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

WORD TO INFO, INC.,

Plaintiff,

v.

APPLE INC.,

Defendant.

Civil Action No.: 2:17-cv-592

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Word to Info, Inc. ("Word to Info"), by way of its Complaint for Patent Infringement ("Complaint") against the above-named Defendant Apple Inc. ("Apple" or "Defendant"), alleges the following:

NATURE OF THE ACTION

1. This is an action for patent infringement arising under the Patent Laws of the United States, Title 35 of the United States Code.

THE PARTIES

2. Plaintiff Word to Info, Inc. is a corporation organized under the laws of the State of Texas with a place of business at 1106 Edgewood Dr., Richardson, Texas 75081.

3. Upon information and belief, Defendant Apple is a corporation organized under the laws of the State of California with its principal place of business at 1 Infinite Loop, Cupertino, California 95014.

JURISDICTION AND VENUE

4. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338.

5. This Court has personal jurisdiction over Apple at least because Apple has ongoing and systematic contacts with this District and the United States. Specifically, Apple does business in the Eastern District of Texas and has thereby availed itself of the privileges and the protections of the laws of the State of Texas and this Judicial District. Moreover, Apple is subject to specific personal jurisdiction in this case because at least part of Word to Info's claims of infringement arise from Apple's activities in the State of Texas and this Judicial District.

6. Venue is proper in this Judicial District under 28 U.S.C. § 1400(b).

7. Apple has at least two regular and established places of business in this District. In particular, Apple continually operates two fixed physical Apple Store locations in this District, located at 2601 Preston Rd, Frisco, TX 75034 and 6121 W Park Blvd, Plano, TX 75093 in this District.

8. Further, Apple represents externally that it has a presence in this District on its website. Apple advertises the location, and provides a link for obtaining driving directions to the location, of the Frisco Apple Store on its website. https://www.apple.com/retail/stonebriar/. Apple advertises the location, and provides a link for obtaining driving directions to the location, of the Plano Apple Store on its website. https://www.apple.com/retail/willowbend/.

9. Apple derives benefits from its presence in this District at the above locations. In particular, Apple derives revenue from sales of Apple products including the Apple Siri functionality of Apple products accused of infringement herein. Apple therefore derives benefits directly related to infringement identified in this complaint through its presence in this District.

10. Apple interacts in a targeted way with existing or potential customers and users within this District through localized customer support at these locations. For example, Apple provides “Genius Bar” customer support of the Apple Siri functionality and of infringing Apple

products having the Apple Siri functionality at Apple Store locations in this District. https://www.apple.com/retail/geniusbar/. Apple also performs targeted marketing and advertising for these locations within this District.

STATEMENT OF FACTS

11. This is an action for patent infringement of one or more claims of United States U.S. Patent No. 5,715,468 entitled "Memory System for Storing and Retrieving Experience and Knowledge with Natural Language" (the '468 Patent); U.S. Patent No. 6,138,087 entitled "Memory System for Storing and Retrieving Experience and Knowledge with Natural Language Utilizing State Representation Data, Word Sense Numbers, Function Codes and/or Directed Graphs" (the '087 Patent); U.S. Patent No. 6,609,091 entitled "Memory System for Storing and Retrieving Experience and Knowledge with Natural Language Utilizing State Representation Data, Word Sense Numbers, Function Codes and/or Directed Graphs" (the '091 Patent); U.S. Patent No. 7,349,840 entitled "Memory System for Storing and Retrieving Experience and Knowledge with Natural Language Utilizing State Representation Data, Word Sense Numbers, Function Codes, Directed Graphs and/or Context Memory" (the '840 Patent); U.S. Patent No. 7,873,509 entitled "Memory System for Storing and Retrieving Experience and Knowledge with Natural Language Utilizing State Representation Data, Word Sense Numbers, Function Codes, Directed Graphs, Context Memory, and/or Purpose Relations" (the '509 Patent); U.S. Patent No. 8,326,603 entitled "Memory System for Storing and Retrieving Experience and Knowledge with Natural Language Queries" (the '603 Patent); U.S. Patent No. 8,688,436 entitled "Memory System for Storing and Retrieving Experience and Knowledge by Utilizing Natural Language Responses" (the '436 Patent) (collectively, the "Patents-in-Suit").

12. Word to Info is the assignee and owner of the right, title and interest in and to, including the right to assert all causes of action arising under the Patents-in-Suit and the right to

any remedies for infringement of them. The Patents-in-Suit were previously owned by their sole inventor, Robert L. Budzinski, who is the owner of Word to Info.

13. At least one of the Patents-in-Suit has been cited during prosecution of numerous issued United States Patents relating to natural language processing. In particular, one of the patents-in-suit has been cited at least 65 times during prosecution of patents listing Defendant Apple Inc. as assignee, such patents including but not limited to U.S. Patent Nos. 8,713,119, 8,903,716; and 9,548,050.

14. On February 3, 1998, the '468 Patent, was duly and legally issued by the United States Patent and Trademark Office. A true and correct copy of the '468 Patent is attached as Exhibit A to this Complaint.

15. On October 24, 2000, the '087 Patent was duly and legally issued by the United States Patent and Trademark Office. A true and correct copy of the '087 Patent is attached as Exhibit B to this Complaint.

16. On August 19, 2003, the '091 Patent was duly and legally issued by the United States Patent and Trademark Office. A true and correct copy of the '091 Patent is attached as Exhibit C to this Complaint.

17. On March 25, 2008, the '840 Patent was duly and legally issued by the United States Patent and Trademark Office. A true and correct copy of the '840 Patent is attached as Exhibit D to this Complaint.

18. On January 18, 2011, the '509 Patent was duly and legally issued by the United States Patent and Trademark Office. A true and correct copy of the '509 Patent is attached as Exhibit E to this Complaint.

19. On December 4, 2012, the '603 Patent was duly and legally issued by the United States Patent and Trademark Office. A true and correct copy of the '603 Patent is attached as Exhibit F to this Complaint.

20. On April 1, 2014, the '436 Patent was duly and legally issued by the United States Patent and Trademark Office. A true and correct copy of the '436 Patent is attached as Exhibit G to this Complaint.

FIRST CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 5,715,468

21. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 20 as though fully set forth herein.

22. Defendant Apple Inc. has been directly infringing and continues to directly infringe one or more claims of the ’468 Patent, including but not limited to Claims 1, 8, 21, 29, and 33, in the United States in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through at least its development, testing, support, and operation of Apple’s Siri personal assistant software.

23. For example, on information and belief, Siri provides electronically encoded data which is representative of natural language by encoding natural language inputs into audio files and/or text files which represent the natural language input. For example, Siri encodes natural language speech using one or more audio codecs. *See* “Siri A Primer” (available at www.venturewerks.com/Siri-A-Primer.pdf) (stating that “Apple hosts Nuance’s speech-to-text and AI-like natural process engine”) at p.3.; *see also* “Nuance Audio Input Specification” available at https://developer.nuance.com/downloads/guidelines/Nuance%20Audio%20Input%20Specification_v11_ND.pdf (providing a list of supported and recommended Nuance codecs).

24. On information and belief, Siri provides a dictionary database comprising entries having syntax usage data. "Syntax usage data" has been construed in the Northern District of California as "data comprised of sets of words which can syntactically be used interchangeably in a natural language construction." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. For example, Siri provides data comprised of sets of words that can syntactically be used interchangeably. *See* http://www.cnet.com/how-to/the-complete-list-of-siri-commands/ (providing an example how "Timmy Jacobsson" and "my brother" can syntactically be used interchangeably); *see also* US Patent Application US20130275164 (especially at Table 3, providing an example how "San Francisco" and "sf" can syntactically be used interchangeably). Siri provides syntax usage data that are associated with a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. See "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200], and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081], and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

25. On information and belief, the dictionary database provided by Siri comprises entries having associated word sense numbers. "Word sense number" has been construed in the

Northern District of California as "[a]n address to the meaning of a word, which has meaning data that is (1) utilized to determine the intended meaning of a word usage, and (2) organized into relations to other word sense numbers." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081], and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

26. On information and belief, the dictionary database provided by Siri comprises entries having associated adjective word sense numbers. "Adjective word sense number" has been construed in the Northern District of California as follows: "An adjective word sense number is composed of an identification number, a state value or value range, and an owner word sense number". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with adjectives. The entities comprise an associated identification number. *See* US Patent Application US20140222436 (especially at ¶¶[0080], and [0081]); *see also* US Patent Application US20130275164 (especially at Fig.8, ¶¶[0200], [0201], [0230], and

[0713]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 2-3. The entities comprise a data value representing a state. *See id.* The entities comprise an owner word sense number. *See id.*

27. On information and belief, the dictionary database provided by Siri comprises entries having associated concrete noun word sense numbers. "Concrete noun word sense number" has been construed in the Northern District of California as follows: "The word sense number of a concrete noun contains a word sense identification number, a type number, a specificity number, and an experience number."]). Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with concrete nouns. The entities comprise an associated identification number. *See* US Patent Application US20130275164 (especially at Fig.8, and ¶¶[0858]-[0870]); *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/ presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15; *see also* http://web.archive.org/web/ 20110823210746/http://www.novauris.com/products.htm. Entities associated with concrete nouns comprise a type number. *See id; see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/ Siri_20100225/Siri--An-Ontology-driven-

Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15. Entities associated with concrete nouns comprise a specificity number. *See id; see also* US Patent Application US20130275164 (especially at Fig.8, and ¶¶[0858]-[0870]); Entities associated with concrete nouns comprise an experience number. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

28. On information and belief, the dictionary database provided by Siri comprises entries having associated verb word sense numbers. "Verb word sense number" has been construed in the Northern District of California as follows: "A verb word sense number contains an identification number which defines the verb word sense number, and includes partial to complete word sense identification numbers of main sentence roles". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities associated with verbs. The entities comprise identification numbers identifying the source entity (e.g., the subject role of a sentence) and the destination entity (e.g., the object role of a sentence). *See* US Patent Application US20130275164 (especially at ¶¶[0953]-[0959]); *see also* US Patent Application US20140222436 (especially at Fig. 3C and ¶¶[0080] and [0081]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma, et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 1.

29. On information and belief, Siri lexically processes the electronically encoded data to access the dictionary database. *See* "Natural Language Processing Course: CSE 537 Instructor: Professor Anita Wasilewska" (available at http://www3.cs.stonybrook.edu/

~cse634/G11present.pdf) at 9; *see also* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 15.

30. On information and belief, Siri provides a grammar specification. *See* "Using Siri with iOS 10", Naples MUG March 13 2017 (available at https://www.naplesmug.com/ wp-content/uploads/2017/03/Siri-Presentation-13-March-2017.pdf) at 7.

31. On information and belief, Siri utilizes syntax usage data from the database, with reference to the grammar specification to produce output data representing a grammatical parse of the natural language. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 13-15; *see also* US Patent Application US20130275164 (especially at Table 3). In particular, Siri utilizes a syntactic parser which performs syntactic parsing of speech. *See* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 3 (stating that "[i]n Active, we currently offer two componentized approaches to natural language parsing"); *see also* Stony Brook NLP Course (available at http://www3.cs.stonybrook.edu/ ~cse634/G11present.pdf) at 5-7; *see also* US Patent Application US20130275164 (especially at Fig. 28 and ¶[0393]).

32. Because of Apple's infringement of the '468 Patent, Plaintiff has suffered damages and will continue to suffer damages in the future. Plaintiff is entitled to an award of such damages, but in no event less than a reasonable royalty, the precise amount to be determined at trial.

SECOND CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 6,138,087

33. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 32 as though fully set forth herein.

34. Defendant Apple Inc. has been directly infringing and continues to directly infringe one or more claims of the '087 Patent, including but not limited to Claims 17 and 18, in the United States in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through at least its development, testing, support, and operation of Apple's Siri personal assistant software.

35. For example, on information and belief, Siri provides electronically encoded data which is representative of natural language by encoding natural language inputs into audio files and/or text files which represent the natural language input. For example, Siri encodes natural language speech using one or more audio codecs. *See* "Siri A Primer" available at www.venturewerks.com/Siri-A-Primer.pdf (stating that "Apple hosts Nuance's speech-to-text and AI-like natural process engine") at 3; *see also* "Nuance Audio Input Specification" available at https://developer.nuance.com/downloads/guidelines/Nuance%20Audio%20Input%20Specification_v11_ND.pdf (providing a list of supported and recommended Nuance codecs).

36. On information and belief, Siri provides a dictionary database comprising entries having syntax usage data. "Syntax usage data" has been construed in the Northern District of California as "data comprised of sets of words which can syntactically be used interchangeably in a natural language construction." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. For example, Siri provides data comprised of sets of words that can syntactically be used

interchangeably. *See* http://www.cnet.com/how-to/the-complete-list-of-siri-commands/ (providing an example how "Timmy Jacobsson" and "my brother" can syntactically be used interchangeably); *see also* US Patent Application US20130275164 (especially at Table 3, providing an example how "San Francisco" and "sf" can syntactically be used interchangeably). Siri provides syntax usage data that are associated with a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. See "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081], and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

37. On information and belief, the dictionary database provided by Siri comprises entries having associated word sense numbers. "Word sense number" has been construed in the Northern District of California as "[a]n address to the meaning of a word, which has meaning data that is (1) utilized to determine the intended meaning of a word usage, and (2) organized into relations to other word sense numbers." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. *See* "SLU for Natural Interaction: the Siri

Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081], and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

38. On information and belief, the dictionary database provided by Siri comprises entries having associated adjective word sense numbers. "Adjective word sense number" has been construed in the Northern District of California as follows: "An adjective word sense number is composed of an identification number, a state value or value range, and an owner word sense number". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with adjectives. The entities comprise an associated identification number. *See* US Patent Application US20140222436 (especially at ¶¶[0080] and [0081]); *see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0200], [0201], [0230], and [0713]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 2-3. The entities comprise a data value representing a state. *See id.* The entities comprise an owner word sense number. *See id.*

39. On information and belief, the dictionary database provided by Siri comprises entries having associated concrete noun word sense numbers. "Concrete noun word sense number" has been construed in the Northern District of California as follows: "The word sense number of a concrete noun contains a word sense identification number, a type number, a specificity number, and an experience number."]). Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with concrete nouns. The entities comprise an associated identification number. *See* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/ presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15; *see also* http://web.archive.org/web/ 20110823210746/http://www.novauris.com/products.htm. Entities associated with concrete nouns comprise a type number. *See id; see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/ Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15. Entities associated with concrete nouns comprise a specificity number. *See id; see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); Entities associated with concrete nouns comprise an experience number. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

40. On information and belief, the dictionary database provided by Siri comprises entries having associated verb word sense numbers. "Verb word sense number" has been construed in the Northern District of California as follows: "A verb word sense number contains an identification number which defines the verb word sense number, and includes partial to complete word sense identification numbers of main sentence roles". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities associated with verbs. The entities comprise identification numbers identifying the source entity (e.g., the subject role of a sentence) and the destination entity (e.g., the object role of a sentence). *See* US Patent Application US20130275164 (especially at ¶¶[0953]-[0959]); *see also* US Patent Application US20140222436 (especially at Fig. 3C and ¶¶[0080] and [0081]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma, et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 1.

41. On information and belief, Siri lexically processes the electronically encoded data to access the dictionary database. *See* "Natural Language Processing Course: CSE 537 Instructor: Professor Anita Wasilewska" (available at http://www3.cs.stonybrook.edu/~cse634/G11present.pdf) at 9; *see also* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 15.

42. On information and belief, Siri provides a grammar specification. *See* "Using Siri with iOS 10", Naples MUG March 13 2017 (available at https://www.naplesmug.com/ wp-content/uploads/2017/03/Siri-Presentation-13-March-2017.pdf) at 7.

43. On information and belief, Siri utilizes syntax usage data and word sense numbers which are from entries of the dictionary database and which are associated with words of the natural language with reference to associated state representation data to select and access word sense numbers for words of the natural language. For example, Siri utilizes an algorithm based on relationships between database entries and words that syntactically can be used interchangeably to select and access database entries. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 15; *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/ resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-15; *see also* http://www.cnet.com/how-to/the-complete-list-of-siri-commands/ (providing an example how "Timmy Jacobsson" and "my brother" can syntactically be used interchangeably select and access database entries); *see also* US Patent Application US20130275164 (especially the algorithms in Figs.28 and 41).

44. Because of Apple's infringement of the '087 Patent, Plaintiff has suffered damages. Plaintiff is entitled to an award of such damages, but in no event less than a reasonable royalty, the precise amount to be determined at trial.

THIRD CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 6,609,091

45. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 44 as though fully set forth herein.

46. Defendant Apple Inc. has been directly infringing and continues to directly infringe one or more claims of the '091 Patent, including but not limited to Claims 1 and 12, in the United States in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through at least its development, testing, support, and operation of Apple's Siri personal assistant software.

47. For example, on information and belief, Siri provides electronically encoded data which is representative of natural language by encoding natural language inputs into audio files and/or text files which represent the natural language input. For example, Siri encodes natural language speech using one or more audio codecs. *See* "Siri A Primer" available at www.venturewerks.com/Siri-A-Primer.pdf (stating that "Apple hosts Nuance's speech-to-text and AI-like natural process engine") at 3; *see also* "Nuance Audio Input Specification" available at https://developer.nuance.com/downloads/guidelines/Nuance%20Audio%20Input%20Specification_v11_ND.pdf (providing a list of supported and recommended Nuance codecs).

48. On information and belief, the dictionary database provided by Siri comprises entries having associated word sense numbers. "Word sense number" has been construed in the Northern District of California as "[a]n address to the meaning of a word, which has meaning data that is (1) utilized to determine the intended meaning of a word usage, and (2) organized into relations to other word sense numbers." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction.

Siri provides a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081], and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

49. On information and belief, the dictionary database provided by Siri comprises entries having associated adjective word sense numbers. "Adjective word sense number" has been construed in the Northern District of California as follows: "An adjective word sense number is composed of an identification number, a state value or value range, and an owner word sense number". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with adjectives. The entities comprise an associated identification number. *See* US Patent Application US20140222436 (especially at ¶¶[0080] and [0081]); *see also* US Patent Application US20130275164 (especially at Fig.8and ¶¶[0200], [0201], [0230], and [0713]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 2-3.

The entities comprise a data value representing a state. *See id.* The entities comprise an owner word sense number. *See id.*

50. On information and belief, the dictionary database provided by Siri comprises entries having associated concrete noun word sense numbers. "Concrete noun word sense number" has been construed in the Northern District of California as follows: "The word sense number of a concrete noun contains a word sense identification number, a type number, a specificity number, and an experience number."]). Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with concrete nouns. The entities comprise an associated identification number. *See* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/ presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15; *see also* http://web.archive.org/web/ 20110823210746/http://www.novauris.com/products.htm. Entities associated with concrete nouns comprise a type number. *See id; see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/ Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15. Entities associated with concrete nouns comprise a specificity number. *See id; see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); Entities associated with concrete

nouns comprise an experience number. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

51. On information and belief, the dictionary database provided by Siri comprises entries having associated verb word sense numbers. "Verb word sense number" has been construed in the Northern District of California as follows: "A verb word sense number contains an identification number which defines the verb word sense number, and includes partial to complete word sense identification numbers of main sentence roles". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities associated with verbs. The entities comprise identification numbers identifying the source entity (e.g., the subject role of a sentence) and the destination entity (e.g., the object role of a sentence). *See* US Patent Application US20130275164 (especially at ¶¶[0953]-[0959]); *see also* US Patent Application US20140222436 (especially at Fig. 3C and ¶¶[0080] and [0081]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma, et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 1.

52. On information and belief, Siri lexically processes the electronically encoded data to access the dictionary database. *See* "Natural Language Processing Course: CSE 537 Instructor: Professor Anita Wasilewska" (available at http://www3.cs.stonybrook.edu/~cse634/G11present.pdf) at 9; *see also* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 15.

53. On information and belief, Siri provides a grammar specification. *See* "Using Siri with iOS 10", Naples MUG March 13 2017 (available at https://www.naplesmug.com/ wp-content/uploads/2017/03/Siri-Presentation-13-March-2017.pdf) at 7.

54. On information and belief, Siri provides a database of requirements such that the requirements must be met by the associated state representation data of the word sense numbers for the word sense numbers to be selected. For example, entities to be selected, they must meet certain relationship and constraints requirements. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/ resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-15; *see also* US Patent Application US20130275164 (especially at Figs. 28, 34, 45 and 46, and ¶¶[0200] and [0394]).

55. On information and belief, Siri utilizes syntax usage data which includes entries of the dictionary database and which are associated with words of the natural language with reference to the grammar specification to produce output data representative of a grammatical parse of the natural language, the output data including selected syntax usage. For example, an exemplary workflow comprises syntactic parsing which is performed against grammar and selecting word sense numbers based on user queries, in order to create natural language output such as speech. The natural language output includes syntax usage data. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30;

see also "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/ presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-15; *see also* US Patent Application US20130275164 (especially at Table 3, providing an example how natural language input "sf" and output "San Francisco" are used interchangeably).

56. Because of Apple's infringement of the '091 Patent, Plaintiff has suffered damages. Plaintiff is entitled to an award of such damages, but in no event less than a reasonable royalty, the precise amount to be determined at trial.

FOURTH CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 7,349,840

57. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 56 as though fully set forth herein.

58. Defendant Apple Inc. has been directly infringing and continues to directly infringe one or more claims of the '840 Patent, including but not limited to Claims 1, 2, 3, and 5, in the United States in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through at least its development, testing, support, and operation of Apple's Siri personal assistant software.

59. For example, on information and belief, Siri provides electronically encoded data which is representative of natural language by encoding natural language inputs into audio files and/or text files which represent the natural language input. For example, Siri encodes natural language speech using one or more audio codecs. *See* "Siri A Primer" available at www.venturewerks.com/Siri-A-Primer.pdf (stating that "Apple hosts Nuance's speech-to-text and AI-like natural process engine") at 3; *see also* "Nuance Audio Input Specification" available

at https://developer.nuance.com/downloads/guidelines/ Nuance%20Audio%20Input%20Specification_v11_ND.pdf (providing a list of supported and recommended Nuance codecs).

60. On information and belief, Siri provides a dictionary database comprising entries having syntax usage data. "Syntax usage data" has been construed in the Northern District of California as "data comprised of sets of words which can syntactically be used interchangeably in a natural language construction." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. For example, Siri provides data comprised of sets of words that can syntactically be used interchangeably. *See* http://www.cnet.com/how-to/the-complete-list-of-siri-commands/ (providing an example how "Timmy Jacobsson" and "my brother" can syntactically be used interchangeably); *see also* US Patent Application US20130275164 (especially at Table 3, providing an example how "San Francisco" and "sf" can syntactically be used interchangeably). Siri provides syntax usage data that are associated with a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. See "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081], and

[0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

61. On information and belief, the dictionary database provided by Siri comprises entries having associated word sense numbers. "Word sense number" has been construed in the Northern District of California as "[a]n address to the meaning of a word, which has meaning data that is (1) utilized to determine the intended meaning of a word usage, and (2) organized into relations to other word sense numbers." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081], and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

62. On information and belief, the dictionary database provided by Siri comprises entries having associated adjective word sense numbers. "Adjective word sense number" has been construed in the Northern District of California as follows: "An adjective word sense number is composed of an identification number, a state value or value range, and an owner word sense number". Although Plaintiff does not believe this construction is correct, to the

extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with adjectives. The entities comprise an associated identification number. *See* US Patent Application US20140222436 (especially at ¶¶ [0080] and [0081]); *see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0200], [0201], [0230], and [0713]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 2-3. The entities comprise a data value representing a state. *See id.* The entities comprise an owner word sense number. *See id.*

63. On information and belief, the dictionary database provided by Siri comprises entries having associated concrete noun word sense numbers. "Concrete noun word sense number" has been construed in the Northern District of California as follows: "The word sense number of a concrete noun contains a word sense identification number, a type number, a specificity number, and an experience number."]). Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with concrete nouns. The entities comprise an associated identification number. *See* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/ presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15; *see also* http://web.archive.org/web/ 20110823210746/http://www.novauris.com/products.htm.

Entities associated with concrete nouns comprise a type number. *See id; see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/ Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15. Entities associated with concrete nouns comprise a specificity number. *See id; see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); Entities associated with concrete nouns comprise an experience number. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

64. On information and belief, the dictionary database provided by Siri comprises entries having associated verb word sense numbers. "Verb word sense number" has been construed in the Northern District of California as follows: "A verb word sense number contains an identification number which defines the verb word sense number, and includes partial to complete word sense identification numbers of main sentence roles". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities associated with verbs. The entities comprise identification numbers identifying the source entity (e.g., the subject role of a sentence) and the destination entity (e.g., the object role of a sentence). *See* US Patent Application US20130275164 (especially at ¶¶[0953]-[0959]); *see also* US Patent Application US20140222436 (especially at Fig. 3C and ¶¶[0080] and [0081]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma, et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing

(ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 1.

65. On information and belief, Siri lexically processes the electronically encoded data to access the dictionary database. *See* "Natural Language Processing Course: CSE 537 Instructor: Professor Anita Wasilewska" (available at http://www3.cs.stonybrook.edu/~cse634/G11present.pdf) at 9; *see also* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 15.

66. On information and belief, Siri provides a grammar specification. *See* "Using Siri with iOS 10", Naples MUG March 13 2017 (available at https://www.naplesmug.com/ wp-content/uploads/2017/03/Siri-Presentation-13-March-2017.pdf) at 7.

67. On information and belief, Siri provides a context data base containing entries having word sense numbers. For example, Siri provides data base entities that are associated with query contexts, to present data to a user in a specific context. *See* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-14 (showing that Siri provides suggestions in the context of a user's location "near you", "your home", and time ("tonight"); *see also* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/ Bellegarda.pdf) at 30 (showing that Siri receives context input); *see also* US Patent Application US20140222436 (especially at Fig. 3B and ¶¶[0059]-[0060], and [0076]).

68. On information and belief, Siri utilizes syntax usage data and word sense numbers which are from entries of the dictionary database and which are associated with words of the natural language with reference to the grammar specification and the context database to select word sense numbers associated with the natural language words. For example, Siri utilizes an algorithm based on relationships between database entries and words that syntactically can be used interchangeably with reference to the grammar specification and the context database to select and access database entries. *See* http://www.cnet.com/how-to/the-complete-list-of-siri-commands/ (providing an example how "Timmy Jacobsson" and "my brother" can syntactically be used interchangeably select and access database entries); *see also* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/ Bellegarda.pdf) at 30 (showing that Siri receives context input) ; *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/ presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at p13-15 (showing that Siri provides suggestions in the context of a user's location "near you", "your home", and time ("tonight"); *see also* US Patent Application US20140222436 (especially at Fig. 3B and ¶¶[0059]-[0060], and [0076]); *see also* "Using Siri with iOS 10", Naples MUG March 13 2017 (available at https://www.naplesmug.com/wp-content/uploads/2017/03/Siri-Presentation-13-March-2017.pdf) at 7; *see also* US Patent Application US20130275164 (especially the algorithms at Figs.28 and 41).

69. Because of Apple's infringement of the '840 Patent, Plaintiff has suffered damages. Plaintiff is entitled to an award of such damages, but in no event less than a reasonable royalty, the precise amount to be determined at trial.

FIFTH CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 7,873,509

70. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 69 as though fully set forth herein.

71. Defendant Apple Inc. has been directly infringing and continues to directly infringe one or more claims of the '509 Patent, including but not limited to Claims 9, 10, and 16, in the United States in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through at least its development, testing, support, and operation of Apple's Siri personal assistant software.

72. For example, on information and belief, Siri provides an experience and knowledge database comprising directed graphs that are associated with word sense numbers. Siri utilizes directed graphs having paths and conditions for accessing each path. *See* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* "CALO: Cognitive Assistant that Learns and Organizes" by SRI International, (2006) (available at https://web.archive.org/web/20070705115103/http://caloproject.sri.com/DARPATech.pdf) at 24 (showing a "Knowledge Base" with associated nodes and links); *see also* US Patent Application US20130275164 (especially at Fig.8, Fig.45-46 and ¶¶[0359], [393], [465], [496-499]). "Word sense number" has been construed in the Northern District of California as "[a]n address to the meaning of a word, which has meaning data that is (1) utilized to determine the intended meaning of a word usage, and (2) organized

into relations to other word sense numbers." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081], and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

73. On information and belief, the experience and knowledge database provided by Siri comprises directed graphs that are associated with adjective word sense numbers. "Adjective word sense number" has been construed in the Northern District of California as follows: "An adjective word sense number is composed of an identification number, a state value or value range, and an owner word sense number". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with adjectives. The entities comprise an associated identification number. *See* US Patent Application US20140222436 (especially at ¶¶[0080] and [0081]); *see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0200], [0201], [0230], and [0713]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma et al., Microsoft Corporation, published in Proceedings of 40th IEEE International

Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 2-3. The entities comprise a data value representing a state. *See id.* The entities comprise an owner word sense number. *See id.* Siri is configured to run on a computer having memory for providing the forgoing described functionality.

74. On information and belief, the experience and knowledge database provided by Siri comprises directed graphs that are associated with concrete noun word sense numbers. "Concrete noun word sense number" has been construed in the Northern District of California as follows: "The word sense number of a concrete noun contains a word sense identification number, a type number, a specificity number, and an experience number." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with concrete nouns. The entities comprise an associated identification number. *See* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15; *see also* http://web.archive.org/web/20110823210746/http://www.novauris.com/products.htm. Entities associated with concrete nouns comprise a type number. *See id; see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-

TomGruber_20100225.pdf) at 15. Entities associated with concrete nouns comprise a specificity number. *See id; see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); Entities associated with concrete nouns comprise an experience number. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88. Siri is configured to run on a computer having memory for providing the forgoing described functionality.

75. On information and belief, the experience and knowledge database provided by Siri comprises directed graphs with nodes that are associated with verb word sense numbers. "Verb word sense number" has been construed in the Northern District of California as follows: " A verb word sense number contains an identification number which defines the verb word sense number, and includes partial to complete word sense identification numbers of main sentence roles." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities associated with verbs. The entities comprise identification numbers identifying the source entity (e.g., the subject role of a sentence) and the destination entity (e.g., the object role of a sentence). *See* US Patent Application US20130275164 (especially at ¶¶[0953]-[0959]); *see also* US Patent Application US20140222436 (especially at Fig. 3C and ¶¶[0080] and [0081]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma, et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/ 2015/04/Template.pdf) at 1. Siri is configured to run on a computer having memory for providing the forgoing described functionality.

76. On information and belief, Siri provides a database that provides context and

entries associated with an experience and knowledge, the database having directed graphs with nodes with associated clause implying word sense numbers organized into paths of the nodes such that the nodes have access conditions which determine zero or more next nodes on zero or more paths that are accessible. Siri utilizes directed graphs associated with having paths and conditions for accessing each path. The database entries represent clauses that can be used to access data associated with query topics. *See* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* "CALO: Cognitive Assistant that Learns and Organizes" by SRI International, (2006) (available at https://web.archive.org/web/20070705115103/http:// caloproject.sri.com/DARPATech.pdf) at 24 (showing a "Knowledge Base" with associated nodes and links); *see also* US Patent Application US20130275164 (especially at Fig.8, Fig.45-46 and ¶¶[0359], [393], [465] and [496-499]); *see* id. (especially at Fig.8, and at ¶[0425], stating that "the connections between nodes in an active ontology that provide evidential support for disambiguation between candidate semantic parse results 222 are directed arcs"); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma, et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/ 2015/04/Template.pdf) at 2-3. In order for nodes to be accessible on a path, they must meet certain access conditions based on criteria and constraints. *See* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-

15; *see* also US Patent Application US20130275164 (especially at Figs. 3B, 3C, 34, 45, 46, and ¶¶[0469]-[0499]); *see also* "Task Management under Change and Uncertainty Constraint Solving Experience with the CALO Project" by Pauline M. Berry, Karen Myers, Tomas E. Uribe, and Neil Yorke-Smith, Artificial Intelligence Center, SRI International, http://www.cs.ucc.ie/ ~kb11/CP2005Changes/changes05proceedings.pdf ("Constraint Solving with CALO") at 1. Siri further includes associated word sense numbers having associated state representation data. *See* US Patent Application US20130275164 (especially at Figs. 43A and 43B). Siri further includes associated word sense numbers having associated state representation data. *See* US Patent Application US20130275164 (especially at Figs. 43A and 43B). Siri is configured to run on a computer having memory for providing the forgoing described functionality. Siri software is configured to run on a computer having memory for providing the forgoing described functionality.

77. On information and belief, Siri utilizes a natural language processor to provide natural language with associated clause implying word sense numbers. Siri utilizes a natural language processor to provide natural language. *See* US Patent Application US20140222436 (especially at ¶[0078], stating that "The natural processing module 332 ("natural language processor") of the digital assistant 326 takes the sequence of words or tokens" etc.). Siri is configured to run on a computer having memory for providing the forgoing described functionality.

78. On information and belief, Siri performs relation path identification processing to find zero or more paths from nodes associated with a clause implying word sense numbers associated with natural language using the experience and knowledge database such that access conditions of the nodes on the found paths are met. *See* "Siri: A Virtual Personal Assistant, An

Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-14; *see also* "CALO: Cognitive Assistant that Learns and Organizes"by SRI International, (2006) (available at https://web.archive.org/web/20070705115103/http://caloproject.sri.com/DARPATech.pdf) at 24 (showing a "Knowledge Base" with associated nodes and links); *see also* US Patent Application US20130275164 (especially at Figs. 3B, 34, 45, 46 and ¶¶[0469]-[0499]); *see also* "Task Management under Change and Uncertainty Constraint Solving Experience with the CALO Project" by Pauline M. Berry, Karen Myers, Tomas E. Uribe, and Neil Yorke-Smith, Artificial Intelligence Center, SRI International, http://www.cs.ucc.ie/~kb11/CP2005Changes/changes05proceedings.pdf ("Constraint Solving with CALO") at 1. Siri is configured to run on a computer having memory for providing the forgoing described functionality.

79. On information and belief, Siri provides criteria for selecting an experience and knowledge path using the previously identified directed graph. *See* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-14; *see also* "CALO: Cognitive Assistant that Learns and Organizes"by SRI International, (2006) (available at https://web.archive.org/web/20070705115103/http://caloproject.sri.com/DARPATech.pdf) at 24 (showing a "Knowledge Base" with associated nodes and links); *see also* US Patent Application US20130275164 (especially at Figs. 3B, 34, 45, 46 and ¶¶[0469]-[0499]); *see also* "Task Management under

Change and Uncertainty Constraint Solving Experience with the CALO Project" by Pauline M. Berry, Karen Myers, Tomas E. Uribe, and Neil Yorke-Smith, Artificial Intelligence Center, SRI International, http://www.cs.ucc.ie/~kb11/CP2005Changes/changes05proceedings.pdf ("Constraint Solving with CALO") at 1. Siri is configured to run on a computer having memory for providing the forgoing described functionality.

80. On information and belief, Siri utilizes criteria to select one or more found paths using the previously identified directed graph. *See* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/ presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-14; *see also* "CALO: Cognitive Assistant that Learns and Organizes"by SRI International, (2006) (available at https://web.archive.org/web/ 20070705115103/http://caloproject.sri.com/DARPATech.pdf) at 24 (showing a "Knowledge Base" with associated nodes and links); *see also* US Patent Application US20130275164 (especially at Figs. 3B, 34, 45, 46 and ¶¶[0469]-[0499]); *see also* "Task Management under Change and Uncertainty Constraint Solving Experience with the CALO Project" by Pauline M. Berry, Karen Myers, Tomas E. Uribe, and Neil Yorke-Smith, Artificial Intelligence Center, SRI International, http://www.cs.ucc.ie/~kb11/CP2005Changes/changes05proceedings.pdf ("Constraint Solving with CALO") at 1. Siri is configured to run on a computer having memory for providing the forgoing described functionality.

81. Because of Apples' infringement of the '509 Patent, Plaintiff has suffered damages. Plaintiff is entitled to an award of such damages, but in no event less than a reasonable royalty, the precise amount to be determined at trial.

SIXTH CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 8,326,603

82. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 81 as though fully set forth herein.

83. Defendant Apple Inc. has been directly infringing and continues to directly infringe one or more claims of the ’603 Patent, including but not limited to Claims 14, and 16, in the United States in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through at least its development, testing, support, and operation of Apple's Siri personal assistant software.

84. For example, on information and belief, Siri utilizes a natural language processor to provide natural language with associated clause implying word sense numbers. Siri utilizes a natural language processor to provide natural language. *See* US Patent Application US20140222436 (especially at ¶[0078], stating that “The natural processing module 332 (“natural language processor”) of the digital assistant 326 takes the sequence of words or tokens” etc.) “Word sense number” has been construed in the Northern District of California as “[a]n address to the meaning of a word, which has meaning data that is (1) utilized to determine the intended meaning of a word usage, and (2) organized into relations to other word sense numbers.” Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. The word sense numbers represent clauses that can be used to access data associated with query topics. *See* “Modeling Human-Agent Interaction with Active Ontologies” by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/ 2007/SS-07-04/SS07-04-009.pdf) at 4 *See* “SLU

for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081] and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

85. On information and belief, Siri utilizes a natural language processor to provide natural language with associated clause implying adjective word sense numbers. Siri utilizes a natural language processor. *See above.* "Adjective word sense number" has been construed in the Northern District of California as follows: "An adjective word sense number is composed of an identification number, a state value or value range, and an owner word sense number". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with adjectives. The entities comprise an associated identification number. *See* US Patent Application US20140222436 (especially at ¶¶[0080] and [0081]); *see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0200], [0201], [0230] and [0713]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 2-3. The entities comprise a data

value representing a state. *See id.* The entities comprise an owner word sense number. *See id.* Siri is configured to run on a computer having memory for providing the forgoing described functionality.

86. On information and belief, Siri utilizes a natural language processor to provide natural language with associated clause concrete noun word sense numbers. Siri utilizes a natural language processor. *See above.* "Concrete noun word sense number" has been construed in the Northern District of California as follows: "The word sense number of a concrete noun contains a word sense identification number, a type number, a specificity number, and an experience number."]). Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with concrete nouns. The entities comprise an associated identification number. *See* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/ presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15; *see also* http://web.archive.org/web/ 20110823210746/http://www.novauris.com/products.htm. Entities associated with concrete nouns comprise a type number. *See id; see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/ Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15. Entities associated with concrete nouns comprise a specificity number. *See id; see also* US Patent Application

US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); Entities associated with concrete nouns comprise an experience number. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88. Siri is configured to run on a computer having memory for providing the forgoing described functionality.

87. On information and belief, Siri utilizes a natural language processor to provide natural language with associated clause implying verb word sense numbers. Siri utilizes a natural language processor. *See above.* "Verb word sense number" has been construed in the Northern District of California as follows: "A verb word sense number contains an identification number which defines the verb word sense number, and includes partial to complete word sense identification numbers of main sentence roles". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities associated with verbs. The entities comprise identification numbers identifying the source entity (e.g., the subject role of a sentence) and the destination entity (e.g., the object role of a sentence). *See* US Patent Application US20130275164 (especially at ¶¶[0953]-[0959]); *see also* US Patent Application US20140222436 (especially and Fig. 3C and ¶¶[0080] and [0081]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma, et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/ 2015/04/Template.pdf) at 1. Siri is configured to run on a computer having memory for providing the forgoing described functionality.

88. On information and belief, Siri provides an experience and knowledge database having comprising directed graphs that are associated with word sense numbers. *See* "SLU for

Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc. (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* US Patent Application US20130275164 (especially at Figs. 3B, 3C, 45, 46 and ¶¶[0496]-[0499]). Siri is configured to run on a computer having memory for providing the forgoing described functionality

89. On information and belief, the database entries comprises entities, and relationships between entities. The entities represent clauses that can be sued to access data associated with query topics. The entities are organized in relation to other entities. *See* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-15; *see also* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "CALO: Cognitive Assistant that Learns and Organizes"by SRI International, (2006) (available at https://web.archive.org/web/20070705115103/http://caloproject.sri.com/DARPATech.pdf) at 24 (showing a "Knowledge Base" with associated nodes and links); *see also* US Patent Application US20130275164 (especially at Figs. 3B and 3C and ¶¶[0080]-[0082] and [0085]-[0086]). Siri is configured to run on a computer having memory for providing the forgoing described functionality.

90. On information and belief, Siri identifies zero or more paths form nodes associated with a clause implying word sense numbers associated with natural language with reference to the experience and knowledge database such that the access conditions of the nodes

on the found paths are met. In order for nodes to be accessible on a path, they must meet certain access conditions based on criteria and constraints. *See* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 13-15; *see* also US Patent Application US20130275164 (especially at Figs. 3B, 3C, 34, 45, 46 and ¶¶[0469]-[0499]); *see also* "Task Management under Change and Uncertainty Constraint Solving Experience with the CALO Project" by Pauline M. Berry, Karen Myers, Tomas E. Uribe, and Neil Yorke-Smith, Artificial Intelligence Center, SRI International, http://www.cs.ucc.ie/~kb11/CP2005Changes/changes05proceedings.pdf ("Constraint Solving with CALO") at 1. Siri further includes associated word sense numbers having associated state representation data. *See* US Patent Application US20130275164 (especially at Figs. 43A and 43B). Siri is configured to run on a computer having memory for providing the forgoing described functionality.

91. Because of Apple's infringement of the '603 Patent, Plaintiff has suffered damages. Plaintiff is entitled to an award of such damages, but in no event less than a reasonable royalty, the precise amount to be determined at trial.

SEVENTH CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 8,688,436

92. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 91 as though fully set forth herein.

93. Defendant Apple Inc. has been directly infringing and continues to directly infringe one or more claims of the '436 Patent, including but not limited to Claims 1, 2, and 7, in the United States in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents,

through at least its development, testing, support, and operation of Apple's Siri personal assistant software.

94. For example, on information and belief, Siri provides electronically encoded data which is representative of natural language by encoding natural language inputs into audio files and/or text files which represent the natural language input. For example, Siri encodes natural language speech using one or more audio codecs. For example, Siri encodes natural language speech using one or more audio codecs. *See* "Siri A Primer" available at www.venturewerks.com/Siri-A-Primer.pdf (stating that "Apple hosts Nuance's speech-to-text and AI-like natural process engine") at 3; *see also* "Nuance Audio Input Specification" available at https://developer.nuance.com/downloads/guidelines/Nuance%20Audio%20Input%20Specification_v11_ND.pdf (providing a list of supported and recommended Nuance codecs).

95. On information and belief, Siri provides a dictionary database comprising entries having syntax usage data. "Syntax usage data" has been construed in the Northern District of California as "data comprised of sets of words which can syntactically be used interchangeably in a natural language construction." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. For example, Siri provides data comprised of sets of words that can syntactically be used interchangeably. *See* http://www.cnet.com/how-to/the-complete-list-of-siri-commands/ (providing an example how "Timmy Jacobsson" and "my brother" can syntactically be used interchangeably); *see also* US Patent Application US20130275164 (especially at Table 3, providing an example how "San Francisco" and "sf" can syntactically be used interchangeably). Siri provides syntax usage data that are associated with a plurality of entities and relationships

between entities. The entities are associated with entries of a knowledge repository database. See "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at ¶¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081], and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

96. On information and belief, the dictionary database provided by Siri comprises entries having associated word sense numbers. "Word sense number" has been construed in the Northern District of California as "[a]n address to the meaning of a word, which has meaning data that is (1) utilized to determine the intended meaning of a word usage, and (2) organized into relations to other word sense numbers." Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides a plurality of entities and relationships between entities. The entities are associated with entries of a knowledge repository database. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/ website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 30; *see also* "Modeling Human-Agent Interaction with Active Ontologies" by Didier Guzzoni Charles Baur, and Adam Cheyer, (2007) (available at https://www.aaai.org/Papers/Symposia/Spring/2007/SS-07-04/SS07-04-009.pdf) at 4; *see also* US Patent Application US20130275164 (especially at

¶[0200] and [0394]); *see also* US Patent Application US20140222436 (especially at Figs. 3B and 3C and ¶¶[0080], [0081] and [0086]). Database entries are associated with start addresses. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

97. On information and belief, the dictionary database provided by Siri comprises entries having associated adjective word sense numbers. "Adjective word sense number" has been construed in the Northern District of California as follows: "An adjective word sense number is composed of an identification number, a state value or value range, and an owner word sense number". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with adjectives. The entities comprise an associated identification number. *See* US Patent Application US20140222436 (especially at ¶ [0080] and [0081]); *see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0200], [0201], [0230] and [0713]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 2-3. The entities comprise a data value representing a state. *See id.* The entities comprise an owner word sense number. *See id.*

98. On information and belief, the dictionary database provided by Siri comprises entries having associated concrete noun word sense numbers. "Concrete noun word sense number" has been construed in the Northern District of California as follows: "The word sense number of a concrete noun contains a word sense identification number, a type number, a specificity number, and an experience number."]). Although Plaintiff does not believe this

construction is correct, to the extent the Court chooses to adopt this construction, Siri meets this construction. Siri provides entities that are associated with concrete nouns. The entities comprise an associated identification number. *See* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); *see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/ presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15; *see also* http://web.archive.org/web/ 20110823210746/http://www.novauris.com/products.htm. Entities associated with concrete nouns comprise a type number. *See id; see also* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/ Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 15. Entities associated with concrete nouns comprise a specificity number. *See id; see also* US Patent Application US20130275164 (especially at Fig.8 and ¶¶[0858]-[0870]); Entities associated with concrete nouns comprise an experience number. *See* B. Stroustroup, The C++ Programming Language (3rd ed.) at Section 5.1 pp.87-88.

99. On information and belief, the dictionary database provided by Siri comprises entries having associated verb word sense numbers. "Verb word sense number" has been construed in the Northern District of California as follows: "A verb word sense number contains an identification number which defines the verb word sense number, and includes partial to complete word sense identification numbers of main sentence roles". Although Plaintiff does not believe this construction is correct, to the extent the Court chooses to adopt this construction, Siri

meets this construction. Siri provides entities associated with verbs. The entities comprise identification numbers identifying the source entity (e.g., the subject role of a sentence) and the destination entity (e.g., the object role of a sentence). *See* US Patent Application US20130275164 (especially at ¶¶[0953]-[0959]); *see also* US Patent Application US20140222436 (especially at Fig. 3C and ¶¶[0080] and [0081]); *see also* "Knowledge Graph Inference for Spoke Dialog Systems" by Ma, et al., Microsoft Corporation, published in Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015, (available at https://www.microsoft.com/en-us/research/wp-content/uploads/2015/04/Template.pdf) at 1.

100. On information and belief, Siri as installed in a computer system lexically processes the electronically encoded data to access the dictionary database. *See* "Natural Language Processing Course: CSE 537 Instructor: Professor Anita Wasilewska" (available at http://www3.cs.stonybrook.edu/~cse634/G11present.pdf) at 9; *see also* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/Bellegarda.pdf) at 15.

101. On information and belief, Siri as installed in a computer system provides a natural language plausibility and expectedness processor. For example, Siri provides an autocomplete functionality to fill in data based on plausibility and expectedness. *See* "Siri: A Virtual Personal Assistant, An Ontology-driven Application for the Masses" by Adam Cheyer and Tom Gruber cofounders of Siri, Siri, Inc., (2010) (available at http://ontolog.cim3.net/file/resource/presentation/Siri_20100225/Siri--An-Ontology-driven-Application-for-the-Masses--AdamCheyer-TomGruber_20100225.pdf) at 18. Siri utilizes expectedness. *See* "SLU for Natural Interaction: the Siri Experience" by Jerome R. Bellegarda, Apple Inc., (2012) (available

at https://www.uni-ulm.de/fileadmin/website_uni_ulm/iui.iwsds2012/files/ Bellegarda.pdf) at 21 (showing that an appropriate calendar entry is provided based on user expectation". Siri further determines the meaning of words, such as "Beachfire", "San Clemente" and "today" based on plausibility and expectedness. *See* "Siri A Primer" available at www.venturewerks.com/Siri-A-Primer.pdf (stating that "when you ask Siri to, "Book a table at Beachfire in San Clemente at 5PM", Siri determines that "Beachfire" is likely the name of a place, "San Clemente" is likely a location and that Siri still needs to confirm the reservation is for today") at 3; *see also* US Patent Application US20140222436 (especially at ¶[0078], stating that "The natural processing module 332 ("natural language processor") of the digital assistant 326 takes the sequence of words or tokens" etc, at [0088]-[0090]).

102. On information and belief, Siri as installed in a computer system utilizes the natural language plausibility and expectedness processor to initiate accessing entries of the dictionary database which are associated with words of the natural language. For example, the autocomplete functionality performs analysis for relationships that exist between a search term and terms found in the surrounding context using available domain knowledge. *See above*.

103. Because of Apple's infringement of the '436 Patent, Plaintiff has suffered damages. Plaintiff is entitled to an award of such damages, but in no event less than a reasonable royalty, the precise amount to be determined at trial.

JURY DEMAND

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Plaintiff demands a trial by jury on all issues triable as such.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Word to Info, Inc. respectfully demands entry of judgment against Apple as follows:

A. finding that Apple in the United States in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through at least its development, testing, support, and operation of the Siri personal assistant software, has infringed one or more claims of the Patents-in-Suit;

B. finding Apple's infringement of at least one of the Patents-in-Suit to be willful;

C. awarding Plaintiff damages to be paid by Apple adequate to compensate Plaintiff for Apple's past infringement of the Patents-in-Suit and any continuing or future infringement of the Patents-in-Suit through the date such judgment is entered, together with pre-judgment and post-judgment interest, costs, expenses and an accounting of all infringing acts including, but not limited to, those acts not presented at trial as justified under 35 U.S.C. § 284;

D. a declaration that this case is exceptional under 35 U.S.C. § 285, and an award of Plaintiff's reasonable attorneys' fees;

E. ordering an accounting of all infringing acts including, but not limited to, those acts not presented at trial and an award of damages to Plaintiff for any such acts; and

F. awarding such other and further relief at law or in equity as the Court deems just and proper.

Dated: August 18, 2017

/s/ Steven R. Daniels

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