alia*, systems, architectures stored on computer readable storage media, and methods, including associated with computers and computer databases, for receiving and processing voice and proximity-based queries, including from a device, comprising: a speech input module receiving a voice-based query in natural language form from a user; and a location/proximity module receiving location/proximity information from a location/proximity device; a speech conversion module converting the voice-based query in natural language form to text in natural language form; a natural language processing module converting the text in natural language form to text in searchable form using lexicons and grammar rules to parse sentences and determine underlying meanings of the voice-base query, wherein the underlying meanings are further determined responsive to the location/proximity information from the location/proximity module; a semantic engine module converting the text in searchable form to a formal database query; and a database-look-up module using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is

responsive to the location/proximity information.

97. SoundHound has infringed and is now directly infringing the '645 patent, including at least claims 1 and 21, in violation of 35 U.S.C. § 271 through actions comprising the practicing, making, using, offering for sale, and/or selling, without authority from Plaintiff, systems, architecture stores on computer readable storage media, and methods, including devices implementing methods, including associated with computers and computer databases, for receiving and processing voice and proximity-based queries, including from a device, comprising: a speech input module receiving a voice-based query in natural language form from a user; and a location/proximity module receiving location/proximity information from a location/proximity device; a speech conversion module converting the voice-based query in natural language form to text in natural language form; a natural language processing module converting the text in natural language form to text in searchable form using lexicons and grammar rules to parse sentences and determine underlying meanings of the voice-base query, wherein the underlying meanings are further determined responsive to the location/proximity information from the location/proximity module; a semantic engine module converting the text in searchable form to a formal database query; and a database-look-up module using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is responsive to the location/proximity information.

98. SoundHound infringes the '645 patent by and through at least its using systems and practicing methods comprising computing devices, including mobile phones, and which further comprise Houndify voice-searching. Without limitation, the accused system comprises

computer hardware and/or software for, *inter alia*, receiving and processing voice and proximity-based queries, including one or more servers comprising: a speech conversion module converting the voice-based query in natural language form to text in natural language form; a natural language processing module converting the text in natural language form to text in searchable form using lexicons and grammar rules to parse sentences and determine underlying meanings of the voice-base query, wherein the underlying meanings are further determined responsive to the location/proximity information from the location/proximity module; a semantic engine module converting the text in searchable form to a formal database query; and a database-look-up module using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is responsive to the location/proximity information.

99. At a minimum, this Complaint notifies SoundHound that its customers are directly infringing and are being accused of directly infringing, the '645 patent, including via use of systems noted above which benefit such customers, including in obtaining search results in accordance with the claimed inventions.. Additionally, or in the alternative, upon information and belief, SoundHound has induced, and continues to induce, infringement of the '645 Patent in this judicial district, the State of Delaware, and elsewhere, by intentionally inducing direct infringement of the '645 Patent, including by aiding or abetting the infringement of its end users and/or customers, by and through at least SoundHound's providing systems and/or apps for devices implementing methods, including associated with computers, computer networks, and computer databases, comprising at least the above-described products comprising "Houndify" functionality. Upon information and belief, such aiding and abetting comprises providing

hardware, software, and/or instructions for such infringing uses by SoundHound's customers and/or end users, including the use of the accused devices in combination with the "Houndify" functionality thereon. Upon information and belief, such induced infringement has occurred since SoundHound became aware of the '645 Patent.

100. Additionally, or in the alternative, upon information and belief, SoundHound has induced, and continues to induce, infringement of the '645 Patent in this judicial district, the State of Delaware, and elsewhere, by intentionally inducing direct infringement of the '645 Patent, including by aiding or abetting the infringement of its end users and/or customers, by and through at least SoundHound's making and providing the "Houndify" software for use on mobile devices, or other computing devices, which practices the claimed method, SoundHound's making, without authority from Plaintiff, devices implementing methods, including associated with computers, computer networks, and computer databases, comprising "Houndify" functionality, and SoundHound's inducing its end users and/or customers to use systems and/or devices implementing methods comprising mobile devices comprising "Houndify" software comprising the "Houndify" functionality, including in combination with SoundHound's devices. Upon information and belief, such aiding and abetting comprises providing hardware, software, and/or instructions for such infringing uses by SoundHound's customers and/or end users, including the use of mobile devices in combination with the "Houndify" functionality thereon. Upon information and belief, such induced infringement has occurred since SoundHound became aware of the '645 Patent.

101. At a minimum, this Complaint notifies SoundHound that it is infringing, and is being accused of infringing, the '645 patent. It also recites facts which state a valid and plausible claim of infringement. Plaintiff reserves the right to take discovery regarding SoundHound's first actual notice of the '645 patent, to the extent it preceded this suit being filed.

102. Further, to the extent SoundHound continues its infringing activities post-suit, such infringement would be clearly and necessarily willful. On information and belief, SoundHound have a significant need to continue providing the accused devices and accused Houndify functionality, which are infringing the '645 patent, including in order to stay competitive and to avoid losing customers. Plaintiff believes and contends that SoundHound's continuance of its clear and inexcusable infringement of the '645 patent post-suit is willful, wanton, malicious, in bad-faith, deliberate, consciously wrongful, flagrant, and/or characteristic of a pirate.

103. Including on account of the foregoing, Plaintiff contends such post-suit activities by SoundHound qualify this as an egregious case of misconduct beyond typical infringement, entitling Plaintiff to enhanced damages. Thus, Plaintiff requests an award of enhanced damages, including treble damages, pursuant to 35 U.S.C. § 284.

104. Each of SoundHound's aforesaid activities have been without authority and/or license from Plaintiff.

COUNT II – INFRINGEMENT OF U.S. PATENT NO. 7,873,654

105. Plaintiff refers to, and incorporates herein, the allegations in the above paragraphs.

106. The '654 patent, entitled "Multimodal Natural Language Query System for Processing and Analyzing Voice and Proximity-Based Queries," was duly and legally issued by the USPTO on January 18, 2011 after full and fair examination.

107. The claims of the '654 patent cover, *inter alia*, systems, devices, and methods, including associated with computers and computer databases and networks, for receiving, processing, and analyzing voice and proximity-based queries, including a speech input module for receiving a voice-based query in natural language form from a user; and a location/proximity

module for receiving location/proximity information from a location/proximity device; and one or more servers connected to the device, wherein the one or more servers comprise: a speech conversion module for converting the voice-based query in natural language form to text in natural language form; a natural language processing module for converting the text in natural language form to text in searchable form using lexicons and grammar rules to parse sentences and determine underlying meanings of the voice-base query; a semantic engine module for converting the text in searchable form to a formal database query; and a database-look-up module for using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module for narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is responsive to the location/proximity information.

108. SoundHound has infringed and is now directly infringing the '654 patent, including at least claims 1, 8, and 15 in violation of 35 U.S.C. § 271 through actions comprising the practicing, making, using, offering for sale, and/or selling, without authority from Plaintiff, systems, devices, and method, including devices implementing methods, including associated with computers and computer databases and networks, for receiving, processing, and analyzing voice and proximity-based queries, including a speech input module for receiving a voice-based query in natural language form from a user; and a location/proximity module for receiving location/proximity information from a location/proximity device; and one or more servers connected to the device, wherein the one or more servers comprise: a speech conversion module for converting the voice-based query in natural language form to text in natural language form; a natural language processing module for converting the text in natural language form to text in searchable form using lexicons and grammar rules to parse sentences and determine underlying

meanings of the voice-base query; a semantic engine module for converting the text in searchable form to a formal database query; and a database-look-up module for using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module for narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is responsive to the location/proximity information.

109. SoundHound infringes the '654 patent by and through at least its using systems and devices and practicing methods comprising computing devices, including mobile phones, , and which further comprise Houndify voice-searching Without limitation, the accused system comprises computer hardware and/or software for, *inter alia*, receiving, processing, and analyzing voice and proximity-based queries, including one or more servers comprising: a speech conversion module for converting the voice-based query in natural language form to text in natural language form; a natural language processing module for converting the text in natural language form to text in searchable form using lexicons and grammar rules to parse sentences and determine underlying meanings of the voice-base query; a semantic engine module for converting the text in searchable form to a formal database query; and a database-look-up module for using the formal database query to obtain a result related to the voice-based query in natural language form from a database, wherein the location/proximity module is configured to provide a context and environment to the database-look-up module for narrowing and streamlining the formal database query associated with the voice-based query, and wherein the narrowing and streamlining is responsive to the location/proximity information.

110. At a minimum, this Complaint notifies SoundHound that its customers are directly infringing and are being accused of directly infringing, the '654 patent, including via

use of systems noted above which benefit such customers, including in obtaining search results in accordance with the claimed inventions. Additionally, or in the alternative, upon information and belief, SoundHound has induced, and continues to induce, infringement of the '654 Patent in this judicial district, the State of Delaware, and elsewhere, by intentionally inducing direct infringement of the '654 Patent, including by aiding or abetting the infringement of its end users and/or customers, by and through at least SoundHound's providing systems and/or apps for devices implementing methods, including associated with computers, computer networks, and computer databases, comprising at least the above-described products comprising "Houndify" functionality. Upon information and belief, such aiding and abetting comprises providing hardware, software, and/or instructions for such infringing uses by SoundHound's customers and/or end users, including the use of the accused devices in combination with the "Houndify" functionality thereon. Upon information and belief, such induced infringement has occurred since SoundHound became aware of the '654 Patent.

111. Additionally, or in the alternative, upon information and belief, SoundHound has induced, and continues to induce, infringement of the '654 Patent in this judicial district, the State of Delaware, and elsewhere, by intentionally inducing direct infringement of the '654 Patent, including by aiding or abetting the infringement of its end users and/or customers, by and through at least SoundHound's making and providing the "Houndify" software for use on mobile devices, or other computing devices, which practices the claimed method, SoundHound's making, without authority from Plaintiff, devices implementing methods, including associated with computers, computer networks, and computer databases, comprising "Houndify" functionality, and SoundHound's inducing its end users and/or customers to use systems and/or devices implementing methods comprising mobile devices comprising "Houndify" software comprising the "Houndify" functionality, including in combination with SoundHound's devices.

Upon information and belief, such aiding and abetting comprises providing hardware, software, and/or instructions for such infringing uses by SoundHound's customers and/or end users, including the use of mobile devices in combination with the "Houndify" functionality thereon. Upon information and belief, such induced infringement has occurred since SoundHound became aware of the '654 Patent.

112. At a minimum, this Complaint notifies SoundHound that it is infringing, and is being accused of infringing, the '654 patent. It also recites facts which state a valid and plausible claim of infringement. Plaintiff reserves the right to take discovery regarding SoundHound's first actual notice of the '654 patent, to the extent it preceded this suit being filed.

113. Further, to the extent SoundHound continues its infringing activities post-suit, such infringement would be clear and necessarily willful. On information and belief, SoundHound have a significant need to continue providing the accused devices and accused Houndify functionality, which are infringing the '654 patent, including in order to stay competitive and to avoid losing customers. Plaintiff believes and contends that SoundHound's continuance of its clear and inexcusable infringement of the '654 patent post-suit is willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, and/or characteristic of a pirate.

114. Including on account of the foregoing, Plaintiff contends such post-suit activities by SoundHound qualify this as an egregious case of misconduct beyond typical infringement, entitling Plaintiff to enhanced damages. Thus, Plaintiff requests an award of enhanced damages, including treble damages, pursuant to 35 U.S.C. § 284.

115. Each of SoundHound's aforesaid activities have been without authority and/or license from Plaintiff.

COUNT III – INFRINGEMENT OF U.S. PATENT NO. 8,150,872

116. Plaintiff refers to, and incorporates herein, the allegations in the above paragraphs.

117. The '872 patent, entitled "Multimodal Natural Language Query System for Processing and Analyzing Voice and Proximity-Based Queries," was duly and legally issued by the USPTO on April 3, 2012 after full and fair examination.

118. The claims of the '872 patent cover, *inter alia*, systems, architecture stored on computer readable storage media, and methods, including associated with computers and computer databases, for receiving, processing, analyzing, and ranking voice and proximity-based queries, including from a computing device communicatively coupled to a network and configured to receive audio input comprising a query and determine location information; and a server communicatively coupled to the computing device via the network, wherein the server is configured to: receive the query from the computing device; perform natural language processing on the query using lexicons and grammar rules to parse sentences and determine a meaning of the query, wherein the natural language processing comprises converting text in natural language form to text in searchable form using the lexicons and grammar rules to determine the meaning of the query; utilize location information to further determine the meaning of the query; perform a database look up based on the determined meaning of the query, wherein the database look up is provided with a context and environment for narrowing and streamlining the database look up utilizing the location information; and rank responses of the database lookup using an accuracy algorithm.

119. SoundHound has infringed and is now directly infringing the '872 patent, including at least claim 1 and 12 in violation of 35 U.S.C. § 271 through actions comprising the practicing, making, using, offering for sale, and/or selling, without authority from Plaintiff, systems, architecture stored on computer readable storage media, and method, including devices

implementing methods, including associated with computers and computer databases, for receiving, processing, analyzing, and ranking voice and proximity-based queries, including from a computing device communicatively coupled to a network and configured to receive audio input comprising a query and determine location information; and a server communicatively coupled to the computing device via the network, wherein the server is configured to: receive the query from the computing device; perform natural language processing on the query using lexicons and grammar rules to parse sentences and determine a meaning of the query, wherein the natural language processing comprises converting text in natural language form to text in searchable form using the lexicons and grammar rules to determine the meaning of the query; utilize location information to further determine the meaning of the query; perform a database look up based on the determined meaning of the query, wherein the database look up is provided with a context and environment for narrowing and streamlining the database look up utilizing the location information; and rank responses of the database lookup using an accuracy algorithm.

120. SoundHound infringes the ‘872 patent by and through at least its using systems and practicing methods comprising computing devices, including mobile phones, , and which further comprise Houndify voice-searching. Without limitation, Houndify. Without limitation, comprises computer hardware and/or software for, *inter alia*, receiving, processing, analyzing, and ranking voice and proximity-based queries, including one or more servers communicatively coupled to a computing device via a network, wherein the server is configured to: receive the query from the computing device; perform natural language processing on the query using lexicons and grammar rules to parse sentences and determine a meaning of the query, wherein the natural language processing comprises converting text in natural language form to text in searchable form using the lexicons and grammar rules to determine the meaning of the query; utilize location information to further determine the meaning of the query; perform a database

look up based on the determined meaning of the query, wherein the database look up is provided with a context and environment for narrowing and streamlining the database look up utilizing the location information; and rank responses of the database lookup using an accuracy algorithm.

121. Further, SoundHound at least makes and/or uses infringing devices, including for internal testing and/or use by SoundHound and its employees, which comprise a computing device communicatively coupled to a network and configured to receive audio input comprising a query and determine location information. These infringing devices comprise computing devices, including mobile phones, including when used in combination with Houndify. Specifically, SoundHound infringes by and through at least its practicing of the patented method, making and/or using computing devices, including the accused computing devices, including computers comprising architecture stored on computer readable storage media specifically made and/or used for performing the patented method, and/or making and/or using computer systems, including computer systems comprising the accused devices, including systems specifically made and/or used for performing the patented method, including by providing the accused devices and the accused Houndify functionality thereon.

122. At a minimum, this Complaint notifies SoundHound that its customers are directly infringing and are being accused of directly infringing, the '6872 patent, including via use of systems noted above which benefit such customers, including in obtaining search results in accordance with the claimed inventions. Additionally, or in the alternative, upon information and belief, SoundHound has induced, and continues to induce, infringement of the '872 Patent in this judicial district, the State of Delaware, and elsewhere, by intentionally inducing direct infringement of the '872 Patent, including by aiding or abetting the infringement of its end users and/or customers, by and through at least SoundHound's providing systems and/or apps for devices implementing methods, including associated with computers, computer networks, and

computer databases, comprising at least the above-described systems, devices and methods comprising "Houndify" functionality. Upon information and belief, such aiding and abetting comprises providing software, and/or instructions for such infringing uses by SoundHound's customers and/or end users, including the use of the accused devices in combination with the "Houndify" functionality thereon. Upon information and belief, such induced infringement has occurred since SoundHound became aware of the '872 Patent.

123. Additionally, or in the alternative, upon information and belief, SoundHound has induced, and continues to induce, infringement of the '872 Patent in this judicial district, the State of Delaware, and elsewhere, by intentionally inducing direct infringement of the '872 Patent, including by aiding or abetting the infringement of its end users and/or customers, by and through at least SoundHound's making and providing the "Houndify" software for use on mobile devices, or other computing devices, which practices the claimed method, SoundHound's making, without authority from Plaintiff, devices implementing methods, including associated with computers, computer networks, and computer databases, comprising "Houndify" functionality, and SoundHound's inducing its end users and/or customers to use systems and/or devices implementing methods comprising mobile devices comprising "Houndify" software comprising the "Houndify" functionality, including in combination with SoundHound's devices. Upon information and belief, such aiding and abetting comprises providing hardware, software, and/or instructions for such infringing uses by SoundHound's customers and/or end users, including the use of mobile devices in combination with the "Houndify" functionality thereon. Upon information and belief, such induced infringement has occurred since SoundHound became aware of the '872 Patent.

124. At a minimum, this Complaint notifies SoundHound that it is infringing, and is being accused of infringing, the '872 patent. It also recites facts which state a valid and plausible

claim of infringement. Plaintiff reserves the right to take discovery regarding SoundHound's first actual notice of the '872 patent, to the extent it preceded this suit being filed.

125. Further, to the extent SoundHound continues its infringing activities post-suit, such infringement would be clear and necessarily willful. On information and belief, SoundHound have a significant need to continue providing the accused devices and accused Houndify functionality, which are infringing the '872 patent, including in order to stay competitive and to avoid losing customers. Plaintiff believes and contends that SoundHound's continuance of its clear and inexcusable infringement of the '872 patent post-suit is willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, and/or characteristic of a pirate.

126. Including on account of the foregoing, Plaintiff contends such post-suit activities by SoundHound qualify this as an egregious case of misconduct beyond typical infringement, entitling Plaintiff to enhanced damages. Thus, Plaintiff requests an award of enhanced damages, including treble damages, pursuant to 35 U.S.C. § 284.

127. Each of SoundHound's aforesaid activities have been without authority and/or license from Plaintiff.

DAMAGES

128. By way of their infringing activities, SoundHound has caused and continues to cause Plaintiff to suffer damages, and Plaintiff is entitled to recover from SoundHound the damages sustained by Plaintiff as a result of SoundHound's wrongful acts in an amount subject to proof at trial, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

129. SoundHound's infringement of Plaintiff's rights under the patents-in-suit will continue to damage Plaintiff, causing irreparable harm for which there is no adequate remedy at

law, unless enjoined by this Court.

130. Plaintiff also requests that the Court make a finding that this is an exceptional case entitling Plaintiff to recover their attorneys' fees and costs pursuant to 35 U.S.C. § 285.

JURY DEMAND

131. Plaintiff hereby requests a trial by jury pursuant to Rule 38 of the Federal Rules of Civil Procedure on all issues so triable.

PRAYER FOR RELIEF

132. Plaintiff respectfully requests that the Court find in their favor and against SoundHound, and that the Court grant Plaintiff the following relief:

A. An adjudication that, including pursuant to 35 U.S.C. § 271, one or more claims of the patents-in-suit has been directly and/or indirectly infringed, either literally and/or under the doctrine of equivalents, by SoundHound;

B. An award to Plaintiff of damages pursuant to 35 U.S.C. § 284 adequate to compensate Plaintiff for SoundHound's past infringement, together with pre-judgment and post-judgment interest, and any continuing or future infringement, including interest, costs, expenses, and an accounting of all infringing acts including, but not limited to, those acts not presented at trial;

C. A grant of preliminary and permanent injunction pursuant to 35 U.S.C. § 283, enjoining SoundHound, and all persons, including its officers, directors, agents, servants, affiliates, employees, divisions, branches, subsidiaries, parents, and all others acting in active concert or participation therewith, from making, using, offering to sell, or selling in the United States, or importing into the United States, any methods, systems, devices, or computer readable media that infringe any claim of the patents-in-suit, or contributing to, or inducing, the same by others, from further acts of infringement with respect to the

claims of the patents-in-suit;

D. That this Court declare that SoundHound's pre-suit and continuing post-suit infringement is, and continues to be, willful and egregious, and, accordingly, award enhanced damages, including treble damages, pursuant to 35 U.S.C. § 284;

E. That this Court declare this to be an exceptional case and award Plaintiff reasonable attorneys' fees and costs in accordance with 35 U.S.C. § 285; and

F. A judgment and order requiring SoundHound to pay Plaintiff their damages, costs, expenses, fees, and prejudgment and post-judgment interest for SoundHound's infringement of the patents-in-suit as provided under 35 U.S.C. §§ 284 and/or 285; and

G. Any and all further relief for which Plaintiff may show itself justly entitled that this Court deems just and proper.

September 4, 2018

Respectfully submitted,

STAMOULIS & WEINBLATT LLC

/s/ *Stamatios Stamoulis*

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