IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

WORD TO INFO, INC., Plaintiff, v. AMAZON.COM, INC., Defendant.	Civil Action No. _____ 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 Amazon.com, Inc. ("Amazon" 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 Amazon.com, Inc. ("Amazon") is a corporation organized under the laws of the State of Delaware with its principal place of business at 410 Terry Ave, Seattle, Washington 98109.

JURISDICTION AND VENUE

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

5. On information and belief, Defendant Amazon is subject to the jurisdiction of this Court by virtue of the facts that Defendant conducts substantial business in this District, Defendant has committed acts of infringement within this District, a substantial part of the events

giving rise to the claims in this Complaint occurred and continue to occur in this District, and Defendant has its principal place of business in this District.

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

STATEMENT OF FACTS

7. 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").

8. 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 said patents 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.

9. 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 during prosecution of patents listing Defendant Amazon as assignee, such patents including but not limited to U.S. Patent Nos. 8,838,659; 9,098,492; 9,110,882; and 9,519,681. Further, one of the patents-in-suit has been cited during prosecution of patents listing Evi Technologies Limited as assignee, such patents including but not limited to U.S. Patent Nos. 8,666,928; 8,219,599; 8,468,122; and 8,719,318. Further, one of the patents-in-suit has been cited during prosecution of patents listing True Knowledge as assignee, such patents including but not limited to U.S. Patent No. 8,219,599.

10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. 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.

16. 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

17. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 16 as though fully set forth herein.

18. Defendant Amazon 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 Amazon’s Alexa personal assistant software.

19. For example, on information and belief, Amazon Alexa 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, Amazon Alexa encodes natural language speech using one or more audio codecs. *See* https://developer.amazon.com/public/solutions/alexa/alexa-voice-service/reference/speechrecognizer (stating that “[a]ll captured audio sent to AVS should be encoded as: 16bit Linear PCM” etc.) and https://developer.amazon.com/public/solutions/alexa/alexa-voice-service/docs/avs-http2-requests (stating that “your client will communicate with the Alexa using HTTP/2 multipart encoded messages”).

20. On information and belief, Amazon Alexa provides a dictionary database containing entries having syntax usage data. Amazon Alexa utilizes Evi technology which is based on True Knowledge technology. *See* https://www.evi.com/about/ (stating that “Evi was founded in August 2005, originally under the name “True Knowledge”” and “[i]n October 2012, Evi was acquired by Amazon”) . Alexa provides syntax usage data based on True Knowledge technology which provides a plurality of entities and relationships between entities. *See*

"Building Sensor Networks" by Ioanis Nikolaidis, Krzysztof Iniewski (available at CRC Press; 1 edition, September 19, 2013, ISBN-13: 978-1466562721, ISBN-10: 1466562722) and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/alexa-skills-kit-voice-interface-and-user-experience-testing (stating that "[t]he five most common synonyms for phrase patterns are present"). The entities in the dictionary database are organized in relation to other entities. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160) at pp. 81-84, 87-88 and also https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/).

21. On information and belief, Amazon Alexa lexically processes the electronically encoded data to access the dictionary database. *See* above; *see also* ECIR 2010 (available at http://dces.essex.ac.uk/staff/udo/ecir2010/slides/ECIR_Industry_Day_2010_Overell.pdf) at p. 21.

22. On information and belief, Amazon Alexa provides a grammar specification. *See* https://developer.amazon.com/blogs/post/Tx2XUAQ741IYQI4/how-to-build-a-multi-language-alexa-skill.

23. On information and belief, Amazon Alexa 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. In particular, Amazon Alexa utilizes a syntactic parser which performs syntactic parsing of the speech. *See* https://developer.amazon.com/blogs/tag/Amazon+Echo (stating that "[a]s a part of developing an Alexa skill, you define the syntax and provide sample utterances") and https://www.slideshare.net/aniruddha.chakrabarti/amazon-alexa-building-custom-skills (stating that "Parsing Invocation Name, Intent and Slots", at slide 18). *See also* Stony Brook NLP Course (available at http://www3.cs.stonybrook.edu/~cse634/G11present.pdf) at p. 5.

24. Because of Amazon'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

25. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 24 as though fully set forth herein.

26. Defendant Amazon 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 Amazon's Alexa personal assistant software.

27. For example, on information and belief, Amazon Alexa 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, Amazon Alexa encodes natural language speech using one or more audio codecs. *See* https://developer.amazon.com/public/solutions/alexa/alexa-voice-service/reference/speechrecognizer (stating that "[a]ll captured audio sent to AVS should be encoded as: 16bit Linear PCM" etc.) and https://developer.amazon.com/public/solutions/alexa/ alexa-voice-service/docs/avs-http2-requests (stating that "your client will communicate with the Alexa using HTTP/2 multipart encoded messages").

28. On information and belief, Amazon Alexa provides a dictionary database containing entries having syntax usage data. Amazon Alexa utilizes Evi technology which is based on True Knowledge technology. *See* https://www.evi.com/about/ (stating that "Evi was founded in August 2005, originally under the name "True Knowledge"" and "[i]n October 2012, Evi was acquired by Amazon") . Alexa provides syntax usage data based on True Knowledge technology which provides a plurality of entities and relationships between entities. *See* "Building Sensor Networks" by Ioanis Nikolaidis, Krzysztof Iniewski (available at CRC Press; 1

edition, September 19, 2013, ISBN-13: 978-1466562721, ISBN-10: 1466562722) and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/alexa-skills-kit-voice-interface-and-user-experience-testing (stating that "[t]he five most common synonyms for phrase patterns are present"). The entities in the dictionary database are organized in relation to other entities. "True Knowledge " (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160) at pp. 81-84, 87-88 and also https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/). Amazon Alexa further utilizes AmazonDB with Titan technology to provide a dictionary database containing entries having syntax usage data and entities that are organized in relation to other entities. *See* http://www.allthingsdistributed.com/2015/08/titan-graphdb-integration-in-dynamodb.html (stating that "we decided to use Titan, a distributed graph database engine optimized for creating and querying large graphs").

29. On information and belief, Amazon Alexa lexically processes the electronically encoded data to access the dictionary database. *See* above; *see also* ECIR 2010 (available at http://dces.essex.ac.uk/staff/udo/ecir2010/slides/ECIR_Industry_Day_2010_Overell.pdf) at p. 21.

30. On information and belief, Amazon Alexa provides a grammar specification. *See* https://developer.amazon.com/blogs/post/Tx2XUAQ741IYQI4/how-to-build-a-multi-language-alexa-skill.

31. On information and belief, Amazon Alexa 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, Amazon Alexa utilizes an algorithm based on relationships between database entries and synonyms to select and access database entries. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160; presenting information on Abraham Lincoln when asked "What or who is the president (head of a nation state) of the United States of America in the year

1863?") at p. 81; *see also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/ (providing an algorithm and example for selecting word sense numbers with reference to associated state representation data).

32. Because of Amazon'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

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

34. Defendant Amazon 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 Amazon's Alexa personal assistant software.

35. For example, on information and belief, Amazon Alexa 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. *See* https://developer.amazon.com/ public/solutions/alexa/alexa-voice-service/reference/ speechrecognizer (stating that "[a]ll captured audio sent to AVS should be encoded as: 16bit Linear PCM" etc.) and https://developer.amazon.com/public/solutions/alexa/alexa-voice-service/docs/avs-http2-requests (stating that "your client will communicate with the Alexa using HTTP/2 multipart encoded messages").

36. On information and belief, Amazon Alexa provides a dictionary database containing entries having syntax usage data. Amazon Alexa utilizes Evi technology which is based on True Knowledge technology. *See* https://www.evi.com/about/ (stating that "Evi was founded in August 2005, originally under the name "True Knowledge"" and "[i]n October 2012,

Evi was acquired by Amazon") . Alexa provides syntax usage data based on True Knowledge technology which provides a plurality of entities and relationships between entities. *See* "Building Sensor Networks" by Ioanis Nikolaidis, Krzysztof Iniewski (available at CRC Press; 1 edition, September 19, 2013, ISBN-13: 978-1466562721, ISBN-10: 1466562722) and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/alexa-skills-kit-voice-interface-and-user-experience-testing (stating that "[t]he five most common synonyms for phrase patterns are present"). The entities in the dictionary database are organized in relation to other entities. "True Knowledge " (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160) at pp. 81-84, 87-88 and also https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/). Amazon Alexa further utilizes AmazonDB with Titan technology to provide a dictionary database containing entries having syntax usage data and entities that are organized in relation to other entities. *See* http://www.allthingsdistributed.com/2015/08/titan-graphdb-integration-in-dynamodb.html (stating that "we decided to use Titan, a distributed graph database engine optimized for creating and querying large graphs").

37. On information and belief, Amazon Alexa provides syntax usage data. For example, Alexa provides syntax usage data based on True Knowledge technology which provides a plurality of entities associated with synonyms. *See* "Building Sensor Networks" by Ioanis Nikolaidis, Krzysztof Iniewski (available at CRC Press; 1 edition, September 19, 2013, ISBN-13: 978-1466562721, ISBN-10: 1466562722) and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/alexa-skills-kit-voice-interface-and-user-experience-testing (stating that "[t]he five most common synonyms for phrase patterns are present").

38. On information and belief, Amazon Alexa lexically processes the electronically encoded data to access the dictionary database. *See* above; *see also* ECIR 2010 (available at http://dces.essex.ac.uk/staff/udo/ecir2010/slides/ECIR_Industry_Day_2010_Overell.pdf) at p. 21.

39. On information and belief, Amazon Alexa provides a grammar specification. *See* https://developer.amazon.com/blogs/post/Tx2XUAQ741IYQI4/how-to-build-a-multi-language-alexa-skill.

40. On information and belief, Amazon Alexa 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 user requirements. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160; stating that "the query-processing engine has to find a value for the variable *a* that satisfies the other constraints etc.") at p. 83. *See also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/ (providing an algorithm and example for selecting word sense numbers with reference to requirements based on user queries). Furthermore, word sense numbers are selected according to an analysis of syntactic structure and application of syntactic rules. *See* https://www.slideshare.net/aniruddha.chakrabarti/amazon-alexa-building-custom-skills at slide 18.

41. On information and belief, Amazon Alexa 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. *See* https://www.slideshare.net/aniruddha.chakrabarti/amazon-alexa-building-custom-skills at slide 18. *See also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/ and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/speech-synthesis-markup-language-ssml-reference (presenting information on Alexa's text-to-speech output utilizing Speech Synthesis Markup Language).

42. Because of Amazon'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

43. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 42 as though fully set forth herein.

44. Defendant Amazon 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 Amazon's Alexa personal assistant software.

45. For example, on information and belief, Amazon Alexa 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, Amazon Alexa encodes natural language speech using one or more audio codecs. *See* https://developer.amazon.com/public/solutions/alexa/alexa-voice-service/reference/speechrecognizer (stating that "[a]ll captured audio sent to AVS should be encoded as: 16bit Linear PCM" etc.) and https://developer.amazon.com/public/solutions/alexa/alexa-voice-service/docs/avs-http2-requests (stating that "your client will communicate with the Alexa using HTTP/2 multipart encoded messages").

46. On information and belief, Amazon Alexa provides a dictionary database containing entries having syntax usage data. Amazon Alexa utilizes Evi technology which is based on True Knowledge technology. *See* https://www.evi.com/about/ (stating that "Evi was founded in August 2005, originally under the name "True Knowledge"" and "[i]n October 2012, Evi was acquired by Amazon") . Alexa provides syntax usage data based on True Knowledge technology which provides a plurality of entities and relationships between entities. *See*

"Building Sensor Networks" by Ioanis Nikolaidis, Krzysztof Iniewski (available at CRC Press; 1 edition, September 19, 2013, ISBN-13: 978-1466562721, ISBN-10: 1466562722) and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/alexa-skills-kit-voice-interface-and-user-experience-testing (stating that "[t]he five most common synonyms for phrase patterns are present"). The entities in the dictionary database are organized in relation to other entities. "True Knowledge " (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160) at pp. 81-84, 87-88 and also https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/).

47. On information and belief, Amazon Alexa provides syntax usage data. For example, Alexa provides syntax usage data based on True Knowledge technology which provides a plurality of entities and relationships between entities. *See* "Building Sensor Networks" by Ioanis Nikolaidis, Krzysztof Iniewski (available at CRC Press; 1 edition, September 19, 2013, ISBN-13: 978-1466562721, ISBN-10: 1466562722) and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/alexa-skills-kit-voice-interface-and-user-experience-testing (stating that "[t]he five most common synonyms for phrase patterns are present"). The entities in the dictionary database are organized in relation to other entities. "True Knowledge " (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160) at pp. 81-84, 87-88 and also https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/).

48. On information and belief, Amazon Alexa 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, Amazon Alexa encodes natural language speech using one or more audio codecs. *See* https://developer.amazon.com/public/solutions/alexa/alexa-voice-service/reference/speechrecognizer (stating that "[a]ll captured audio sent to AVS should be encoded as: 16bit Linear PCM" etc.) and https://developer.amazon.com/public/solutions/alexa/alexa-voice-

service/docs/avs-http2-requests (stating that "your client will communicate with the Alexa using HTTP/2 multipart encoded messages").

49. On information and belief, Amazon Alexa lexically processes the electronically encoded data to access the dictionary database. *See* above; *see also* ECIR 2010 (available at http://dces.essex.ac.uk/staff/udo/ecir2010/slides/ECIR_Industry_Day_2010_Overell.pdf) at p. 21.

50. On information and belief, Amazon Alexa provides a grammar specification. *See* https://developer.amazon.com/blogs/post/Tx2XUAQ741IYQI4/how-to-build-a-multi-language-alexa-skill.

51. On information and belief, Amazon Alexa provides a context database containing entries having word sense numbers. For example, Amazon Alexa provides database entities that are associated with query contexts, to present data to a user in a specific context. *See* https://www.amazon.com/gp/help/customer/display.html?nodeId=201602230 (processing queries about "the weather today" and "my shopping list"). *See also* http://time.com/4227833/amazon-echo-user-guide/ (providing an example of Amazon Alexa presenting data to a user based upon the context of the user's location).

52. On information and belief, Amazon Alexa 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, Amazon Alexa utilizes an algorithm based on relationships between database entries and synonyms with reference to the grammar specification and the context database to select and access database entries. *See* https://www.slideshare.net/aniruddha.chakrabarti/amazon-alexa-building-custom-skills at slide 18. *See also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/ (providing an algorithm and example for selecting word sense numbers with reference to requirements based on user queries).

53. Because of Amazon'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

54. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 53 as though fully set forth herein.

55. Defendant Amazon 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 Amazon's Alexa personal assistant software.

56. For example, on information and belief, Amazon Alexa provides an experience and knowledge 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. Amazon Alexa utilizes directed graphs having paths and conditions for accessing each path. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160), at pp. 81-84. *See also* http://www.allthingsdistributed.com/2015/08/titan-graphdb-integration-in-dynamodb.html and https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/. Amazon Alexa further includes associated word sense numbers having associated state representation data. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160), at p. 83 and *see also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/. Amazon Alexa is configured to run on a computer having memory for providing the foregoing described functionality.

57. On information and belief, Amazon Alexa utilizes a natural language processor. *See* https://www.amazon.com/Amazon-Echo-And-Alexa-Devices/b?ie=UTF8&node=9818047011. *See also* https://training.ti.com/sites/default/files/docs/Amazon-Echo-Systems-Alexa-Voice-Service.pdf at slide 10.

58. On information and belief, Amazon Alexa 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* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160), at pp. 81-84, and *see also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/. Amazon Alexa software is configured to run on a computer having memory for providing the foregoing described functionality.

59. On information and belief, Amazon Alexa provides criteria for selecting an experience and knowledge path using the previously identified directed graph. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160), at pp. 81-84, and *see also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/. Amazon Alexa software is configured to run on a computer having memory for providing the foregoing described functionality.

60. On information and belief, Amazon Alexa utilizes criteria to select one or more found paths using the previously identified directed graph. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160), at pp. 81-84, and *see also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/ (utilizing access criteria comprising "has('genreId', 'Pizzeria')") to select a path comprising the entity associated with "LittleCesarz"). Amazon Alexa software is configured to run on a computer having memory for providing the foregoing described functionality.

61. Because of Amazons' 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

62. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 61 as though fully set forth herein.

63. Defendant Amazon 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 Amazon's Alexa personal assistant software.

64. For example, on information and belief, Amazon Alexa utilizes a natural language processor to provide natural language with an associated clause implying word sense numbers. Amazon Alexa performs natural language processing using word sense numbers. Amazon Alexa utilizes Evi technology which is based on True Knowledge technology. *See* https://www.evi.com/about/ (stating that "Evi was founded in August 2005, originally under the name "True Knowledge"" and "[i]n October 2012, Evi was acquired by Amazon") . Amazon provides a database that comprises entities, relationships between entities, and multi-lingual and synonymous terms that represent the entities. The entities in Satori are organized in relation to other entities. *See* "Building Sensor Networks" by Ioanis Nikolaidis, Krzysztof Iniewski (available at CRC Press; 1 edition, September 19, 2013, ISBN-13: 978-1466562721, ISBN-10: 1466562722) and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/alexa-skills-kit-voice-interface-and-user-experience-testing (stating that "[t]he five most common synonyms for phrase patterns are present"). The entities in the dictionary database are organized in relation to other entities. "True Knowledge " (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160) at pp. 81-84, 87-88. *See also*

https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/. Amazon Alexa further utilizes AmazonDB with Titan technology to provide a dictionary database containing entries having syntax usage data and entities that are organized in relation to other entities via graphs. *See* http://www.allthingsdistributed.com/2015/08/titan-graphdb-integration-in-dynamodb.html (stating that "we decided to use Titan, a distributed graph database engine optimized for creating and querying large graphs") and *see also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/. Amazon Alexa further includes accessing associated word sense numbers having associated state representation data and which are utilized in traversing directed graphs. *See* http://www.allthingsdistributed.com/2015/08/titan-graphdb-integration-in-dynamodb.html (stating that "we decided to use Titan, a distributed graph database engine optimized for creating and querying large graphs") and *see also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/Amazon Alexa is configured to run on a computer having memory for providing the foregoing described functionality.

65. On information and belief, Amazon Alexa provides an experience and knowledge 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. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160), at pp. 81-84, and *see also* https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/. Amazon Alexa is configured to run on a computer having memory for providing the foregoing described functionality.

66. On information and belief, Amazon Alexa identifies zero or more paths from 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. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160), at pp. 81-84, and *see also*

https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/. Amazon Alexa is configured to run on a computer having memory for providing the foregoing described functionality.

67. Because of Amazon'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

68. Plaintiff repeats and re-alleges the allegations of paragraphs 1 through 67 as though fully set forth herein.

69. Defendant Amazon 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 Amazon's Alexa personal assistant software.

70. For example, on information and belief, Amazon Alexa 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, Amazon Alexa encodes natural language speech using one or more audio codecs. *See* https://developer.amazon.com/public/solutions/alexa/alexa-voice-service/reference/speechrecognizer (stating that "[a]ll captured audio sent to AVS should be encoded as: 16bit Linear PCM" etc.) and https://developer.amazon.com/public/solutions/alexa/alexa-voice-service/docs/avs-http2-requests (stating that "your client will communicate with the Alexa using HTTP/2 multipart encoded messages").

71. On information and belief, Amazon Alexa as installed in a computer system provides in the memory of the computer system a dictionary database containing entries having syntax usage data. For example, Amazon Alexa provides a dictionary database containing

entries having syntax usage data. Amazon Alexa utilizes Evi technology which is based on True Knowledge technology. *See* https://www.evi.com/about/ (stating that "Evi was founded in August 2005, originally under the name "True Knowledge"" and "[i]n October 2012, Evi was acquired by Amazon") . Alexa provides syntax usage data based on True Knowledge technology which provides a plurality of entities and relationships between entities. *See* "Building Sensor Networks" by Ioanis Nikolaidis, Krzysztof Iniewski (available at CRC Press; 1 edition, September 19, 2013, ISBN-13: 978-1466562721, ISBN-10: 1466562722) and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/alexa-skills-kit-voice-interface-and-user-experience-testing (stating that "[t]he five most common synonyms for phrase patterns are present"). The entities in the dictionary database are organized in relation to other entities. "True Knowledge " (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160) at pp. 81-84, 87-88 and also https://aws.amazon.com/blogs/big-data/building-a-graph-database-on-aws-using-amazon-dynamodb-and-titan/). Amazon Alexa further utilizes AmazonDB with Titan technology to provide a dictionary database containing entries having syntax usage data and entities that are organized in relation to other entities. *See* http://www.allthingsdistributed.com/2015/08/titan-graphdb-integration-in-dynamodb.html (stating that "we decided to use Titan, a distributed graph database engine optimized for creating and querying large graphs").

72. On information and belief, Amazon Alexa provides syntax usage data. *See* "Building Sensor Networks" by Ioanis Nikolaidis, Krzysztof Iniewski (available at CRC Press; 1 edition, September 19, 2013, ISBN-13: 978-1466562721, ISBN-10: 1466562722) and https://developer.amazon.com/public/solutions/alexa/alexa-skills-kit/docs/alexa-skills-kit-voice-interface-and-user-experience-testing (stating that "[t]he five most common synonyms for phrase patterns are present").

73. On information and belief, Amazon Alexa as installed in a computer system lexically processes the electronically encoded data to access the dictionary database. *See above*; *see also* https://www.amazon.com/gp/help/customer/display.html?nodeId=201602230.

74. On information and belief, Amazon Alexa as installed in a computer system provides a natural language plausibility and expectedness processor. For example, Amazon Alexa initiates access to the database by answering incorrectly spelled queries based on plausibility and expectedness. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160) at p. 91. Amazon Alexa provides an autopopulate functionality to fill in data based on plausibility and expectedness. *See* http://docs.aws.amazon.com/lex/latest/dg/lex-dg.pdf; at p. 9. Amazon Alexa further disambiguates the meaning of words, such as "today" and "my", based on plausibility and expectedness. *See* https://www.amazon.com/gp/help/customer/display.html?nodeId=201602230

75. On information and belief, Amazon Alexa 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. *See* "True Knowledge" (available at https://www.aaai.org/ojs/index.php/aimagazine/article/view/2298/2160) at pp. 81-83, and at p. 91. *See also* http://docs.aws.amazon.com/lex/latest/dg/lex-dg.pdf; at p. 9 and https://www.amazon.com/gp/help/customer/display.html?nodeId=201602230.

76. Because of Amazon'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 Amazon as follows:

A. finding that Amazon 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 Amazon's Alexa personal assistant software has infringed one or more claims of the Patents-in-Suit;

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

C. awarding Plaintiff damages to be paid by Amazon adequate to compensate Plaintiff for Amazon'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: June 6, 2017

STAMOULIS & WEINBLATT LLC

/s/ Stamatios Stamoulis

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