IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

PARUS HOLDINGS INC. **Plaintiff,** **v.** **AMAZON.COM, INC.** **Defendant.**	**Civil Action No. _____** **JURY TRIAL DEMANDED**

COMPLAINT

1. Plaintiff Parus Holdings Inc. ("Parus" or "Plaintiff") files this complaint for patent infringement against Defendant Amazon.com, Inc. ("Amazon" or "Defendant") for infringement of U.S. Patent No. 7,516,190 ("the '190 patent"), U.S. Patent No. 9,377,992 ("the '992 patent"), and U.S. Patent No. 10,320,981 ("the '981 patent") (collectively the "patents-in-suit"), pursuant to 35 U.S.C. § 271 (copies of the patents-in-suit are attached as Exhibits A, B, and C, respectively).

PARTIES

2. Plaintiff Parus Holdings Inc. is a Delaware corporation having its principal place of business at 3000 Lakeside Drive, Suite 110S, Bannockburn, IL 60015.

3. Defendant Amazon.com, Inc. is a company organized and existing under the laws of the State of Delaware with a principal place of business located at 410 Terry Avenue North, Seattle, Washington 98109-5210. Amazon may be served via its registered agent, Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19808.

4. The patents-in-suit are infringed by Amazon's Alexa devices and associated servers, including for example those identified in Section V and all structurally/functionally similar devices.

JURISDICTION AND VENUE

5. This is an action for patent infringement under the patent laws of the United States, 35 U.S.C. §271. This court has federal jurisdiction of such federal question claims pursuant to 28 U.S.C. §§1331 and 1338(a).

6. The Court has personal jurisdiction over Amazon consistent with the requirements of the Due Process Clause of the United States Constitution and the Delaware Long-Arm Statute. Amazon has regularly and systematically transacted business in Delaware, directly or through subsidiaries or intermediaries, and/or committed acts of patent infringement in Delaware as alleged more particularly below. Amazon has placed infringing products into the stream of commerce by shipping those products into Delaware or knowing that the products would be shipped into Delaware.

7. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391 and 1400(b) because, among other things, Amazon has transacted business in the District of Delaware and has committed acts of direct infringement in the District of Delaware.

BACKGROUND

8. Since its founding, Parus has offered a robust diversity of products and services to customers in a wide variety of markets. Parus' products and services have included audio and video conferencing, email management, voice messaging, polling and transcription, IM/presence, collaboration, softphone, and virtual assistant solutions and services. For example, ParusOne provides voice-response technology solutions for customers and other users to manage communication technology used for business from laptops, mobile phones, and home offices to answer calls, handle voice mails, faxes and emails, schedule meetings, and establish conference calls. ParusOffice enables small businesses to channel their various phone communications through one main number. ParusSpeak provides interactive voice response solutions for companies

that need business process automation, as well as automated name, address, and caller feedback capture. ParusMobile provides worldwide group messaging for direct selling organizations, mobile professionals, and small business customers. Parus' customers have included businesses in network marketing, manufacturing, financial services, retail, healthcare, customer care, and direct response industries. Parus has had dozens of customers in this judicial district.

9. Parus' systems have also received accolades from the industry, including some of the most preeminent awards in the CRM, call center, and teleservice fields. For example, ParusOne was named the 2007 Product of the Year by both Internet Telephony and from Unified Communications; Parus Marketing Campaign Manager was named the 2007 Product of the Year by Customer Interaction Solutions; and Webley MD Reminders was named the Product of the Year in both 2009 and 2010 by Customer Interaction Solutions.

THE ASSERTED PATENTS

10. On April 7, 2009, the United States Patent and Trademark Office issued U.S. Patent No. 7,516,190, the '190 patent, entitled "Personal Voice-Based Information Retrieval System," after full and fair examination. Plaintiff is the assignee of all rights, title, and interest in and to the '190 patent and possesses all rights of recovery under the '190 patent, including the right to recover damages for present, past, and future infringement. The '190 patent expired on May 10, 2022, but, pursuant to 35 U.S.C. § 286, Plaintiff is entitled to recover damages for any infringement by Amazon committed less than six years prior to the filing of this Complaint. A true and correct copy of the '190 patent is attached as Exhibit A. The '190 patent is valid and enforceable.

11. On June 28, 2016, the United States Patent and Trademark Office issued U.S. Patent No. 9,377,992, the '992 patent, entitled "Personal Voice-Based Information Retrieval System," after full and fair examination. Plaintiff is the assignee of all rights, title, and interest in and to the '992 patent and possesses all rights of recovery under the '992 patent, including the right to recover

damages for present, past, and future infringement. The '992 patent expired on November 16, 2022, but, pursuant to 35 U.S.C. § 286, Plaintiff is entitled to recover damages for any infringement by Amazon committed less than six years prior to the filing of this Complaint. A true and correct copy of the '992 patent is attached as Exhibit B. The '992 patent is valid and enforceable.

12. On June 11, 2019, the United States Patent and Trademark Office issued U.S. Patent No. 10,320,981, the '981 patent, entitled "Personal Voice-Based Information Retrieval System," after full and fair examination. Plaintiff is the assignee of all rights, title, and interest in and to the '981 patent and possesses all rights of recovery under the '981 patent, including the right to recover damages for present, past, and future infringement. The '981 patent expired on February 6, 2021, but, pursuant to 35 U.S.C. § 286, Plaintiff is entitled to recover damages for any infringement by Amazon committed less than six years prior to the filing of this Complaint. A true and correct copy of the '981 patent is attached as Exhibit C. The '981 patent is valid and enforceable.

CLAIMS FOR PATENT INFRINGEMENT

13. In the interest of providing detailed averments of infringement, Plaintiff has identified below at least one claim per patent-in-suit to demonstrate infringement by at least one product. However, the selection of claims and products below should not be considered limiting, and infringement by Amazon by way of additional claims of the patents-in-suit and additional products will be disclosed in compliance with the Court's rules related to infringement contentions and/or discovery. The allegations provided below are exemplary and without prejudice to Plaintiff's infringement contentions to be provided pursuant to the Court's scheduling order, local rules, and/or discovery procedures. Plaintiff's claim construction contentions regarding the meaning and scope of the claim terms will be provided under the Court's scheduling order, local rules, and/or discovery procedures. As detailed below, each element of at least one claim of each of the patents-in-suit is literally present in at least one accused product. To the extent that any

element is not literally present, each such element is present under the doctrine of equivalents. Plaintiff's analysis below should not be taken as an admission and/or contention that the preamble for any claim is or is not limiting. While publicly available information is cited below, Plaintiff may rely on other forms of evidence to show infringement.

14. The accused products include at least the following smart speaker products incorporating Amazon's Alexa from 2017 to the present, as well as products with reasonably similar functionality and all varieties of these products. Specific identification of the accused products will be provided in plaintiff's infringement contentions pursuant to the Court's scheduling order, local rules, and/or discovery procedures.

- Echo (all generations);
- Echo dot (all generations);
- Amazon Tap;
- Echo Look;
- Echo Show;
- Echo Spot;
- Echo Plus;
- Echo Flex; and
- Echo Auto.

15. Amazon has directly and indirectly infringed the patents-in-suit by having engaged in acts constituting infringement under 35 U.S.C. § 271(a), including but not necessarily limited to one or more of making, using, selling and offering to sell, in this district and elsewhere in the United States, and importing into and exporting from the United States, the accused products or components thereof.

16. Amazon has had knowledge of the patents-in-suit since prior to the date of this Complaint.

17. Amazon's acts of infringement have caused damage to Parus. Parus is entitled to recover from Amazon the damages sustained by Parus as a result of Amazon's wrongful acts in an amount subject to proof at trial.

COUNT ONE: PATENT INFRINGEMENT OF THE '190 PATENT

18. Parus incorporates by reference the preceding paragraphs as if fully stated herein.

19. Claim 1 of the '190 patent is reproduced below:

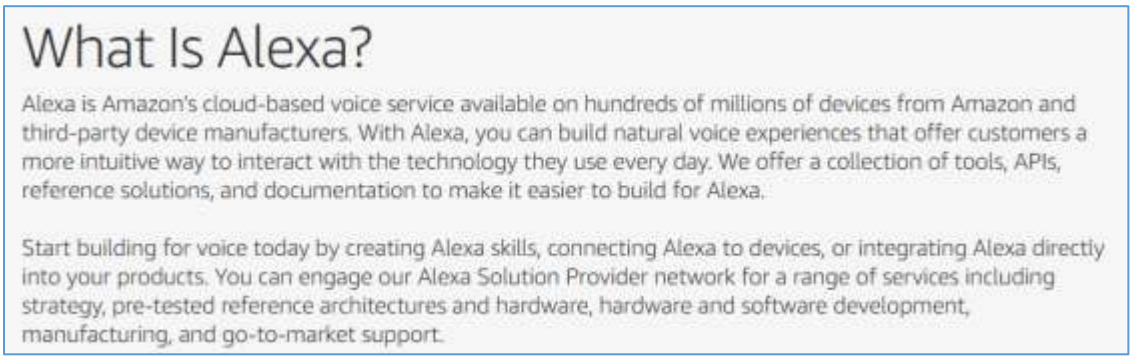
> 1. A method for allowing users to use speech commands to obtain information from a pre-defined portion of a pre-selected web site in audio format, said method comprising the steps of:
>
> (a) providing a computer having a speech processor, said computer being operatively connected to the internet and to at least one phone;
>
> (b) providing a URL to said computer, said URL indicating a pre-selected web site from which the information is to be retrieved;
>
> (c) using said computer to designate a pre-defined portion of the pre-selected web site which contains the information to be retrieved;
>
> (d) using said computer to identify a named object associated with the content of the information to be retrieved;
>
> (e) using said computer to generate a regular expression based on said pre-defined portion of said pre-selected web site and said named object, said regular expression corresponding to said content of said information to be retrieved, wherein said regular expression is a text string used for describing a search pattern;
>
> (f) providing a speech command to said speech processor, said speech command corresponding to said regular expression;
>
> (g) said speech processor converting said speech command to a digital-form command;
>
> (h) said computer receiving said digital-form command from said speech processor, said computer assigning said regular expression to said digital-form command;

> (i) after steps (a) through (h) are completed, transmitting an audio speech command to said speech processor, said speech command corresponding to said regular expression;
>
> (j) said speech processor converting said speech command to said digital-form command;
>
> (k) said computer receiving said digital-form command from said speech processor;
>
> (l) said computer retrieving said regular expression corresponding to said digital-form command;
>
> (m) said computer retrieving the information from the pre-defined portion of the pre-selected web site corresponding to said regular expression when the requested information is found in the pre-defined portion of the pre-selected website;
>
> (n) said computer searching said pre-selected web site for said named object when the requested information is not found in the pre-defined portion of the pre-selected web site;
>
> (o) said computer providing said retrieved information to said speech processor;
>
> (p) said speech processor converting said retrieved information into an audio message; and
>
> (q) said speech processor forwarding said audio message to a user.

20. Using its accused products, Amazon performed a method for allowing users to use speech commands to obtain information from a pre-defined portion of a pre-selected web site in audio format as specified by claim 1. Amazon accused products used to infringe claim 1 (and/or any other claims in the patent) are herein collectively the "'190 accused products." In the following, infringement by way of an Amazon Echo device is illustrated to provide non-limiting examples of Amazon's infringement of the '190 patent.

21. The '190 patent claim 1 begins, "A method for allowing users to use speech commands to obtain information from a pre-defined portion of a pre-selected web site in audio format, said method comprising the steps of." As non-limiting examples, Amazon performed this method using Amazon Echo smart speaker devices.

22. The Amazon Alexa system included the Alexa cloud based service and at least one Alexa compatible remote device such as the Amazon Echo smart speaker. The Amazon Alexa system performed a method for allowing users to use speech commands to obtain information from a pre-defined portion of a pre-selected web site in audio format.

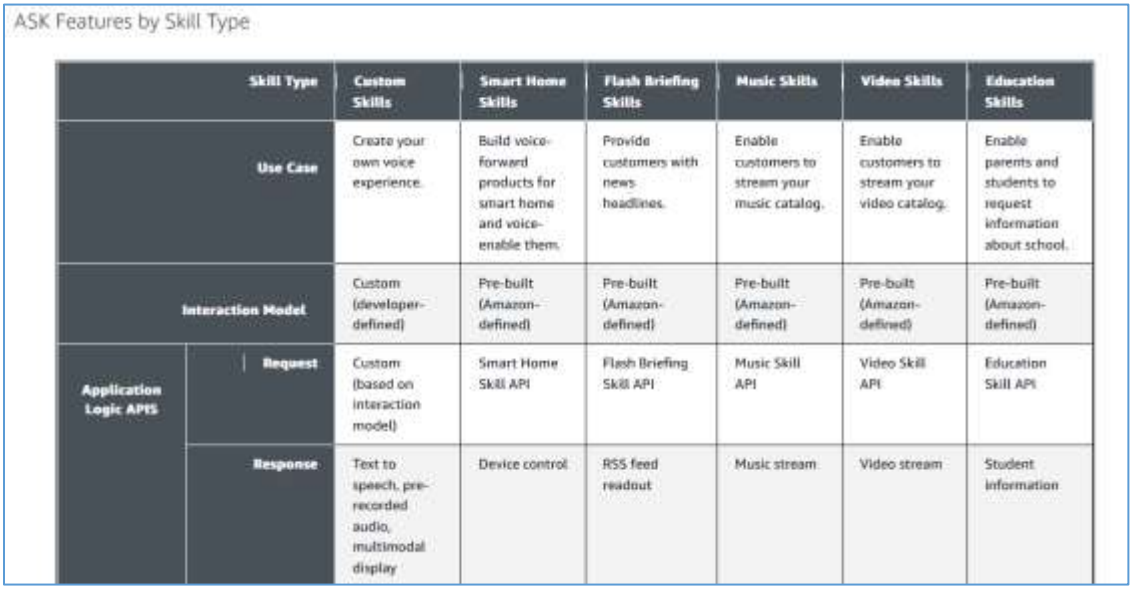


What Is Alexa?

Alexa is Amazon's cloud-based voice service available on hundreds of millions of devices from Amazon and third-party device manufacturers. With Alexa, you can build natural voice experiences that offer customers a more intuitive way to interact with the technology they use every day. We offer a collection of tools, APIs, reference solutions, and documentation to make it easier to build for Alexa.

Start building for voice today by creating Alexa skills, connecting Alexa to devices, or integrating Alexa directly into your products. You can engage our Alexa Solution Provider network for a range of services including strategy, pre-tested reference architectures and hardware, hardware and software development, manufacturing, and go-to-market support.

https://web.archive.org/web/20201111235237/https://developer.amazon.com/en-US/alexa (Internet archive, Sep. 2019).



ASK Features by Skill Type

Skill Type		Custom Skills	Smart Home Skills	Flash Briefing Skills	Music Skills	Video Skills	Education Skills
Use Case		Create your own voice experience.	Build voice-forward products for smart home and voice-enable them.	Provide customers with news headlines.	Enable customers to stream your music catalog.	Enable customers to stream your video catalog.	Enable parents and students to request information about school.
Interaction Model		Custom (developer-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)
Application Logic APIs	Request	Custom (based on interaction model)	Smart Home Skill API	Flash Briefing Skill API	Music Skill API	Video Skill API	Education Skill API
	Response	Text to speech, pre-recorded audio, multimodal display	Device control	RSS feed readout	Music stream	Video stream	Student information

https://web.archive.org/web/20200817142721/https://developer.amazon.com/en-US/alexa/alexa-skills-kit/get-deeper (Internet archive, Mar. 2020)

What is Amazon Echo?

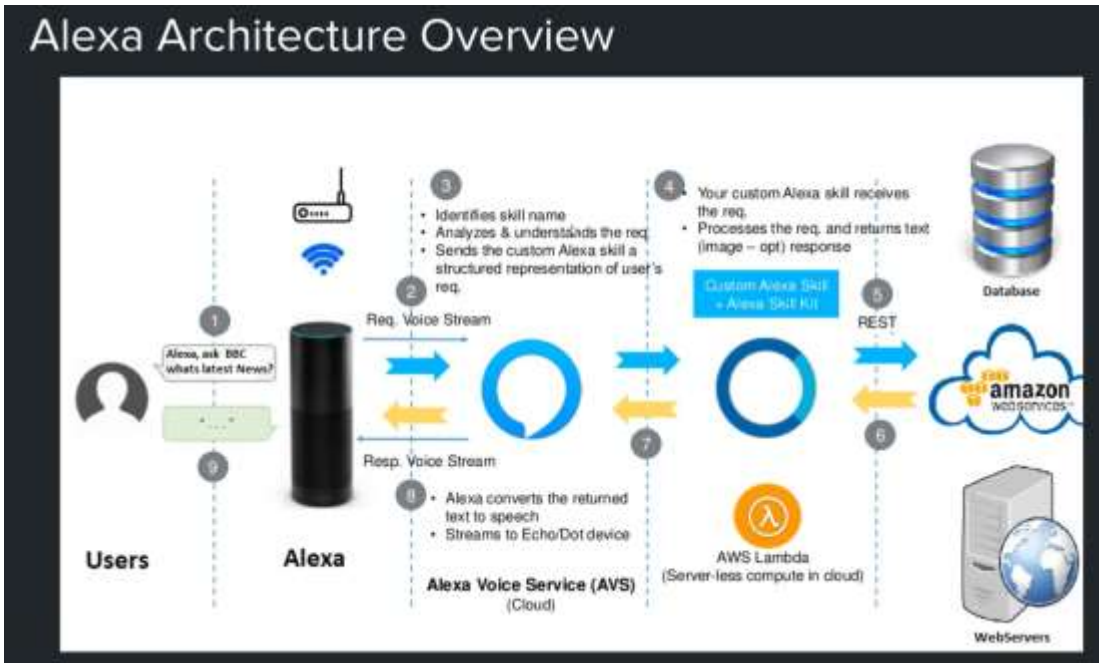
Amazon Echo is designed around your voice. It's hands-free and always on. With seven microphones and beam forming technology, Echo can hear you from across the room—even while music is playing. Echo is also an expertly tuned speaker that can fill any room with immersive sound.

Echo connects to Alexa, a cloud-based voice service, to provide information, answer questions, play music, read the news, check sports scores or the weather, and more—instantly. All you have to do is ask. Echo begins working as soon as it detects the wake word. You can pick Alexa or Amazon as your wake word.

...and adding new skills

We are always adding new capabilities to Echo. Recently, we've added local search from Yelp, streaming music from Pandora, audiobooks from Audible, Google Calendar access, live sports scores and schedules, traffic reports, Amazon.com re-ordering, control of smart home devices with WeMo, Philips Hue, SmartThings, Insteon, Wink, and more.

https://web.archive.org/web/20160131082954/http://www.amazon.com/Amazon-SK705DI-Echo/dp/B00X4WHP5E (Internet archive, Jun. 2015)



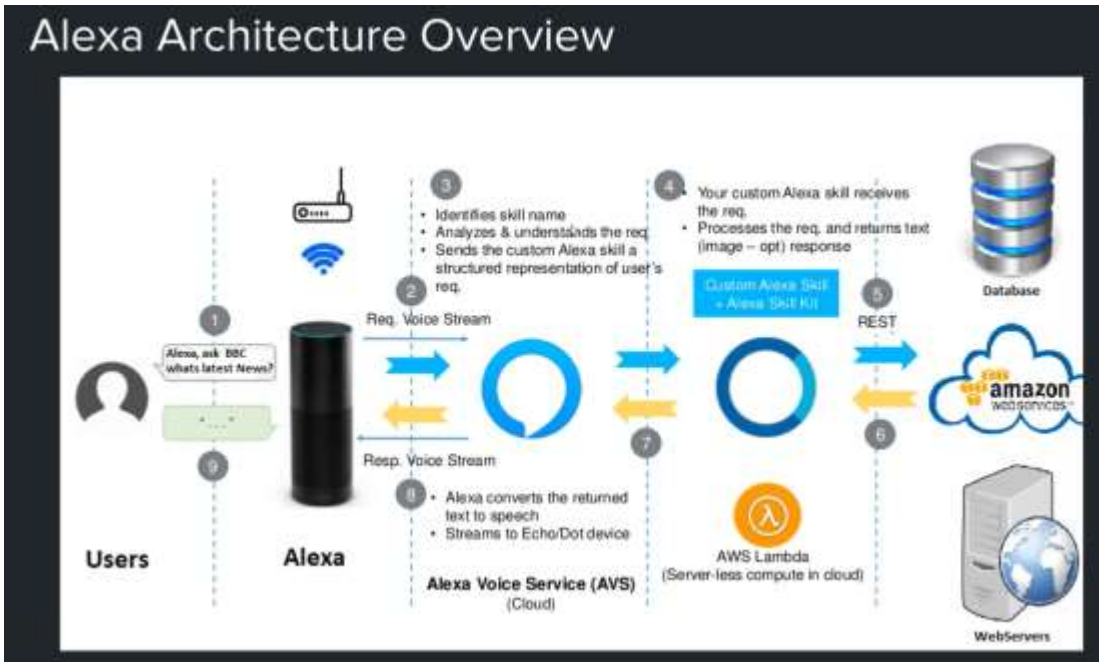
Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo

23. The '190 patent claim 1 further recites, in subsection (a), "(a) providing a computer having a speech processor, said computer being operatively connected to the internet and to at least one phone." As non-limiting examples, Amazon provided a computer having a speech processor,

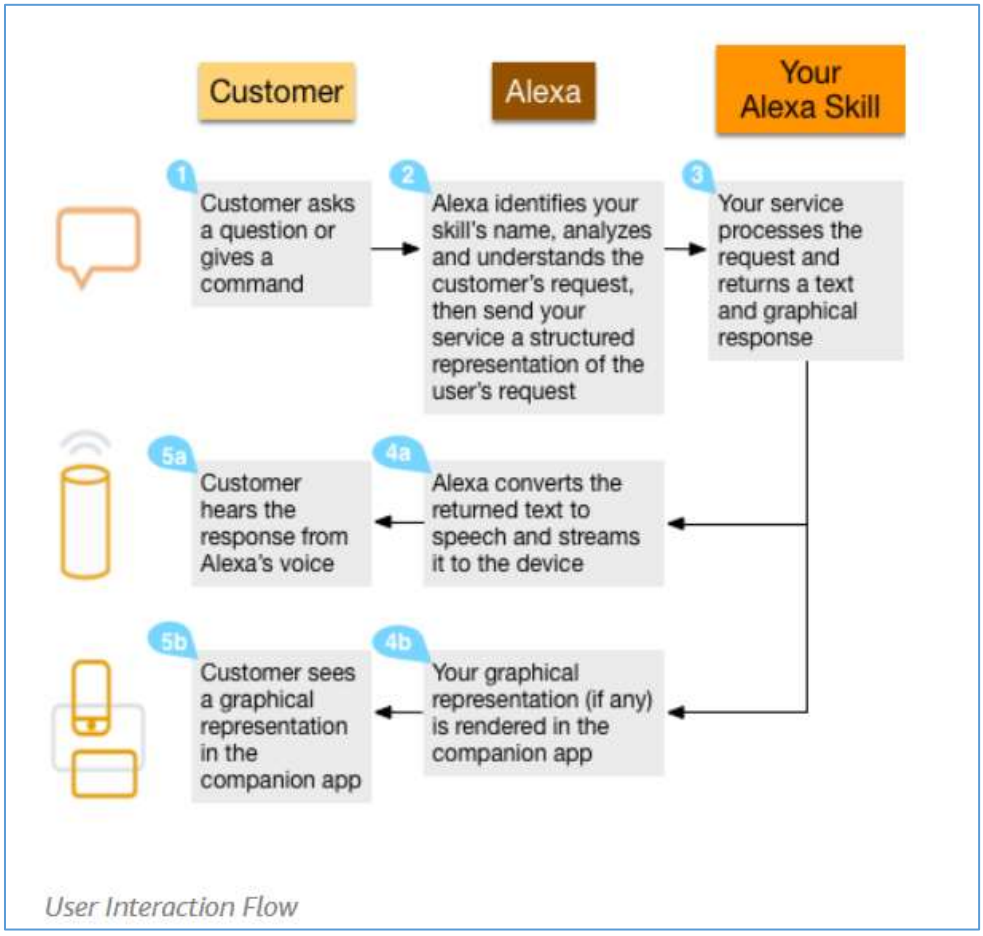
said computer being operatively connected to the internet and to at least one phone that operated with the Alexa Echo smart speakers.

24. For example, as shown below, the Amazon Alexa system included a computer having a speech processor in the form of the Alexa Voice Service. The Amazon Alexa system was also accessible by a phone application.

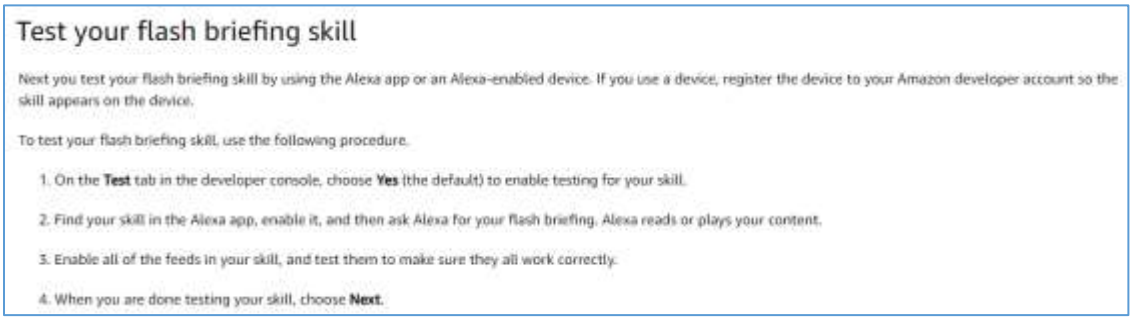
https://web.archive.org/web/20160131082954/http://www.amazon.com/Amazon-SK705DI-Echo/dp/B00X4WHP5E (Internet archive, Jun. 2015)



Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo



https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)



Test your flash briefing skill

Next you test your flash briefing skill by using the Alexa app or an Alexa-enabled device. If you use a device, register the device to your Amazon developer account so the skill appears on the device.

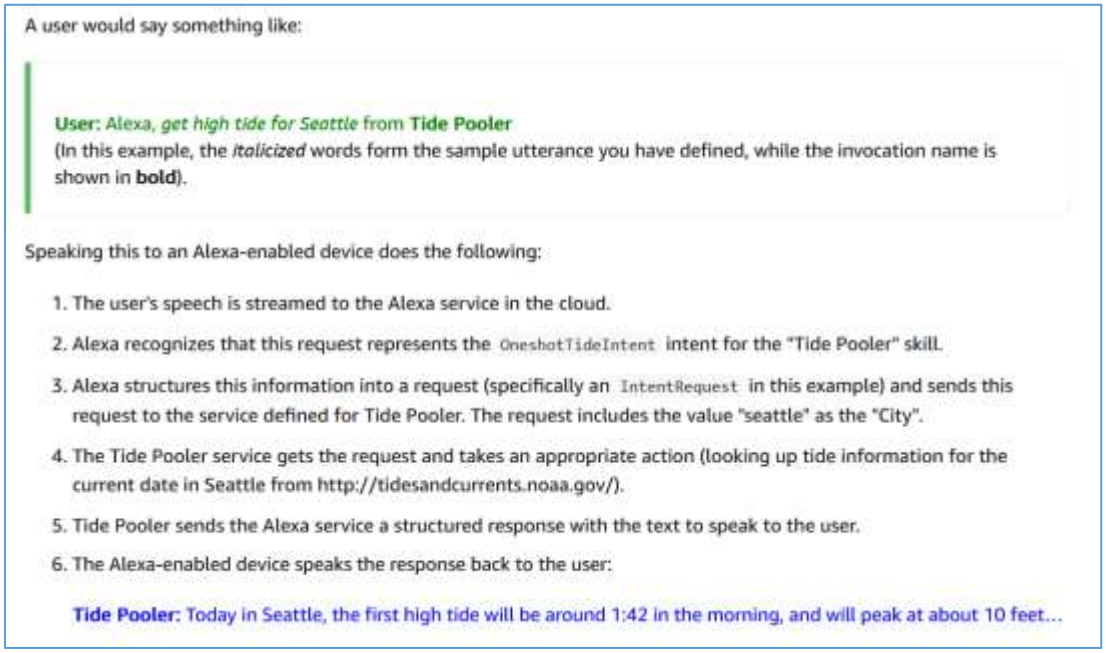
To test your flash briefing skill, use the following procedure.

1. On the **Test** tab in the developer console, choose **Yes** (the default) to enable testing for your skill.
2. Find your skill in the Alexa app, enable it, and then ask Alexa for your flash briefing. Alexa reads or plays your content.
3. Enable all of the feeds in your skill, and test them to make sure they all work correctly.
4. When you are done testing your skill, choose **Next**.

https://web.archive.org/web/20201030024213/https://developer.amazon.com/en-US/docs/alexa/flashbriefing/steps-to-create-a-flash-briefing-skill.html (Internet archive Nov. 2020)

25. The '190 patent claim 1 further recites, in subsection (b), "(b) providing a URL to said computer, said URL indicating a pre-selected web site from which the information is to be retrieved." As non-limiting examples, Amazon provided a URL to the computer described above, said URL indicating a pre-selected web site from which the information is to be retrieved.

26. For example, a skill developer provided a URL to the Amazon Alexa system that indicated a pre-selected web site where information was be retrieved. For example, the Tide Pool skill retrieved a portion of the information from the web site at the URL http://tidesandcurrents.noaa.gov/. Amazon similarly acted as a skill developer for its own Amazon-created skills.



A user would say something like:

User: Alexa, *get high tide for Seattle* from **Tide Pooler**
(In this example, the *italicized* words form the sample utterance you have defined, while the invocation name is shown in **bold**).

Speaking this to an Alexa-enabled device does the following:

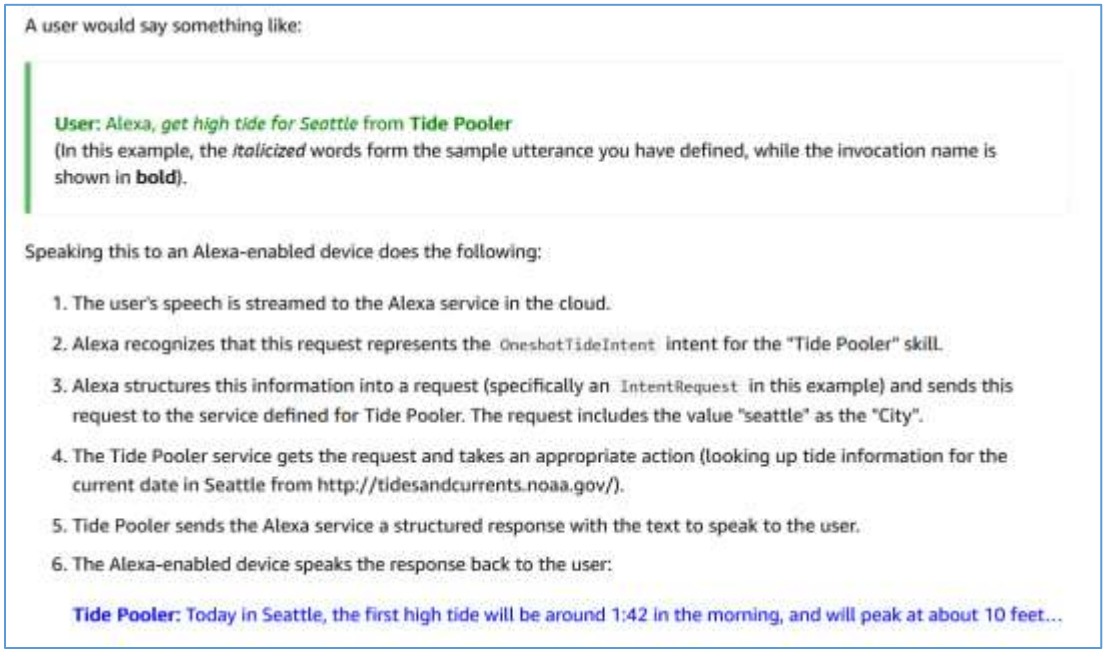
1. The user's speech is streamed to the Alexa service in the cloud.
2. Alexa recognizes that this request represents the `OneshotTideIntent` intent for the "Tide Pooler" skill.
3. Alexa structures this information into a request (specifically an `IntentRequest` in this example) and sends this request to the service defined for Tide Pooler. The request includes the value "seattle" as the "City".
4. The Tide Pooler service gets the request and takes an appropriate action (looking up tide information for the current date in Seattle from http://tidesandcurrents.noaa.gov/).
5. Tide Pooler sends the Alexa service a structured response with the text to speak to the user.
6. The Alexa-enabled device speaks the response back to the user:

Tide Pooler: Today in Seattle, the first high tide will be around 1:42 in the morning, and will peak at about 10 feet...

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

27. The '190 patent claim 1 further recites, in subsection (c), "(c) using said computer to designate a pre-defined portion of the pre-selected web site which contains the information to be retrieved." As non-limiting examples, Amazon used the computer described above to designate a pre-defined portion of the pre-selected web site which contains the information to be retrieved.

28. For example, a skill developer provided code/instructions to the Amazon Alexa system that designated a pre-defined portion of the pre-selected web site which contained the information to be retrieved. The Tide Pool skill accesses a portion of the web site at http://tidesandcurrents.noaa.gov/. Amazon similarly acted as a skill developer for its own Amazon-created skills.



A user would say something like:

> **User:** *Alexa, get high tide for Seattle* from **Tide Pooler**
> (In this example, the *italicized* words form the sample utterance you have defined, while the invocation name is shown in **bold**).

Speaking this to an Alexa-enabled device does the following:

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3. Alexa structures this information into a request (specifically an `IntentRequest` in this example) and sends this request to the service defined for Tide Pooler. The request includes the value "seattle" as the "City".
4. The Tide Pooler service gets the request and takes an appropriate action (looking up tide information for the current date in Seattle from http://tidesandcurrents.noaa.gov/).
5. Tide Pooler sends the Alexa service a structured response with the text to speak to the user.
6. The Alexa-enabled device speaks the response back to the user:

   Tide Pooler: Today in Seattle, the first high tide will be around 1:42 in the morning, and will peak at about 10 feet...

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

29. The ’190 patent claim 1 further recites, in subsection (d), “(d) using said computer to identify a named object associated with the content of the information to be retrieved.” As non-limiting examples, Amazon used the computer described above to identify a named object associated with the content of the information to be retrieved.

30. On information and belief, a skill developer (such as the Tide Pool skill developer) provided code/instructions to the Amazon Alexa system that identified a named object associated with the content of the information to be retrieved. Amazon similarly acted as a skill developer for its own Amazon-created skills.

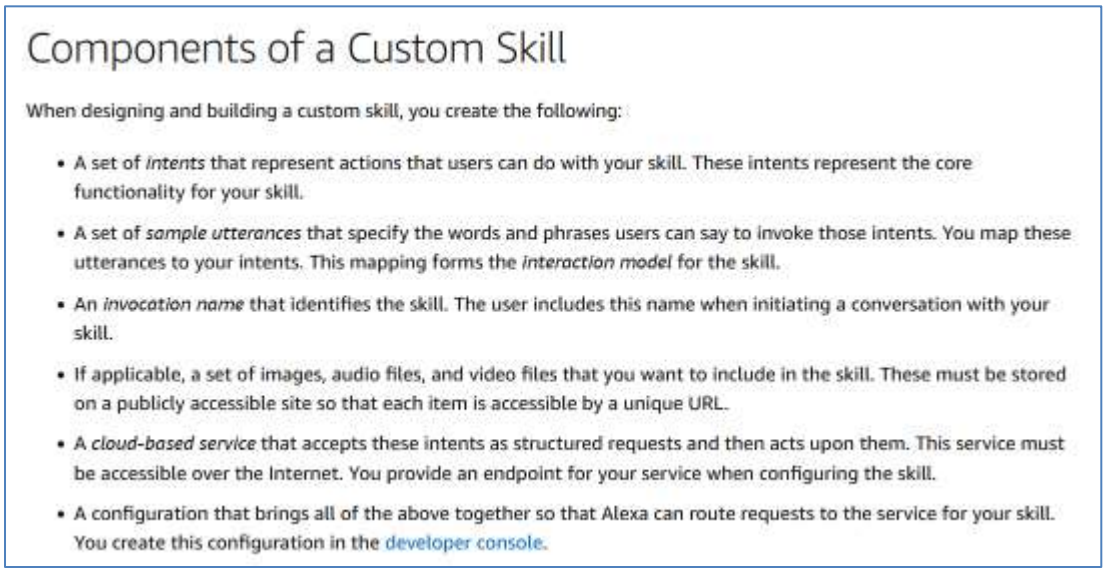
31. The ’190 patent claim 1 further recites, in subsection (e), “(e) using said computer to generate a regular expression based on said pre-defined portion of said pre-selected web site and said named object, said regular expression corresponding to said content of said information to be retrieved, wherein said regular expression is a text string used for describing a search pattern.” As non-limiting examples, Amazon used the computer described above to generate a regular expression based on said pre-defined portion of said pre-selected web site and said named object,

said regular expression corresponding to said content of said information to be retrieved, wherein said regular expression is a text string used for describing a search pattern.

32. On information and belief, a skill developer, such as at Amazon, provided code/instructions to the Amazon Alexa system that generated and used a regular expression associated with the content of the information to be retrieved.

33. The '190 patent claim 1 further recites, in subsection (f), "(f) providing a speech command to said speech processor, said speech command corresponding to said regular expression." As non-limiting examples, Amazon provided a speech command to said speech processor, said speech command corresponding to said regular expression.

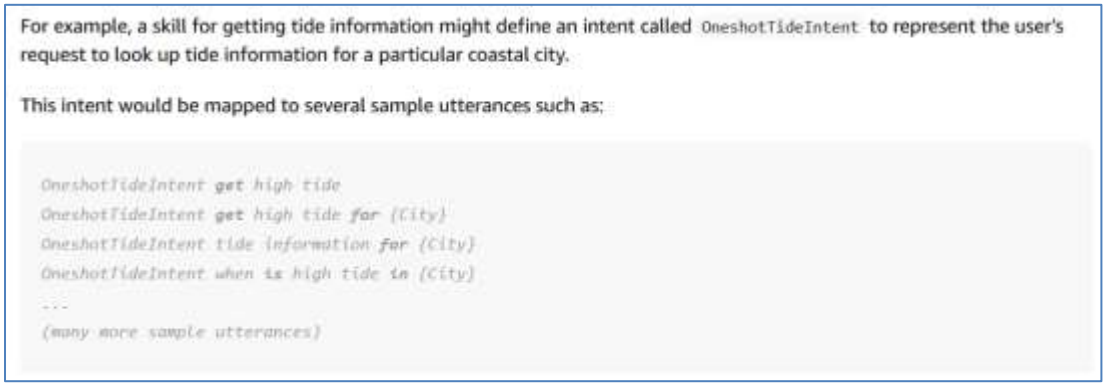
34. For example, a skill developer at Amazon provided sample utterances. On information and belief, the sample utterances corresponded to said regular expression.



Components of a Custom Skill

When designing and building a custom skill, you create the following:

- A set of *intents* that represent actions that users can do with your skill. These intents represent the core functionality for your skill.
- A set of *sample utterances* that specify the words and phrases users can say to invoke those intents. You map these utterances to your intents. This mapping forms the *interaction model* for the skill.
- An *invocation name* that identifies the skill. The user includes this name when initiating a conversation with your skill.
- If applicable, a set of images, audio files, and video files that you want to include in the skill. These must be stored on a publicly accessible site so that each item is accessible by a unique URL.
- A *cloud-based service* that accepts these intents as structured requests and then acts upon them. This service must be accessible over the Internet. You provide an endpoint for your service when configuring the skill.
- A configuration that brings all of the above together so that Alexa can route requests to the service for your skill. You create this configuration in the developer console.



For example, a skill for getting tide information might define an intent called `OneshotTideIntent` to represent the user's request to look up tide information for a particular coastal city.

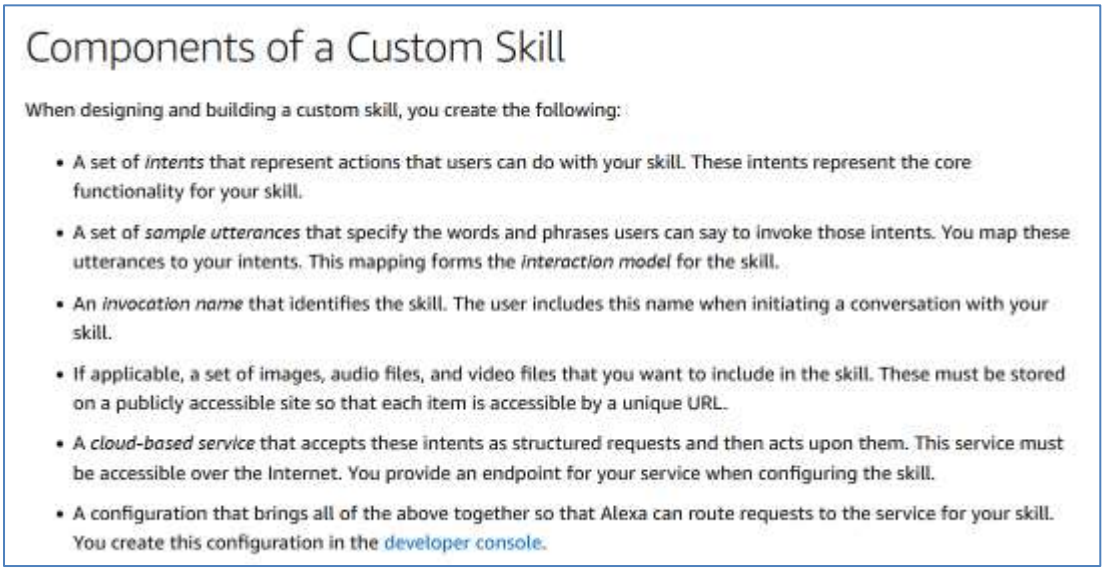
This intent would be mapped to several sample utterances such as:

```
OneshotTideIntent get high tide
OneshotTideIntent get high tide for {City}
OneshotTideIntent tide information for {City}
OneshotTideIntent when is high tide in {City}
...
(many more sample utterances)
```

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

35. The '190 patent claim 1 further recites, in subsection (g), "(g) said speech processor converting said speech command to a digital-form command." As non-limiting examples, Amazon's speech processor converted said speech command to a digital-form command.

36. For example, a skill developer provided intents as a digital-form command.



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- If applicable, a set of images, audio files, and video files that you want to include in the skill. These must be stored on a publicly accessible site so that each item is accessible by a unique URL.
- A *cloud-based service* that accepts these intents as structured requests and then acts upon them. This service must be accessible over the Internet. You provide an endpoint for your service when configuring the skill.
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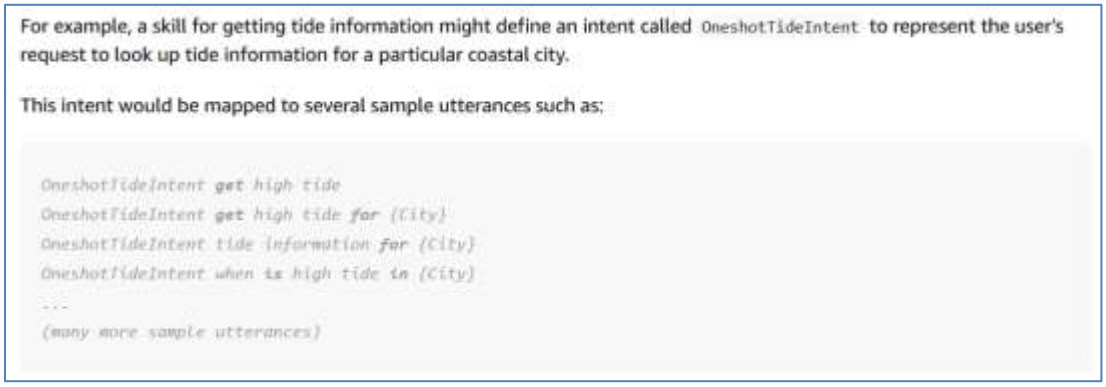

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```
OneshotTideIntent get high tide
OneshotTideIntent get high tide for {City}
OneshotTideIntent tide information for {City}
OneshotTideIntent when is high tide in {City}
...
(many more sample utterances)
```

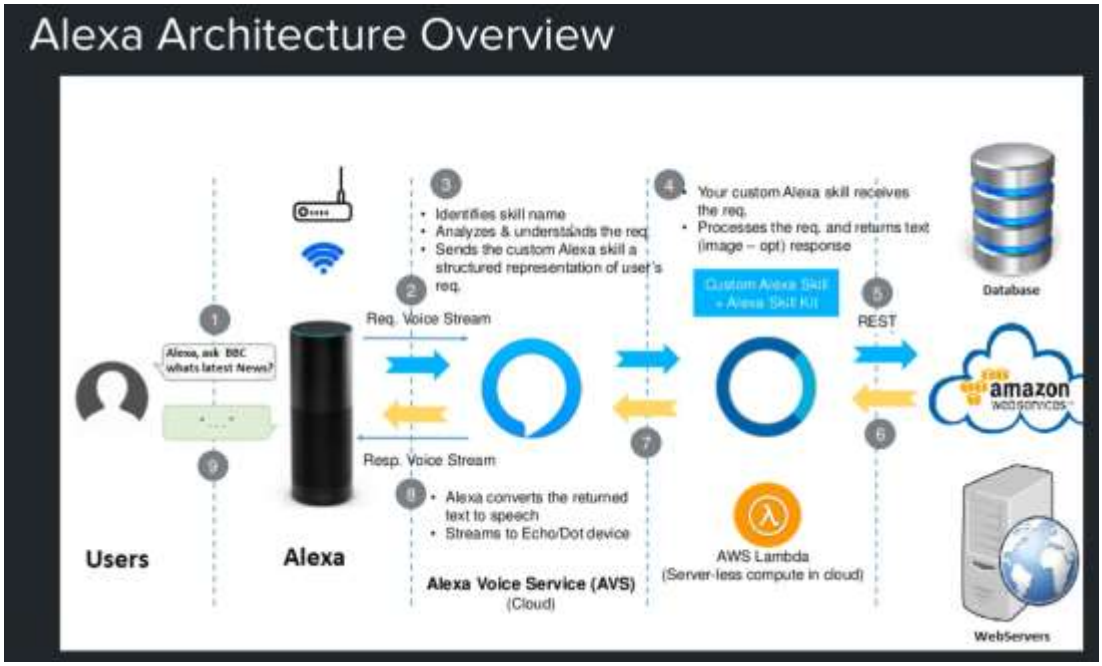
https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

37. The '190 patent claim 1 further recites, in subsection (h), "(h) said computer receiving said digital-form command from said speech processor, said computer assigning said regular expression to said digital-form command." As non-limiting examples, Amazon's computer received said digital-form command from said speech processor, and said computer assigned said regular expression to said digital-form command.

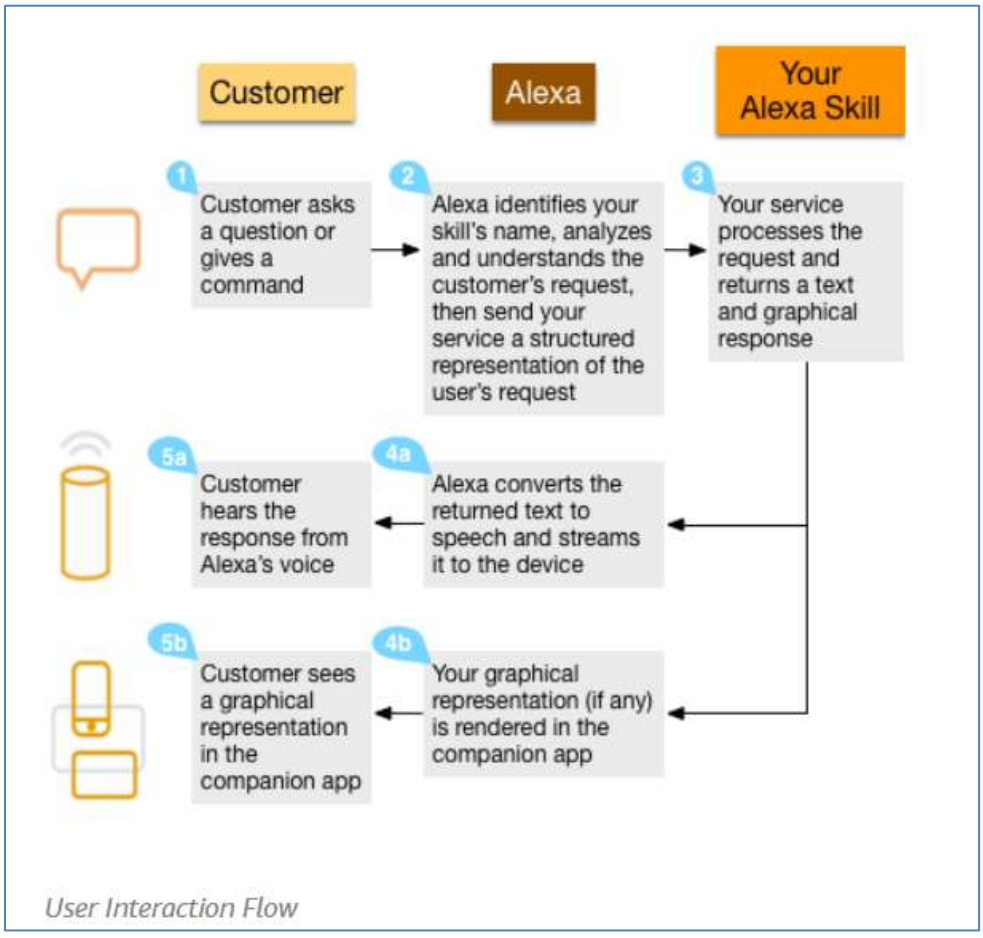
38. On information and belief, Amazon assigned the Amazon Alexa regular expression to a digital form command.

39. The '190 patent claim 1 further recites, in subsection (i), "(i) after steps (a) through (h) are completed, transmitting an audio speech command to said speech processor, said speech command corresponding to said regular expression." As non-limiting examples, Amazon, after having completed steps (a) through (h), transmitted an audio speech command to said speech processor, said speech command corresponding to said regular expression.

40. On information and belief, an Amazon Alexa speech command corresponded to said regular expression. For example, the user request (speech command) was transmitted to the Alexa system AVS.



Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo



https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

Conduct a Conversation with the User

A custom skill typically gets a question or other information from the user and then replies with an answer or some action, such as ordering a car or a pizza. Users can invoke your skill by using your invocation name in combination with sample utterances and phrases defined by Alexa:

- **Alexa**, *Get high tide for seattle* **from** Tide Pooler
- **Alexa**, **Ask** Recipes *how do I make an omelet?*
- **Alexa**, **Ask** Daily Horoscopes **about** *Taurus*
- **Alexa**, *Give ten points to Stephen* **using** Score Keeper

Users can also start interacting with a skill without providing any specific question or request:

- **Alexa**, **Open** Tide Pooler
- **Alexa**, **Talk** to Recipes
- **Alexa**, **Play** Trivia Master
- **Alexa**, **Start** Score Keeper

Users may use this option if they don't know or can't remember the exact request they want to make. In this case, the skill normally returns a welcome message that provides users brief help on how to use the skill.

In the above examples, the **bolded** words are defined by the Alexa service, while the italicized words are sample utterances defined for the skill.

If your skill needs more information to complete a request, you can have a back-and-forth conversation with the user:

User: Alexa, get high tide from Tide Pooler *(Although 'get high tide' maps to the* `OneShotTideIntent`*, the user didn't specify the city. Tide Pooler needs to collect this information to continue.)*
Tide Pooler: Tide information for what city? *(Alexa is now listening for the user's response. For a device with a light ring, like an Amazon Echo, the device lights up to give a visual cue)*
User: Seattle
Tide Pooler: Today in Seattle, the first high tide will be at...
Interaction ends.

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

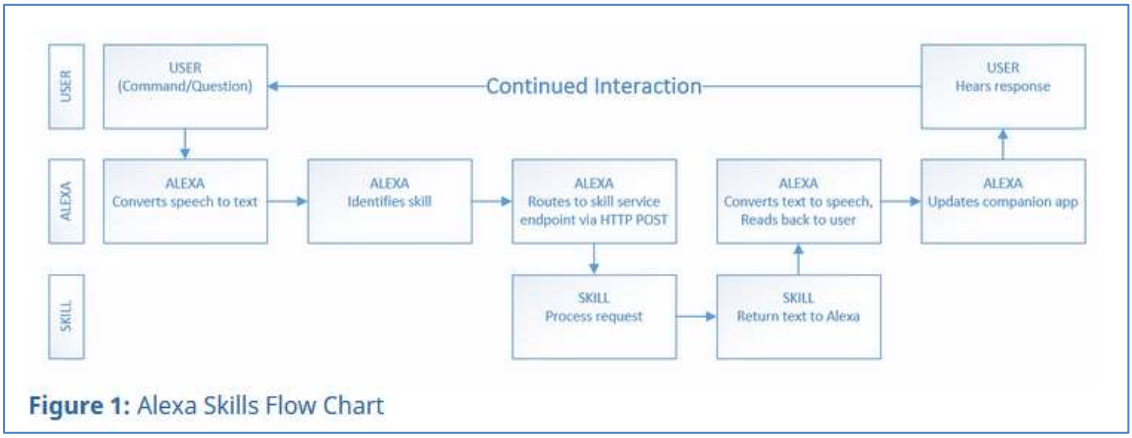


Figure 1: Alexa Skills Flow Chart

https://www.codemag.com/article/1805081/Building-an-Alexa-Skill-with-AWS-Lambda

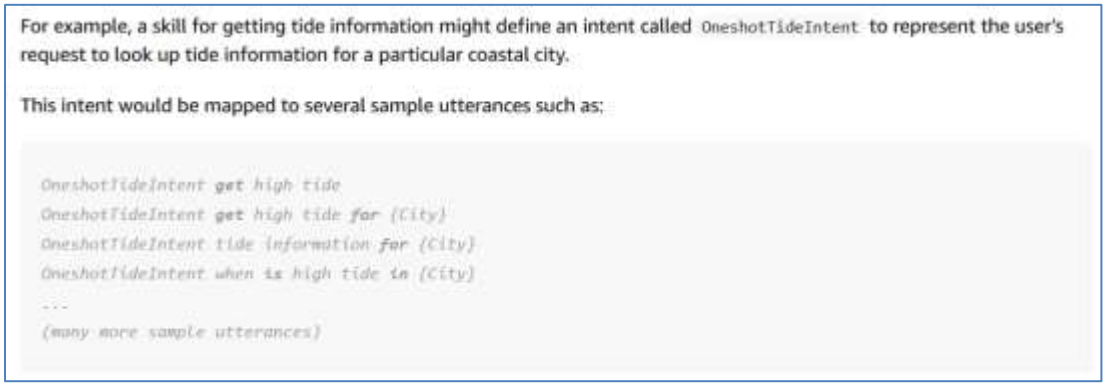
41. The '190 patent claim 1 further recites, in subsection (j), "(j) said speech processor converting said speech command to said digital-form command." As non-limiting examples, Amazon's speech processor converted said speech command to said digital-form command.

42. For example, the Amazon intents were a digital-form command.

Components of a Custom Skill

When designing and building a custom skill, you create the following:

- A set of *intents* that represent actions that users can do with your skill. These intents represent the core functionality for your skill.
- A set of *sample utterances* that specify the words and phrases users can say to invoke those intents. You map these utterances to your intents. This mapping forms the *interaction model* for the skill.
- An *invocation name* that identifies the skill. The user includes this name when initiating a conversation with your skill.
- If applicable, a set of images, audio files, and video files that you want to include in the skill. These must be stored on a publicly accessible site so that each item is accessible by a unique URL.
- A *cloud-based service* that accepts these intents as structured requests and then acts upon them. This service must be accessible over the Internet. You provide an endpoint for your service when configuring the skill.
- A configuration that brings all of the above together so that Alexa can route requests to the service for your skill. You create this configuration in the developer console.



For example, a skill for getting tide information might define an intent called `OneshotTideIntent` to represent the user's request to look up tide information for a particular coastal city.

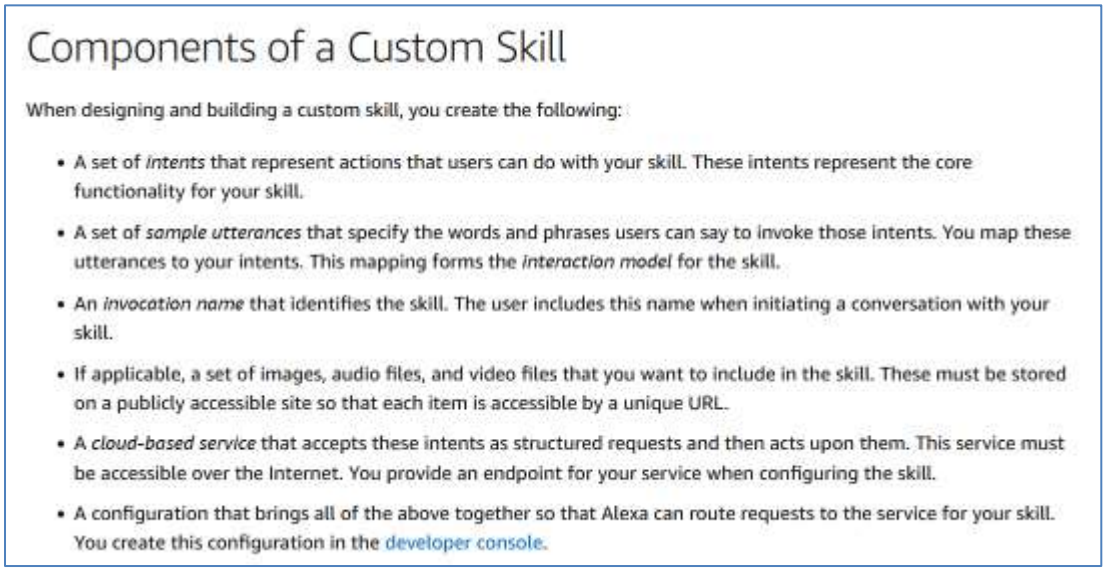
This intent would be mapped to several sample utterances such as:

```
OneshotTideIntent get high tide
OneshotTideIntent get high tide for {City}
OneshotTideIntent tide information for {City}
OneshotTideIntent when is high tide in {City}
...
(many more sample utterances)
```

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

43. The '190 patent claim 1 further recites, in subsection (k), "(k) said computer receiving said digital-form command from said speech processor." As non-limiting examples, Amazon's computer received said digital-form command from said speech processor.

44. For example, the Amazon intents were a digital-form command.



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- A set of *sample utterances* that specify the words and phrases users can say to invoke those intents. You map these utterances to your intents. This mapping forms the *interaction model* for the skill.
- An *invocation name* that identifies the skill. The user includes this name when initiating a conversation with your skill.
- If applicable, a set of images, audio files, and video files that you want to include in the skill. These must be stored on a publicly accessible site so that each item is accessible by a unique URL.
- A *cloud-based service* that accepts these intents as structured requests and then acts upon them. This service must be accessible over the Internet. You provide an endpoint for your service when configuring the skill.
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This intent would be mapped to several sample utterances such as:

```
OneshotTideIntent get high tide
OneshotTideIntent get high tide for {City}
OneshotTideIntent tide information for {City}
OneshotTideIntent when is high tide in {City}
...
{many more sample utterances}
```

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

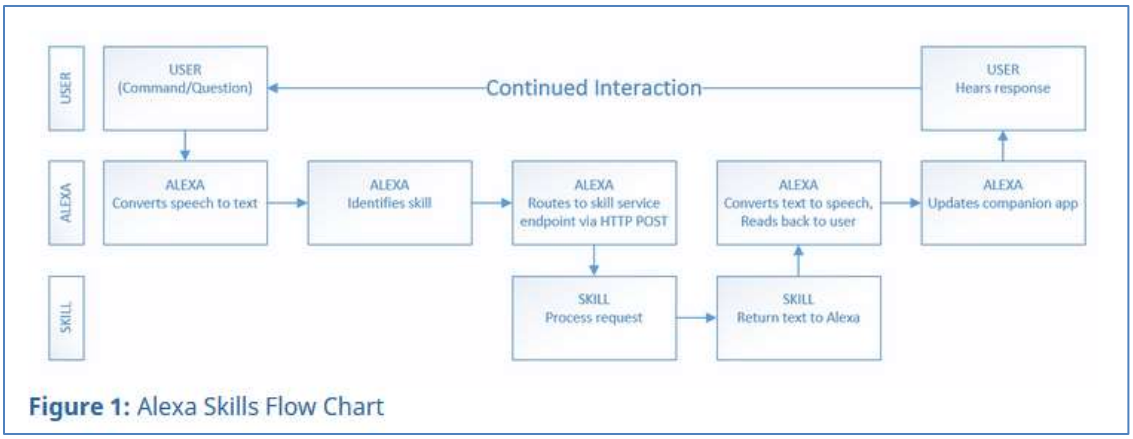


Figure 1: Alexa Skills Flow Chart

https://www.codemag.com/article/1805081/Building-an-Alexa-Skill-with-AWS-Lambda

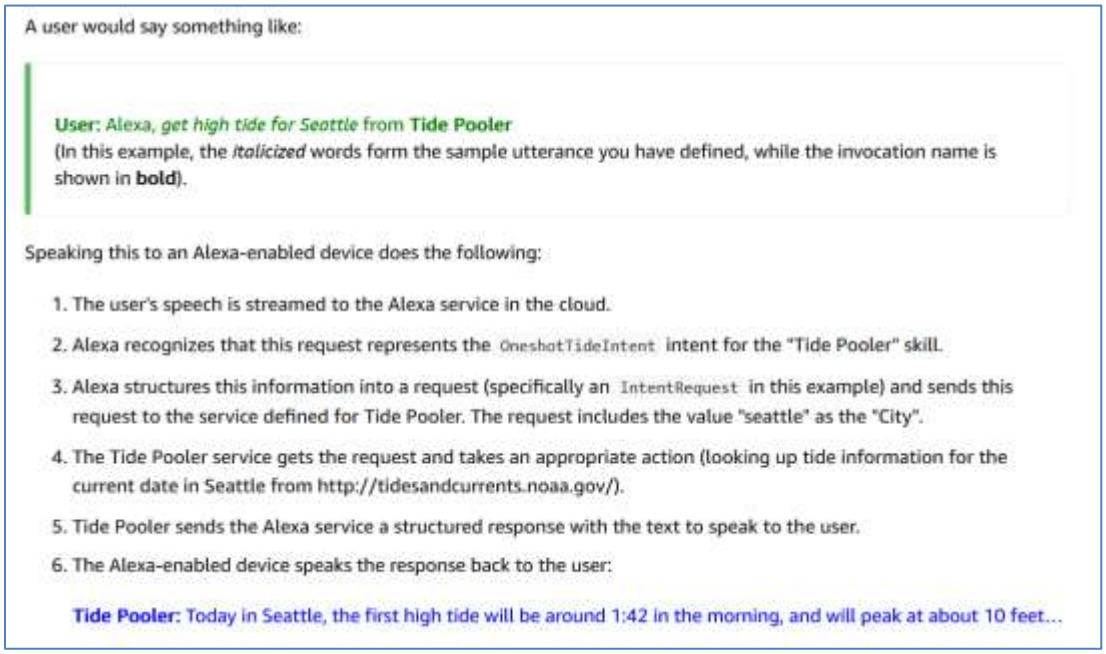
45. The '190 patent claim 1 further recites, in subsection (l), "(l) said computer retrieving said regular expression corresponding to said digital-form command." As non-limiting examples, on information and belief, Amazon's computer retrieved said regular expression corresponding to said digital-form command.

46. The '190 patent claim 1 further recites, in subsection (m), "(m) said computer retrieving the information from the pre-defined portion of the pre-selected web site corresponding to said regular expression when the requested information is found in the pre-defined portion of the pre-selected website." As non-limiting examples, Amazon's computer retrieved the information from the pre-defined portion of the pre-selected web site corresponding to said regular

expression when the requested information is found in the pre-defined portion of the pre-selected website.

47. On information and belief, the Amazon Alexa system retrieved information from the pre-defined portion of the pre-selected web site that corresponded to said regular expression. The particular Alexa skill retrieved a pre-defined portion of the pre-selected web site.

48. For example, the Tide Pool skill accesses a portion of the web page at http://tidesandcurrents.noaa.gov/. Amazon similarly acted as a skill developer for its own Amazon-created skills.


A user would say something like:

User: *Alexa, get high tide for Seattle* from **Tide Pooler**
(In this example, the *italicized* words form the sample utterance you have defined, while the invocation name is shown in **bold**).

Speaking this to an Alexa-enabled device does the following:

1. The user's speech is streamed to the Alexa service in the cloud.
2. Alexa recognizes that this request represents the `OneshotTideIntent` intent for the "Tide Pooler" skill.
3. Alexa structures this information into a request (specifically an `IntentRequest` in this example) and sends this request to the service defined for Tide Pooler. The request includes the value "seattle" as the "City".
4. The Tide Pooler service gets the request and takes an appropriate action (looking up tide information for the current date in Seattle from http://tidesandcurrents.noaa.gov/).
5. Tide Pooler sends the Alexa service a structured response with the text to speak to the user.
6. The Alexa-enabled device speaks the response back to the user:

Tide Pooler: Today in Seattle, the first high tide will be around 1:42 in the morning, and will peak at about 10 feet...

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

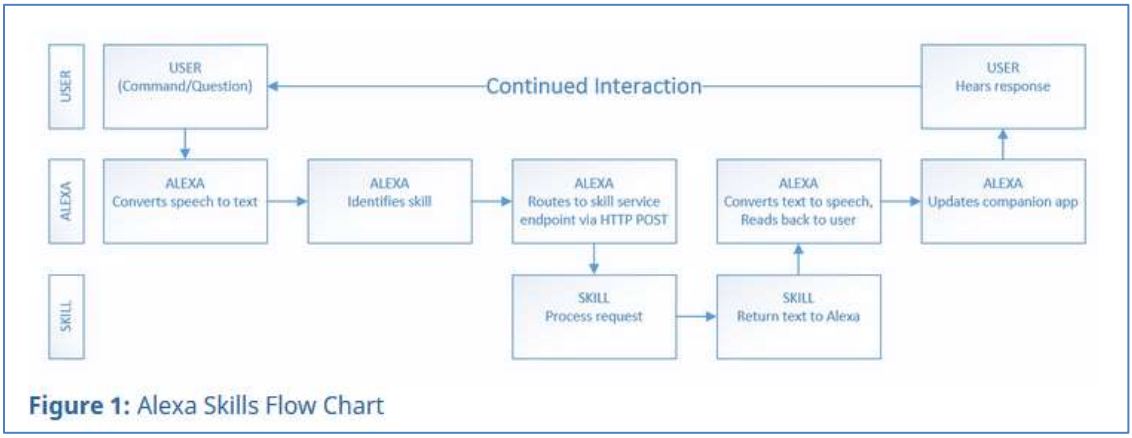


Figure 1: Alexa Skills Flow Chart

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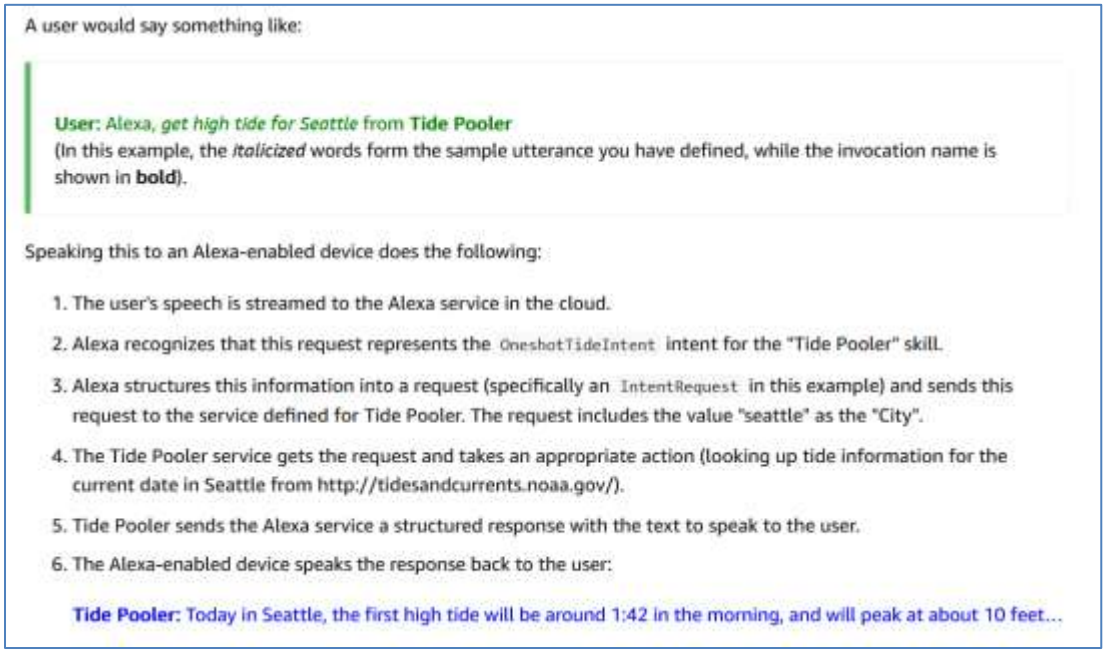
49. The '190 patent claim 1 further recites, in subsection (n), "(n) said computer searching said pre-selected web site for said named object when the requested information is not found in the pre-defined portion of the pre-selected web site." As non-limiting examples, on information and belief, Amazon's computer searched said pre-selected web site for said named object when the requested information was not found in the pre-defined portion of the pre-selected web site.

50. The '190 patent claim 1 further recites, in subsection (o), "(o) said computer providing said retrieved information to said speech processor." As non-limiting examples, Amazon's computer provided said retrieved information to said speech processor.

51. For example, the Tide Pool skill provided the retrieved information to the AVS. http://tidesandcurrents.noaa.gov/. Amazon similarly acted as a skill developer for its own Amazon-created skills.

(i) The API call would be an instruction

(ii) The Alexa skill would process the returned information from the website to extract/format the requested information.



A user would say something like:

> **User:** *Alexa, get high tide for Seattle* from **Tide Pooler**
> (In this example, the *italicized* words form the sample utterance you have defined, while the invocation name is shown in **bold**).

Speaking this to an Alexa-enabled device does the following:

1. The user's speech is streamed to the Alexa service in the cloud.
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3. Alexa structures this information into a request (specifically an `IntentRequest` in this example) and sends this request to the service defined for Tide Pooler. The request includes the value "seattle" as the "City".
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   Tide Pooler: Today in Seattle, the first high tide will be around 1:42 in the morning, and will peak at about 10 feet...

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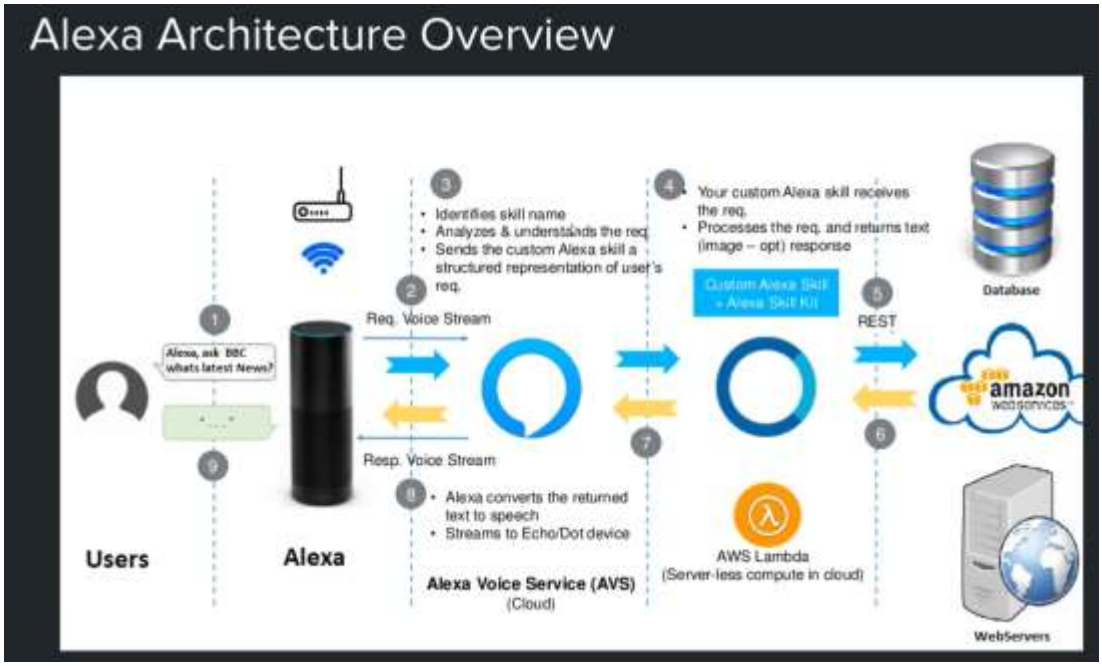
52. The ’190 patent claim 1 further recites, in subsection (p), “(p) said speech processor converting said retrieved information into an audio message.” As non-limiting examples, Amazon’s speech processor converted said retrieved information into an audio message.

53. For example, the Alexa Voice Service included a speech-synthesis engine, where the Alexa Voice Service converted the returned text to speech.



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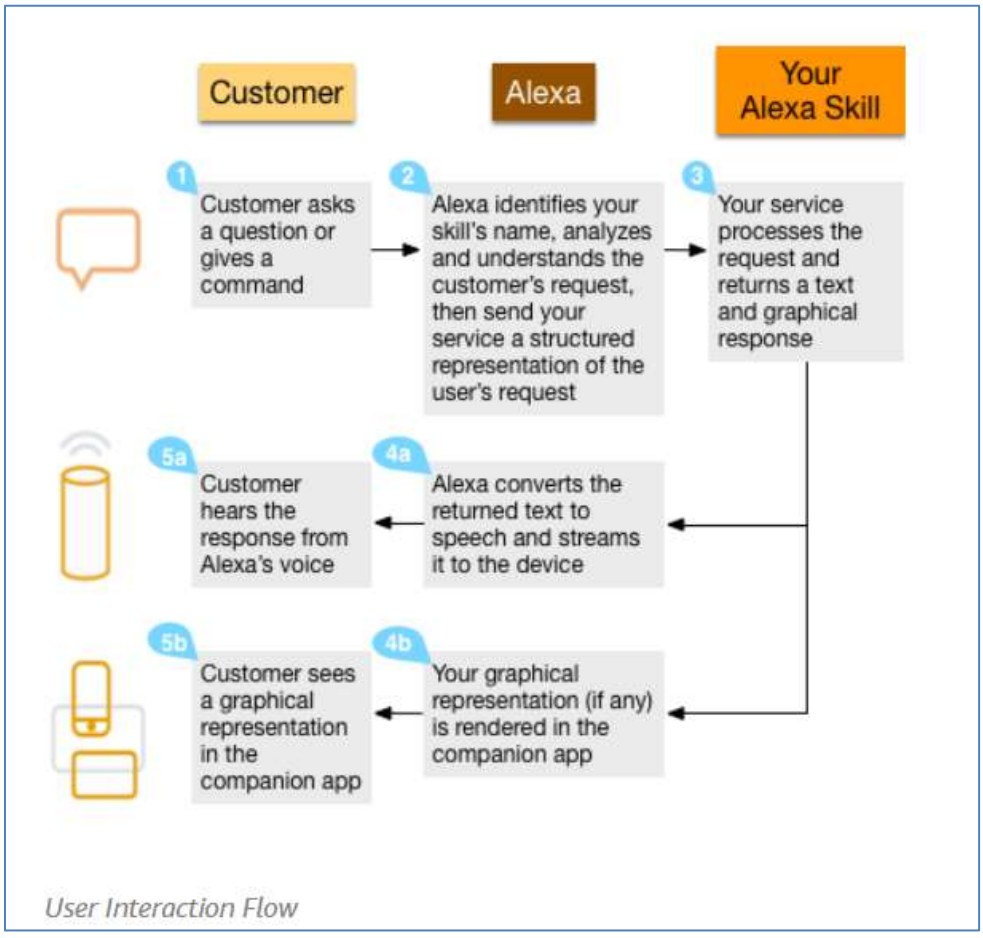

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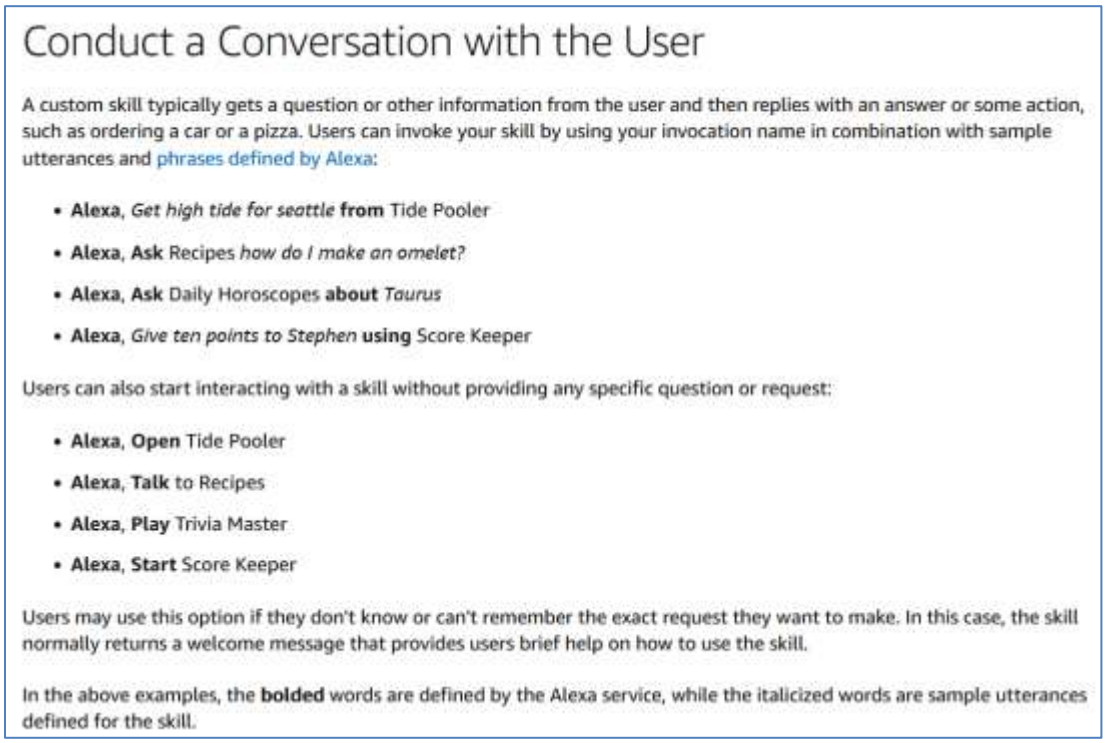

Conduct a Conversation with the User

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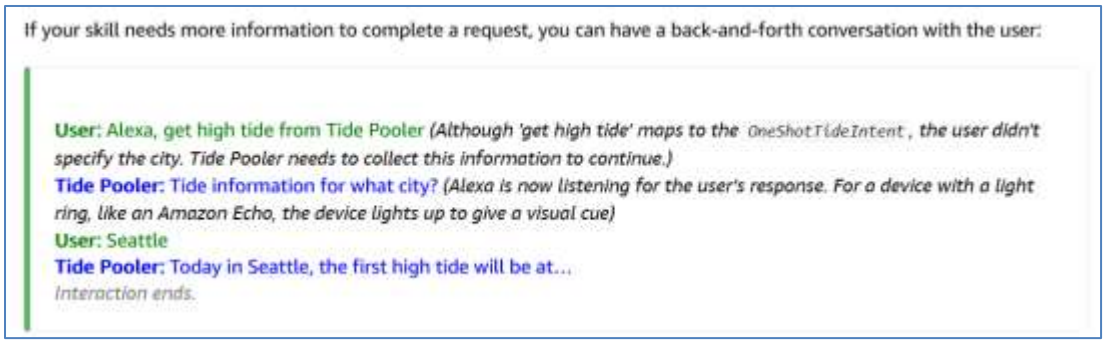
Users may use this option if they don't know or can't remember the exact request they want to make. In this case, the skill normally returns a welcome message that provides users brief help on how to use the skill.

In the above examples, the **bolded** words are defined by the Alexa service, while the italicized words are sample utterances defined for the skill.



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Tide Pooler: Tide information for what city? *(Alexa is now listening for the user's response. For a device with a light ring, like an Amazon Echo, the device lights up to give a visual cue)*
User: Seattle
Tide Pooler: Today in Seattle, the first high tide will be at...
Interaction ends.

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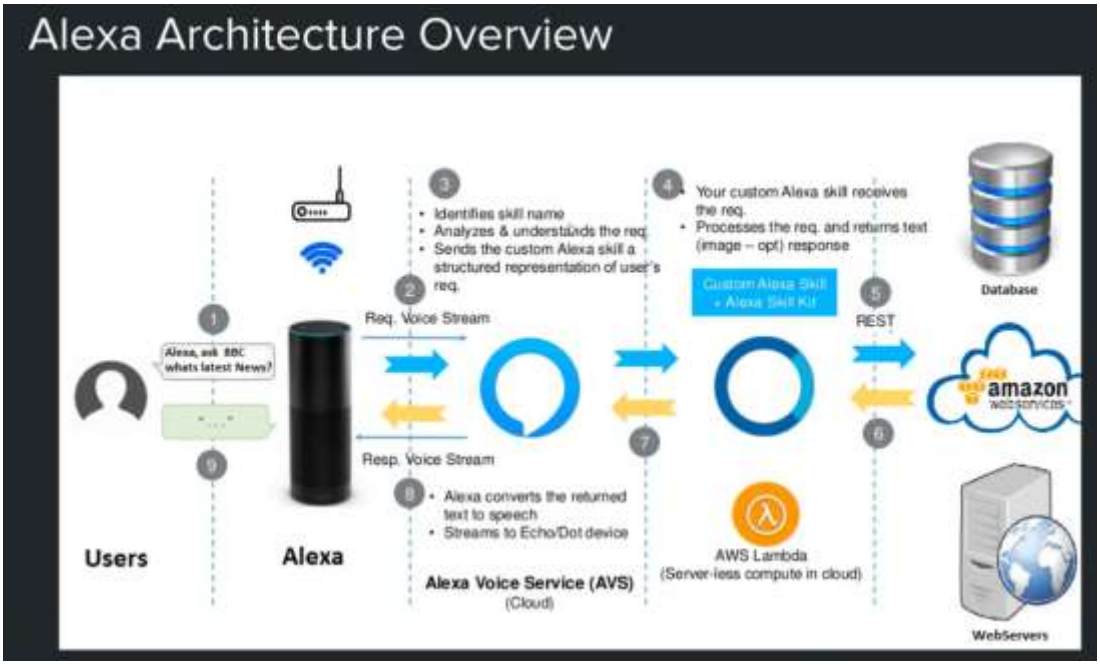
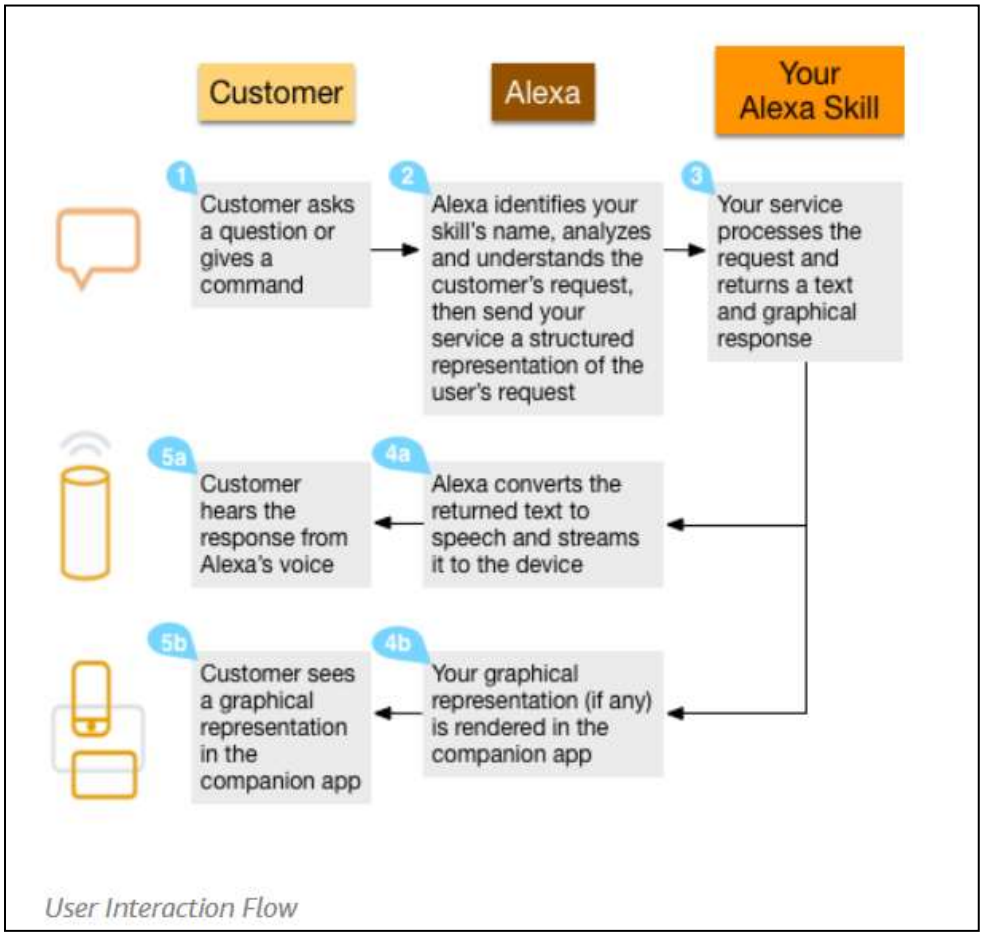
54. The '190 patent claim 1 further recites, in subsection (q), "(q) said speech processor forwarding said audio message to a user." As non-limiting examples, Amazon's speech processor forwarded said audio message to a user.

55. For example, the Alexa Voice Service included a speech-synthesis engine, where the Alexa Voice Service converted the returned text to speech and transmitted it to the user.



Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo



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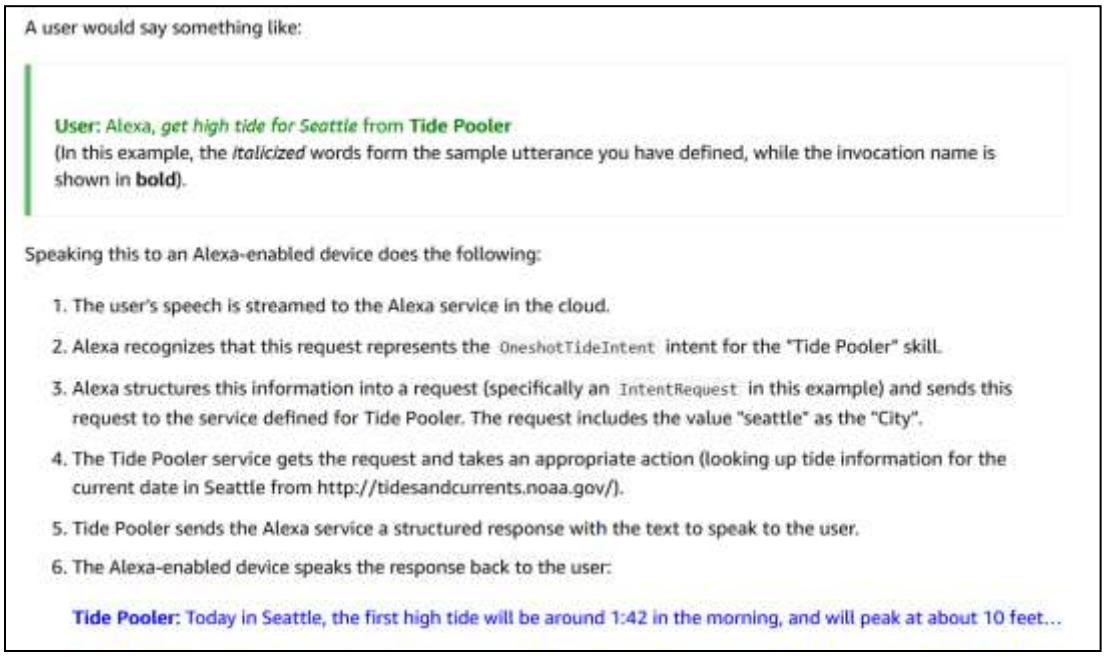

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https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

57. The above provides non-limiting examples of Amazon's infringement of claim 1 of the '190 patent. As asserted in this action, Amazon infringes additional claims in the '190 patent, with the specific infringement contentions to be presented in discovery per the Court's procedure.

COUNT TWO: PATENT INFRINGEMENT OF THE '992 PATENT

58. Parus incorporates by reference the preceding paragraphs as if fully stated herein.

59. Claim 1 of the '992 patent is reproduced below:

1. A method for retrieving information from an information source using speech commands by a user provided via an electronic communication device, said method comprising steps of:

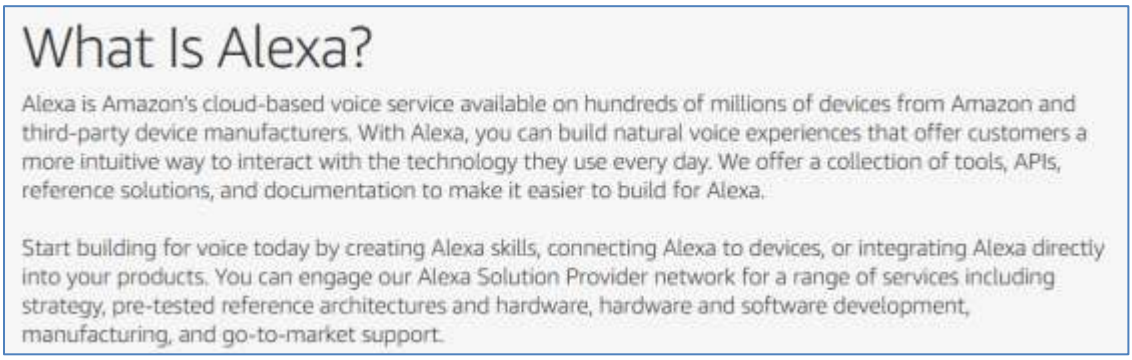
    receiving a speech command from the user via the electronic communication device at a speech recognition engine coupled to a media

> server, the media server configured to identify and access the information source via a network, wherein the speech recognition engine selects recognition grammar established to correspond to the speech command and wherein the information source is periodically updated with information;
>
> selecting, by the media server, at least one appropriate information source retrieval instruction corresponding to the recognition grammar established for the speech command, wherein the at least one appropriate information source retrieval instruction is stored in a database associated with the server;
>
> accessing, by a web browsing server, a portion of the information source including only a portion of information previously identified by the user of interest to the user by using a clipping client to separate the portion of the information from other information, wherein the clipping client generates a content descriptor file containing a description of content of the portion of information and wherein the content descriptor file indicates where the portion of the information selected is located within the information source and retrieving only the portion of the information according to the at least one appropriate information source retrieval instruction;
>
> converting the information retrieved from said information source into an audio message by a speech synthesis engine, the speech synthesis engine coupled to the media server; and
>
> transmitting said audio message to the electronic communication device for the user.

60. Using its accused products, Amazon performed a method for retrieving information from an information source using speech commands by a user provided via an electronic communication device as specified by claim 1. Amazon accused products used to infringe claim 1 (and/or any other claims in the patent) are herein collectively the "'992 accused products." In the following, infringement by way of an Amazon Echo device is illustrated to provide non-limiting examples of Amazon's infringement of the '992 patent.

61. The '992 patent claim 1 begins, "A method for retrieving information from an information source using speech commands by a user provided via an electronic communication device, said method comprising steps of:" As non-limiting examples, Amazon performed this method using Amazon Echo smart speaker devices.

62. The Amazon Alexa system included the Alexa cloud based service and at least one Alexa compatible remote device such as the Amazon Echo smart speaker. The Amazon Alexa system performed a method for retrieving information from an information source using speech commands by a user provided via an electronic communication device.

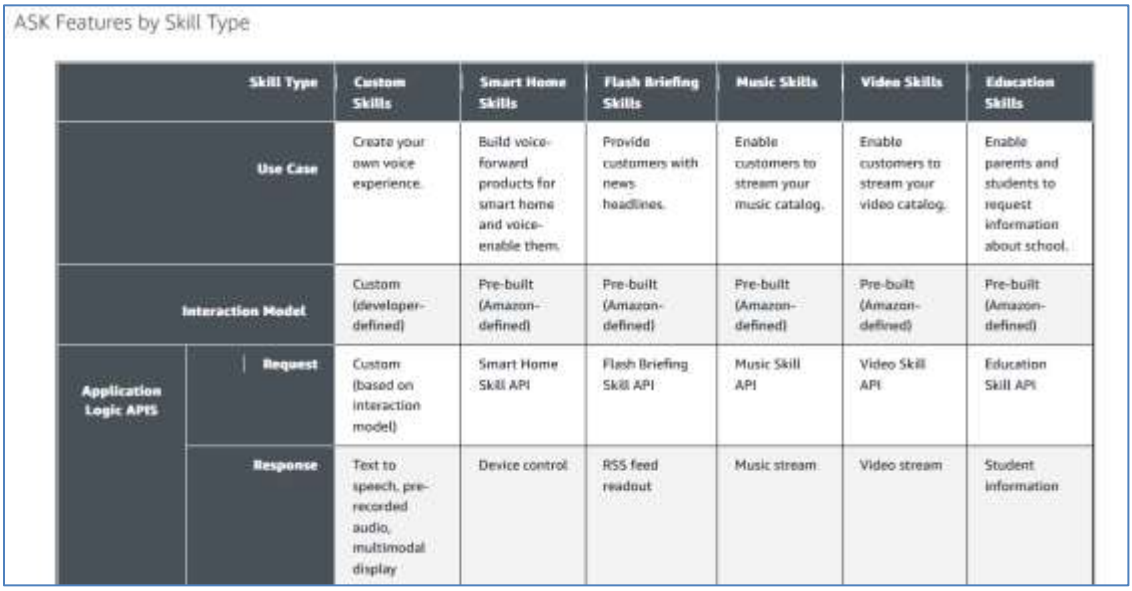


What Is Alexa?

Alexa is Amazon's cloud-based voice service available on hundreds of millions of devices from Amazon and third-party device manufacturers. With Alexa, you can build natural voice experiences that offer customers a more intuitive way to interact with the technology they use every day. We offer a collection of tools, APIs, reference solutions, and documentation to make it easier to build for Alexa.

Start building for voice today by creating Alexa skills, connecting Alexa to devices, or integrating Alexa directly into your products. You can engage our Alexa Solution Provider network for a range of services including strategy, pre-tested reference architectures and hardware, hardware and software development, manufacturing, and go-to-market support.

https://web.archive.org/web/20201111235237/https://developer.amazon.com/en-US/alexa (Internet archive, Sep. 2019)



ASK Features by Skill Type

Skill Type		Custom Skills	Smart Home Skills	Flash Briefing Skills	Music Skills	Video Skills	Education Skills
Use Case		Create your own voice experience.	Build voice-forward products for smart home and voice-enable them.	Provide customers with news headlines.	Enable customers to stream your music catalog.	Enable customers to stream your video catalog.	Enable parents and students to request information about school.
Interaction Model		Custom (developer-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)
Application Logic APIs	Request	Custom (based on interaction model)	Smart Home Skill API	Flash Briefing Skill API	Music Skill API	Video Skill API	Education Skill API
	Response	Text to speech, pre-recorded audio, multimodal display	Device control	RSS feed readout	Music stream	Video stream	Student information

https://web.archive.org/web/20200817142721/https://developer.amazon.com/en-US/alexa/alexa-skills-kit/get-deeper (Internet archive, Mar. 2020)

What is Amazon Echo?

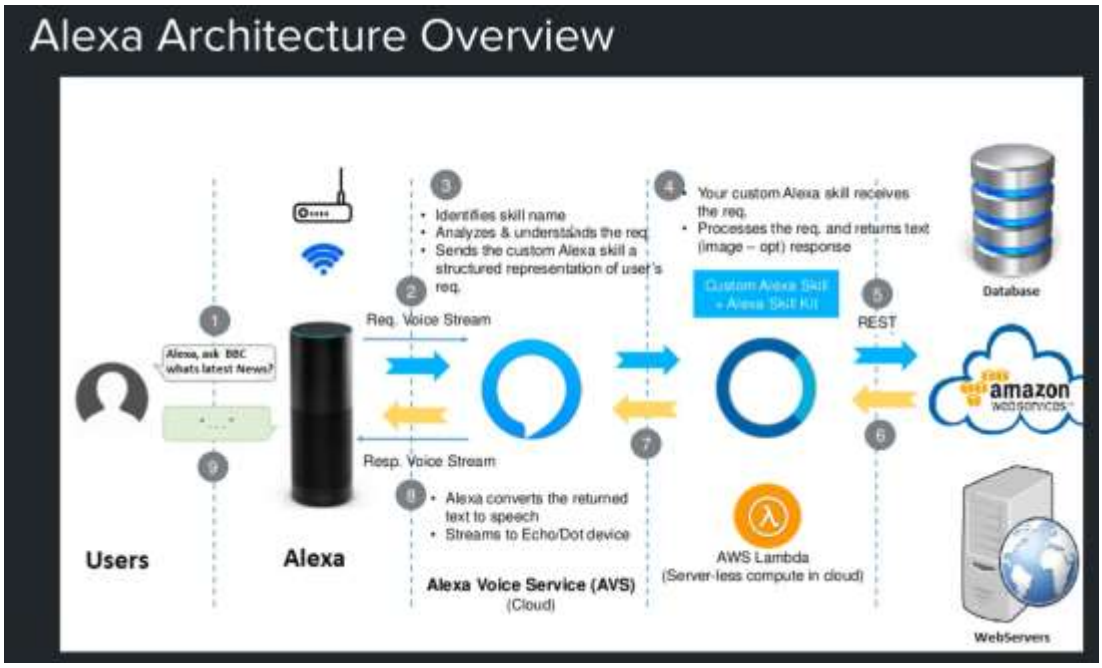
Amazon Echo is designed around your voice. It's hands-free and always on. With seven microphones and beam forming technology, Echo can hear you from across the room—even while music is playing. Echo is also an expertly tuned speaker that can fill any room with immersive sound.

Echo connects to Alexa, a cloud-based voice service, to provide information, answer questions, play music, read the news, check sports scores or the weather, and more—instantly. All you have to do is ask. Echo begins working as soon as it detects the wake word. You can pick Alexa or Amazon as your wake word.

...and adding new skills

We are always adding new capabilities to Echo. Recently, we've added local search from Yelp, streaming music from Pandora, audiobooks from Audible, Google Calendar access, live sports scores and schedules, traffic reports, Amazon.com re-ordering, control of smart home devices with WeMo, Philips Hue, SmartThings, Insteon, Wink, and more.

https://web.archive.org/web/20160131082954/http://www.amazon.com/Amazon-SK705DI-Echo/dp/B00X4WHP5E (Internet archive, Jun. 2015)

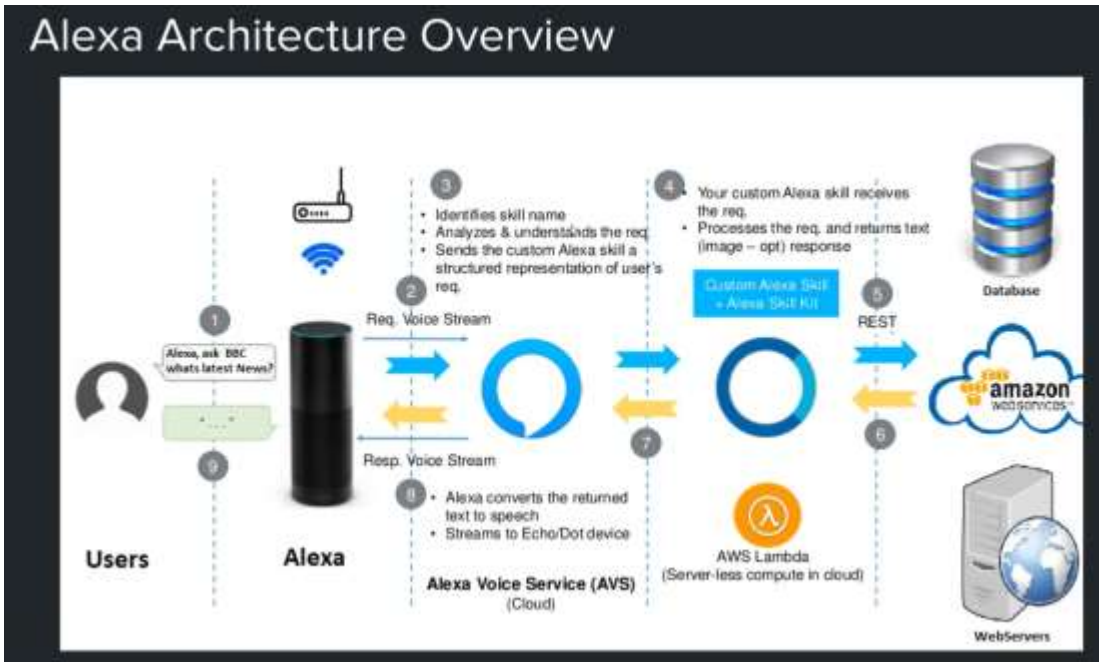


Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo

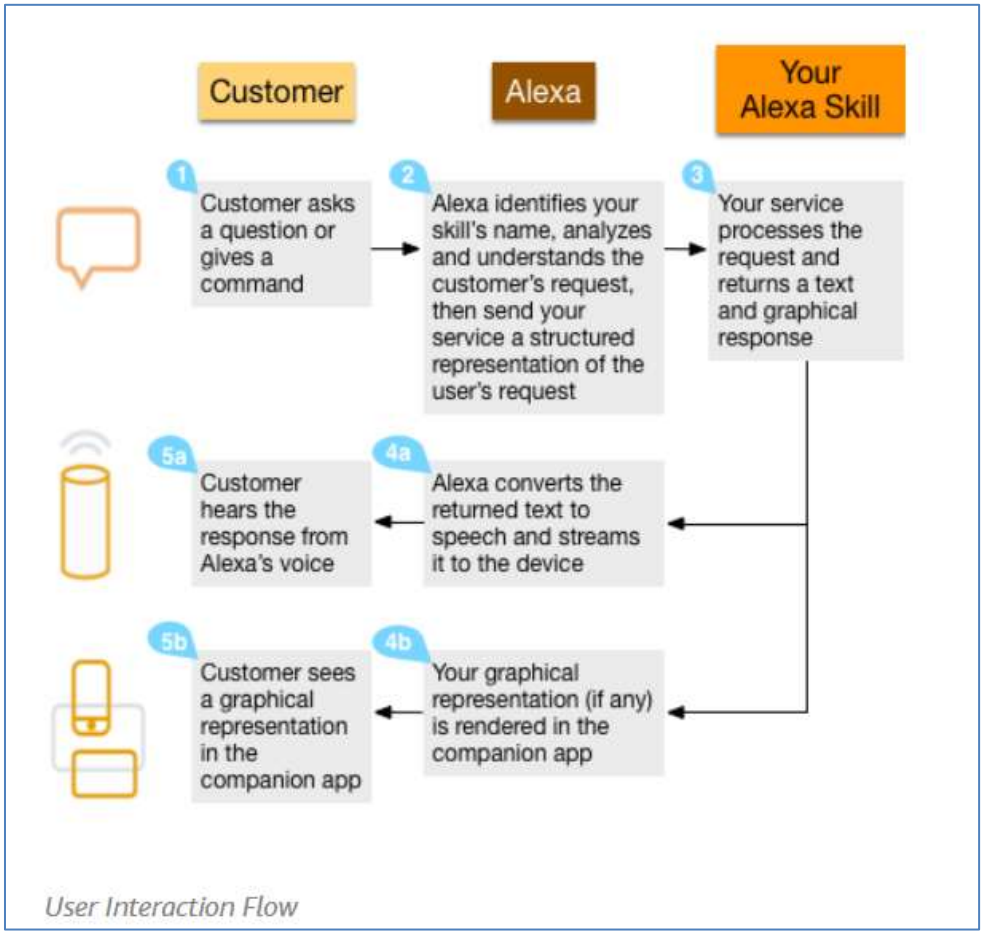
63. The '992 patent claim 1 further recites, in its first subsection, "receiving a speech command from the user via the electronic communication device at a speech recognition engine

coupled to a media server, the media server configured to identify and access the information source via a network, wherein the speech recognition engine selects recognition grammar established to correspond to the speech command and wherein the information source is periodically updated with information." As non-limiting examples, Amazon's speech recognition engine coupled to its media server received a speech command from the user via the electronic communication device, the media server configured to identify and access the information source via a network, wherein the speech recognition engine selects recognition grammar established to correspond to the speech command and wherein the information source is periodically updated with information.

64. For example, the Alexa Voice Service included a speech recognition engine. The Alexa Skills and AWS Lambda were included in a media server.

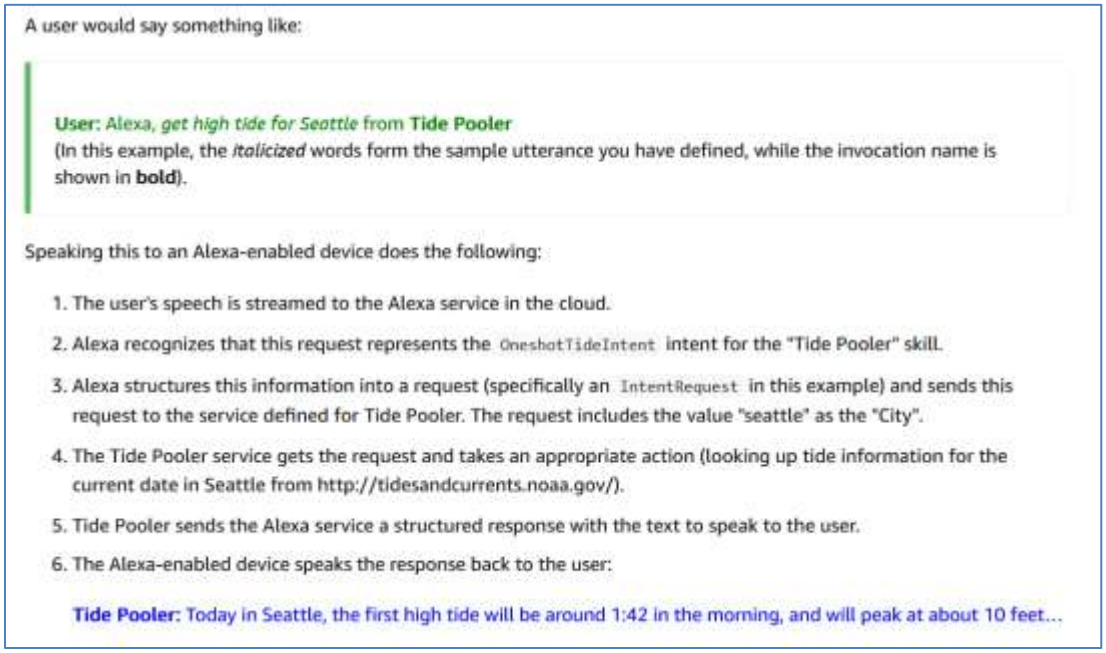


Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo



https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

65. The particular Alexa skill accessed a website containing the information of interest. For example, the Tide Pooler skill accessed the noaa.gov website. Amazon similarly acted as a skill developer for its own Amazon-created skills.



A user would say something like:

> **User:** Alexa, *get high tide for Seattle* from **Tide Pooler**
> (In this example, the *italicized* words form the sample utterance you have defined, while the invocation name is shown in **bold**).

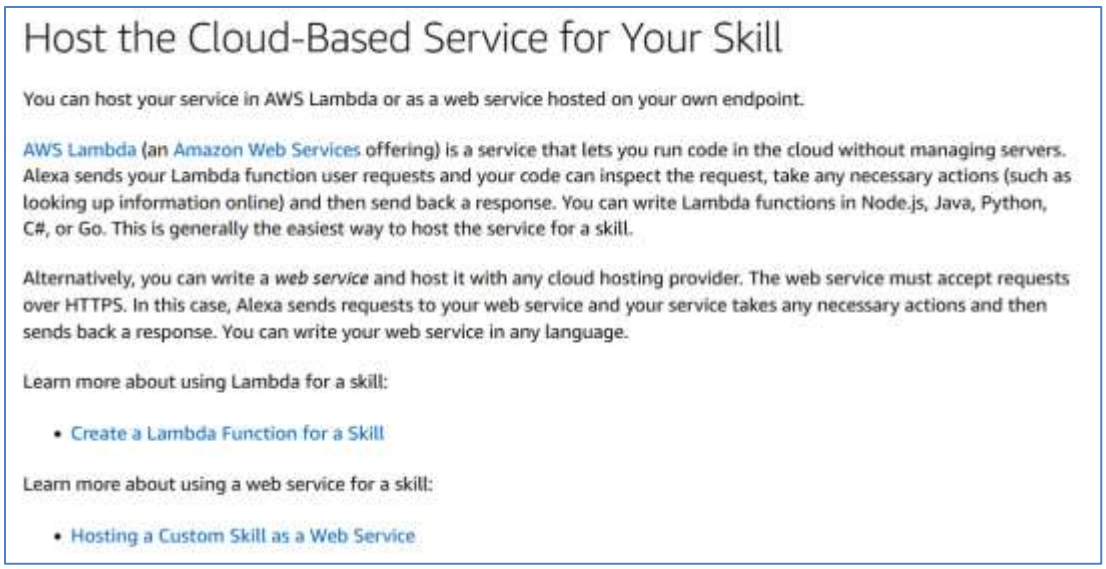
Speaking this to an Alexa-enabled device does the following:

1. The user's speech is streamed to the Alexa service in the cloud.
2. Alexa recognizes that this request represents the `OneshotTideIntent` intent for the "Tide Pooler" skill.
3. Alexa structures this information into a request (specifically an `IntentRequest` in this example) and sends this request to the service defined for Tide Pooler. The request includes the value "seattle" as the "City".
4. The Tide Pooler service gets the request and takes an appropriate action (looking up tide information for the current date in Seattle from http://tidesandcurrents.noaa.gov/).
5. Tide Pooler sends the Alexa service a structured response with the text to speak to the user.
6. The Alexa-enabled device speaks the response back to the user:

   Tide Pooler: Today in Seattle, the first high tide will be around 1:42 in the morning, and will peak at about 10 feet...

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

66. Also, for example, the Amazon AWS Lambda service provided for online information lookup.



Host the Cloud-Based Service for Your Skill

You can host your service in AWS Lambda or as a web service hosted on your own endpoint.

AWS Lambda (an Amazon Web Services offering) is a service that lets you run code in the cloud without managing servers. Alexa sends your Lambda function user requests and your code can inspect the request, take any necessary actions (such as looking up information online) and then send back a response. You can write Lambda functions in Node.js, Java, Python, C#, or Go. This is generally the easiest way to host the service for a skill.

Alternatively, you can write a *web service* and host it with any cloud hosting provider. The web service must accept requests over HTTPS. In this case, Alexa sends requests to your web service and your service takes any necessary actions and then sends back a response. You can write your web service in any language.

Learn more about using Lambda for a skill:

- Create a Lambda Function for a Skill

Learn more about using a web service for a skill:

- Hosting a Custom Skill as a Web Service

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

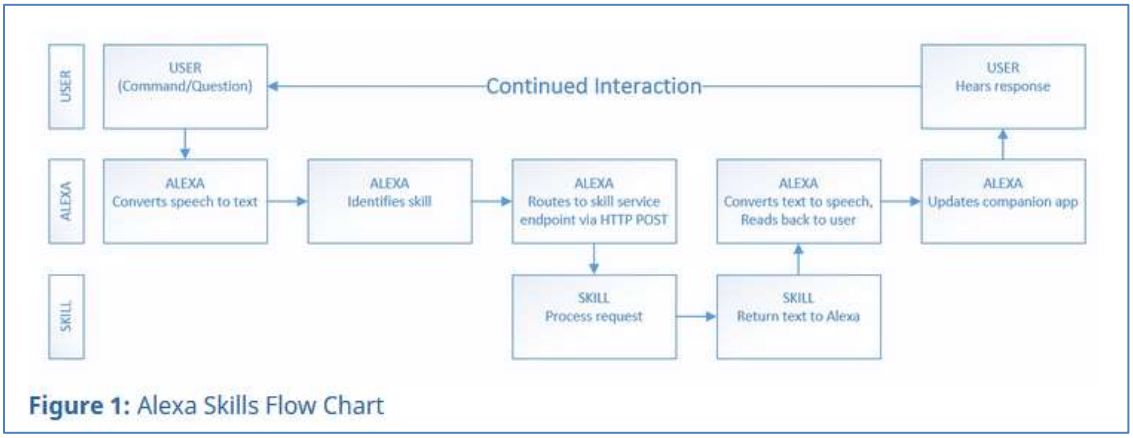


Figure 1: Alexa Skills Flow Chart

https://www.codemag.com/article/1805081/Building-an-Alexa-Skill-with-AWS-Lambda

67. Further, the Alexa Voice Service selected from particular sample utterances.

Components of a Custom Skill

When designing and building a custom skill, you create the following:

- A set of *intents* that represent actions that users can do with your skill. These intents represent the core functionality for your skill.
- A set of *sample utterances* that specify the words and phrases users can say to invoke those intents. You map these utterances to your intents. This mapping forms the *interaction model* for the skill.
- An *invocation name* that identifies the skill. The user includes this name when initiating a conversation with your skill.
- If applicable, a set of images, audio files, and video files that you want to include in the skill. These must be stored on a publicly accessible site so that each item is accessible by a unique URL.
- A *cloud-based service* that accepts these intents as structured requests and then acts upon them. This service must be accessible over the Internet. You provide an endpoint for your service when configuring the skill.
- A configuration that brings all of the above together so that Alexa can route requests to the service for your skill. You create this configuration in the developer console.

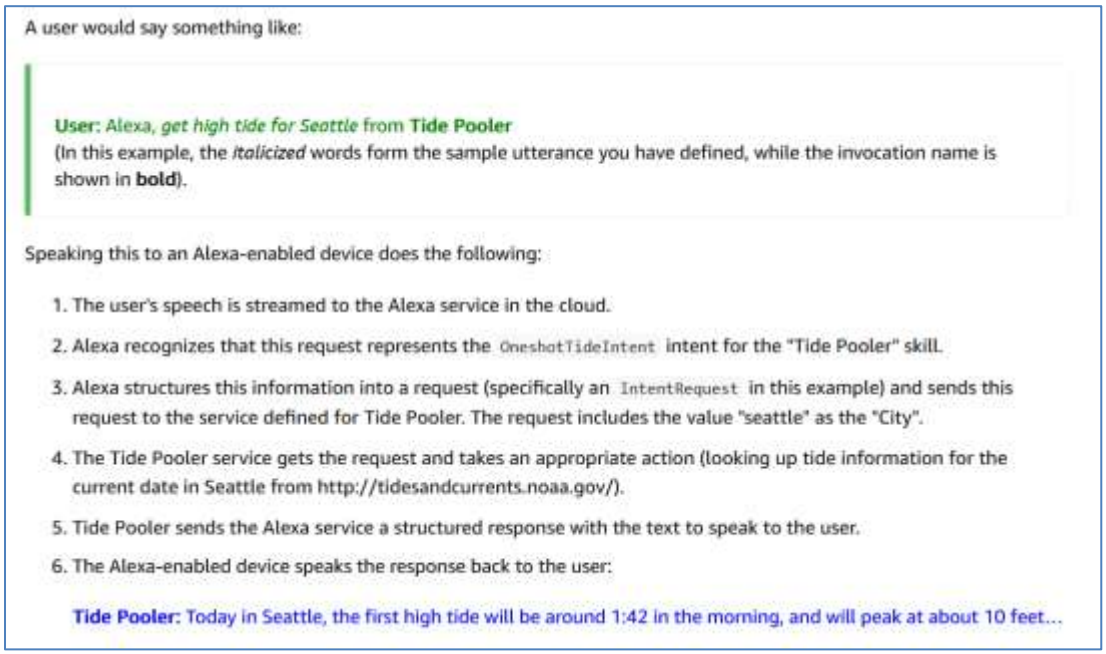
For example, a skill for getting tide information might define an intent called `OneshotTideIntent` to represent the user's request to look up tide information for a particular coastal city.

This intent would be mapped to several sample utterances such as:

```
OneshotTideIntent get high tide
OneshotTideIntent get high tide for {City}
OneshotTideIntent tide information for {City}
OneshotTideIntent when is high tide in {City}
...
(many more sample utterances)
```

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

68. The particular Alexa skill accessed a website containing the information of interest. For example, the Tide Pooler skill accessed the noaa.gov website which was periodically updated with tide information. Amazon similarly acted as a skill developer for its own Amazon-created skills.



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(In this example, the *italicized* words form the sample utterance you have defined, while the invocation name is shown in **bold**).

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Tide Pooler: Today in Seattle, the first high tide will be around 1:42 in the morning, and will peak at about 10 feet...

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

69. Further, for example, the Amazon AWS Lambda service provided for online information lookup from sources that were periodically updated.

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You can host your service in AWS Lambda or as a web service hosted on your own endpoint.

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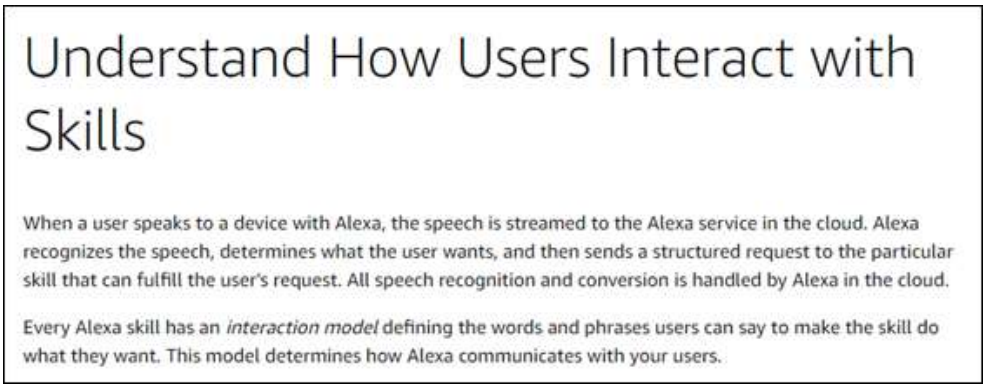
https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

70. The recognition grammar used by Amazon is described in Amazon's developer site.

https://developer.amazon.com/ja-JP/docs/alexa/alexa-gadgets-toolkit/receive-voice-input.html

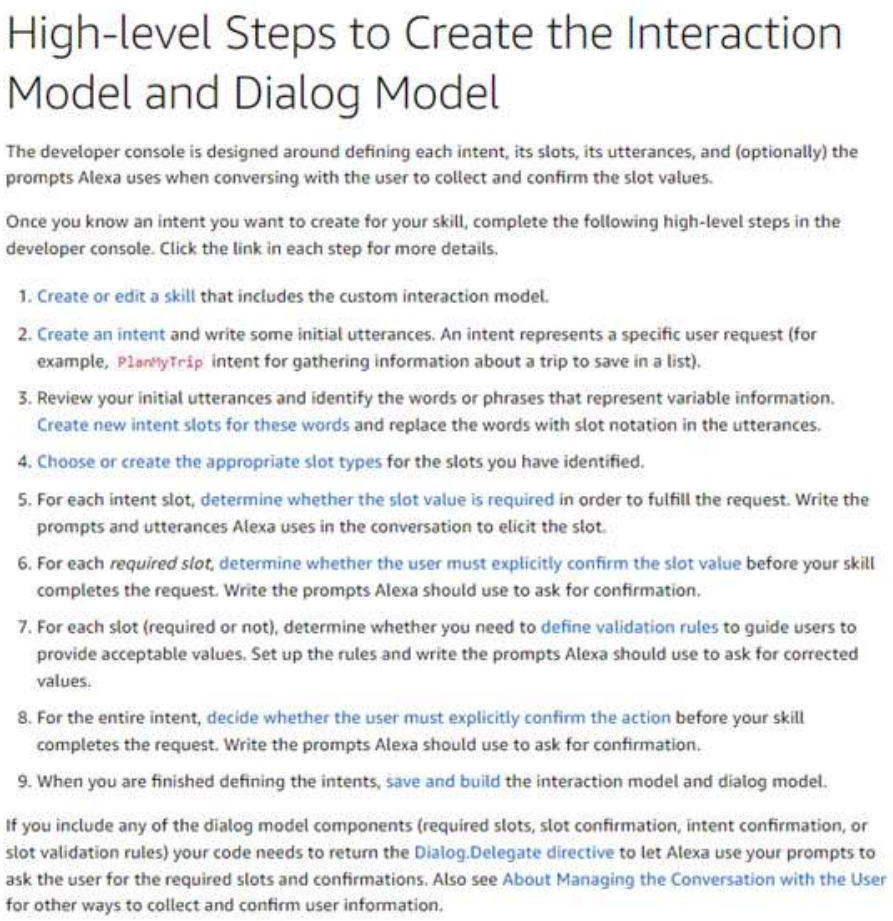


Understand How Users Interact with Skills

When a user speaks to a device with Alexa, the speech is streamed to the Alexa service in the cloud. Alexa recognizes the speech, determines what the user wants, and then sends a structured request to the particular skill that can fulfill the user's request. All speech recognition and conversion is handled by Alexa in the cloud.

Every Alexa skill has an *interaction model* defining the words and phrases users can say to make the skill do what they want. This model determines how Alexa communicates with your users.

https://web.archive.org/web/20190610015215/https://developer.amazon.com/docs/ask-overviews/understanding-how-users-interact-with-skills.html (Internet archive Jun. 2019)



High-level Steps to Create the Interaction Model and Dialog Model

The developer console is designed around defining each intent, its slots, its utterances, and (optionally) the prompts Alexa uses when conversing with the user to collect and confirm the slot values.

Once you know an intent you want to create for your skill, complete the following high-level steps in the developer console. Click the link in each step for more details.

1. Create or edit a skill that includes the custom interaction model.
2. Create an intent and write some initial utterances. An intent represents a specific user request (for example, `PlanMyTrip` intent for gathering information about a trip to save in a list).
3. Review your initial utterances and identify the words or phrases that represent variable information. Create new intent slots for these words and replace the words with slot notation in the utterances.
4. Choose or create the appropriate slot types for the slots you have identified.
5. For each intent slot, determine whether the slot value is required in order to fulfill the request. Write the prompts and utterances Alexa uses in the conversation to elicit the slot.
6. For each *required slot*, determine whether the user must explicitly confirm the slot value before your skill completes the request. Write the prompts Alexa should use to ask for confirmation.
7. For each slot (required or not), determine whether you need to define validation rules to guide users to provide acceptable values. Set up the rules and write the prompts Alexa should use to ask for corrected values.
8. For the entire intent, decide whether the user must explicitly confirm the action before your skill completes the request. Write the prompts Alexa should use to ask for confirmation.
9. When you are finished defining the intents, save and build the interaction model and dialog model.

If you include any of the dialog model components (required slots, slot confirmation, intent confirmation, or slot validation rules) your code needs to return the Dialog.Delegate directive to let Alexa use your prompts to ask the user for the required slots and confirmations. Also see About Managing the Conversation with the User for other ways to collect and confirm user information.

https://web.archive.org/web/20190525122808/https://developer.amazon.com/docs/custom-skills/create-the-interaction-model-for-your-skill.html (Internet archive May, 2019)

Identify the Slots for the Intent

Once you have written a few utterances, note the words or phrases that represent variable information. These will become the intent's *slots*. For example, in the utterances identified earlier, the variables are highlighted in red.

```
i am going on a trip on friday
i want to visit portland
i want to travel from seattle to portland next friday
i'm driving from seattle to portland
i'm driving to portland to go hiking
```

Create a slot for each of these words or phrases and then replace the original word with the slot name in curly brackets (`{ }`):

1. Click an intent in the left-hand navigation to open the detail page for the intent.
2. In an utterance, highlight the word or phrase representing the slot value.
3. In the drop-down that appears, enter a name for the slot in the edit box and click **Add**.

   This creates a new slot for the intent and replaces the original value in the utterance with the slot name in curly brackets (`{ }`).

   For the example shown above, you would note that "seattle" represents the city the user wants to depart from, so you might call this slot `fromCity` . The utterance would now look like this:

   ```
   i want to travel from {fromCity} to portland next friday
   ```

4. Repeat for all the remaining variable words.

   In the `PlanMyTrip` intent, you might end up with the slots like this:

   - `fromCity`
   - `toCity`
   - `travelDate`
   - `travelMode`
   - `activity`

https://web.archive.org/web/20190610224424/https://developer.amazon.com/docs/custom-skills/create-intents-utterances-and-slots.html#identify-slots (Internet archive Jun. 2019)

JSON for Intents and Utterances (Interaction Model Schema)

You can see and edit the JSON representation of all of your intents and utterances in the JSON Editor. The `interactionModel.languageModel.intents` property contains an array of intent objects. For a given intent, the `samples` property contains an array of sample utterances. If the intent has any slots, the `slots` property contains an array of slot objects. A slot object can also have a `samples` property if you have defined user utterances for the slot as part of the dialog model.

This example shows a portion of the `intent` object for a `PlanMyTrip` intent. The utterances for the intent are in `interactionModel.languageModel.intents[].samples` . Each slot has its own `samples` array. For brevity, other properties within `interactionModel` and `languageModel` are not shown. For details about the interaction model JSON, see Interaction Model Schema.

```
{
  "interactionModel": {
    "languageModel": {
      "intents": [
        {
          "name": "PlanMyTrip",
          "slots": [
            {
              "name": "travelDate",
              "type": "AMAZON.DATE",
              "samples": [
                "I am taking this trip on {travelDate}",
                "on {travelDate}",
                "{travelDate}"
              ]
            },
            {
              "name": "toCity",
              "type": "AMAZON.US_CITY",
              "samples": [
                "I'm going to {toCity}",
                "{toCity}"
              ]
            },
            {
              "name": "fromCity",
              "type": "AMAZON.US_CITY",
              "samples": [
                "{fromCity}",
                "I'm starting from {fromCity}"
              ]
            },
```

```
            {
              "name": "travelMode",
              "type": "LIST_OF_TRAVEL_MODES",
              "samples": [
                "I am going to {travelMode}",
                "{travelMode}"
              ]
            },
            {
              "name": "activity",
              "type": "LIST_OF_ACTIVITIES",
              "samples": [
                "{activity}",
                "I plan to {activity}"
              ]
            }
          ],
          "samples": [
            "{toCity}",
            "I want to travel from {fromCity} to {toCity} {travelDate}",
            "i want to visit {toCity}",
            "i am going on trip on {travelDate}",
            "I'm {travelMode} from {fromCity} to {toCity}",
            "i'm {travelMode} to {toCity} to {activity}",
            "plan a trip",
            "plan a trip to {toCity} ",
            "plan a trip starting from {fromCity} ",
            "I'd like to leave on {travelDate} ",
            "I'd like to leave on the {travelDate} ",
            "I'd like to fly out of {fromCity} "
          ]
        }
      ]
    }
  }
}
```

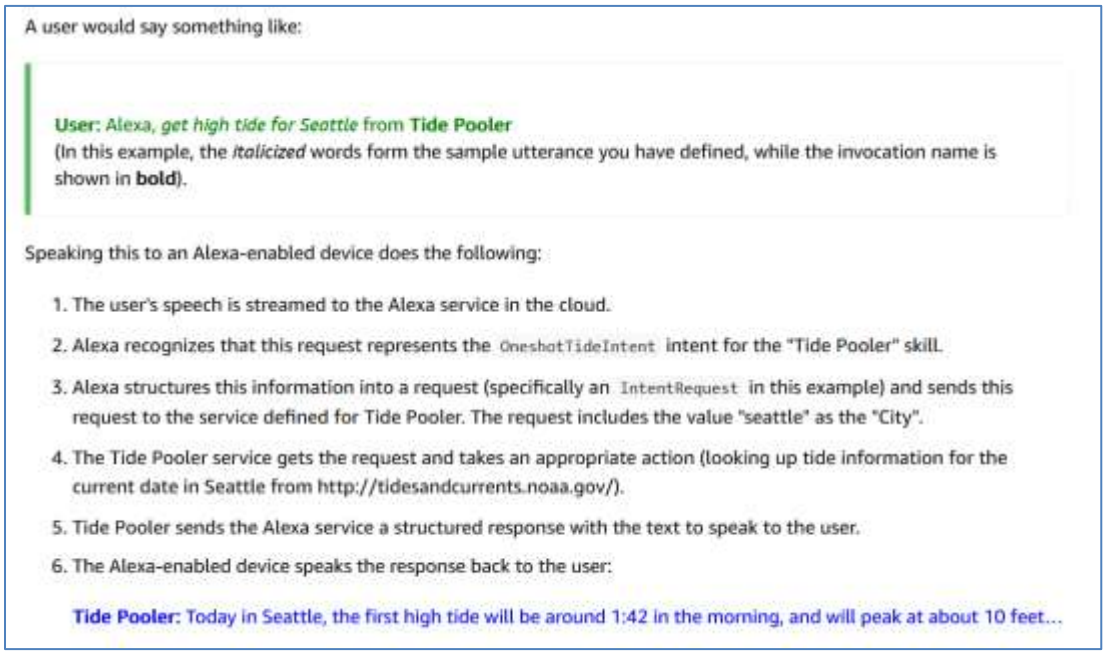
https://web.archive.org/web/20190610224424/https://developer.amazon.com/docs/custom-skills/create-intents-utterances-and-slots.html#identify-slots (Internet archive Jun. 2019)

71. The ’992 patent claim 1 further recites, in its second subsection, “selecting, by the media server, at least one appropriate information source retrieval instruction corresponding to the recognition grammar established for the speech command, wherein the at least one appropriate information source retrieval instruction is stored in a database associated with the server.” As non-limiting examples, Amazon’s media server selected at least one appropriate information source retrieval instruction corresponding to the recognition grammar established for the speech command, wherein the at least one appropriate information source retrieval instruction is stored in a database associated with the server.

72. On information and belief, an information source retrieval instruction was stored in a database. For example, the Tide Pool skill accessed a portion of the information source at http://tidesandcurrents.noaa.gov/.

(i) The API call would be an instruction

(ii) The Alexa skill would process the returned information from the website to extract/format the requested information.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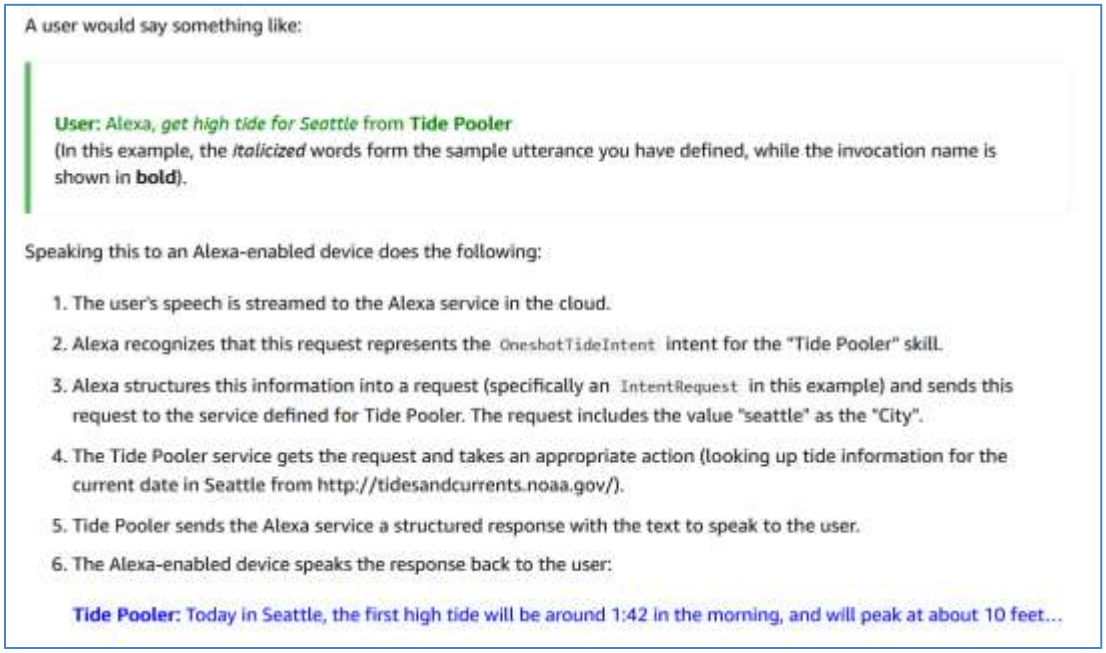
https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

73. The '992 patent claim 1 further recites, in its third subsection, "accessing, by a web browsing server, a portion of the information source including only a portion of information previously identified by the user of interest to the user by using a clipping client to separate the portion of the information from other information, wherein the clipping client generates a content descriptor file containing a description of content of the portion of information and wherein the content descriptor file indicates where the portion of the information selected is located within the information source and retrieving only the portion of the information according to the at least one appropriate information source retrieval instruction." As non-limiting examples, Amazon's web browsing server accessed a portion of the information source including only a portion of information previously identified by the user of interest to the user by using a clipping client to separate the portion of the information from other information, wherein the clipping client generates a content descriptor file containing a description of content of the portion of information and wherein the content descriptor file indicates where the portion of the information selected is located within the information source and retrieving only the portion of the information according to the at least one appropriate information source retrieval instruction.

74. For example, the Tide Pool skill accessed a portion of the information source at http://tidesandcurrents.noaa.gov/. Amazon similarly acted as a skill developer for its own Amazon-created skills.



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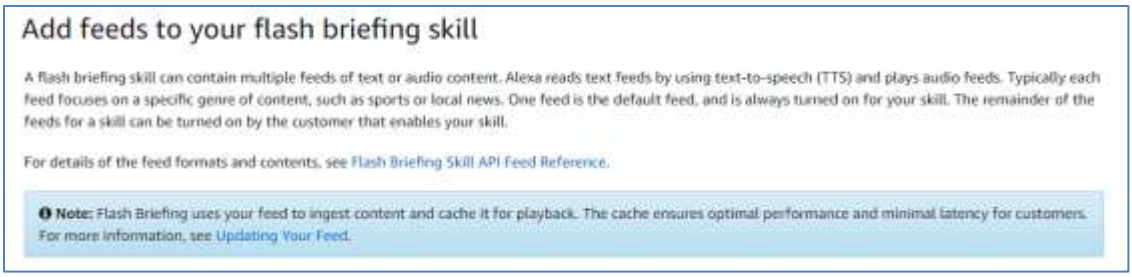
https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)



Add feeds to your flash briefing skill

A flash briefing skill can contain multiple feeds of text or audio content. Alexa reads text feeds by using text-to-speech (TTS) and plays audio feeds. Typically each feed focuses on a specific genre of content, such as sports or local news. One feed is the default feed, and is always turned on for your skill. The remainder of the feeds for a skill can be turned on by the customer that enables your skill.

For details of the feed formats and contents, see Flash Briefing Skill API Feed Reference.

Note: Flash Briefing uses your feed to ingest content and cache it for playback. The cache ensures optimal performance and minimal latency for customers. For more information, see Updating Your Feed.

https://web.archive.org/web/20201030024213/https://developer.amazon.com/en-US/docs/alexa/flashbriefing/steps-to-create-a-flash-briefing-skill.html (Internet archive October, 2020)

https://www.amazon.com/alexa-news-flash-briefing/b?ie=UTF8&node=21362891011

Set Up News and Flash Briefings for Alexa

Get news, local weather, and more from popular broadcasters with flash briefings.

To customize your new channel and flash briefings:

1. Open the Alexa app .
2. Open **More** and select **Settings**.
3. Select **News**, then select **My News Channel** or **Flash Briefing**.
   - Select **My News Channel** and choose your primary news channel for long-form news content.
   - Select **Flash Briefing** and choose multiple news sources for short updates and top stories.

Note: Alexa helps you select your preferred news providers when you ask to play news or a flash briefing for the first time. A list of available news providers is available in the Alexa Skills store.

https://www.amazon.com/gp/help/customer/display.html?nodeId=GXMFWZJ8FKRGLFFU

High School Sports Scores from ScoreStream are Live on Amazon Alexa

NEWS PROVIDED BY
ScoreStream
Sep 23, 2020, 12:00 ET

SHARE THIS ARTICLE

SAN DIEGO, Sept. 23, 2020 /PRNewswire/ -- Effective immediately, Alexa will have comprehensive high school sports scores from ScoreStream for all high school sports in all seasons. Last year, ScoreStream and Amazon collaborated to provide real time, hyper local prep football scores from thousands of games across the country. This year that collaboration is extending to all sports in all seasons.

Customers can simply ask for the name of their favorite team, "Alexa, what is the score of the Washington high school football game?" or can ask, "Alexa, what is the Washington Tigers high school volleyball score?" to get updates on various local games in their area.

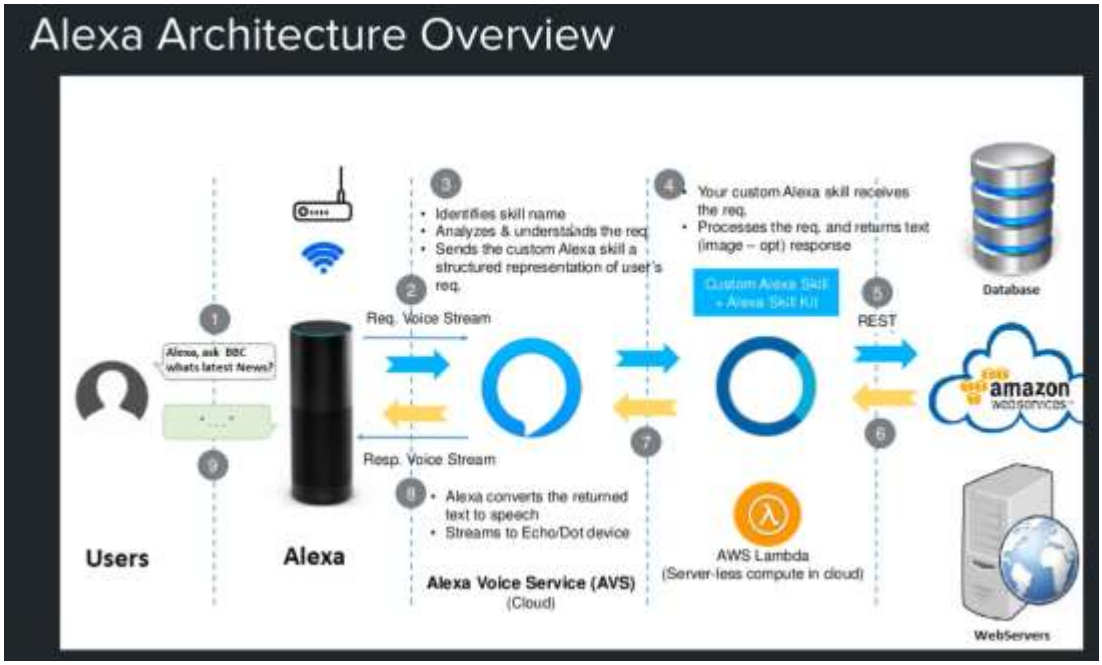
"We had a great response from fans accessing real time scores on their Alexa device last year. As we moved into the winter there was great interest in having that same coverage for basketball and the other high school sports in different seasons. We are excited to provide Alexa users with coverage of all the sports in their local community for the 2020/2021 sports seasons," said Derrick Oien, CEO and cofounder of ScoreStream.

About ScoreStream
ScoreStream is a patented, crowd-sourcing platform for local sports coverage in real time. The ScoreStream mobile app engages fans through crowd-sourced scores, photos, video and chat from over 15,000 games per week from around the world. ScoreStream works with many major media companies in the television, radio and newspaper sectors. ScoreStream is a venture-backed start-up based in Del Mar, CA.

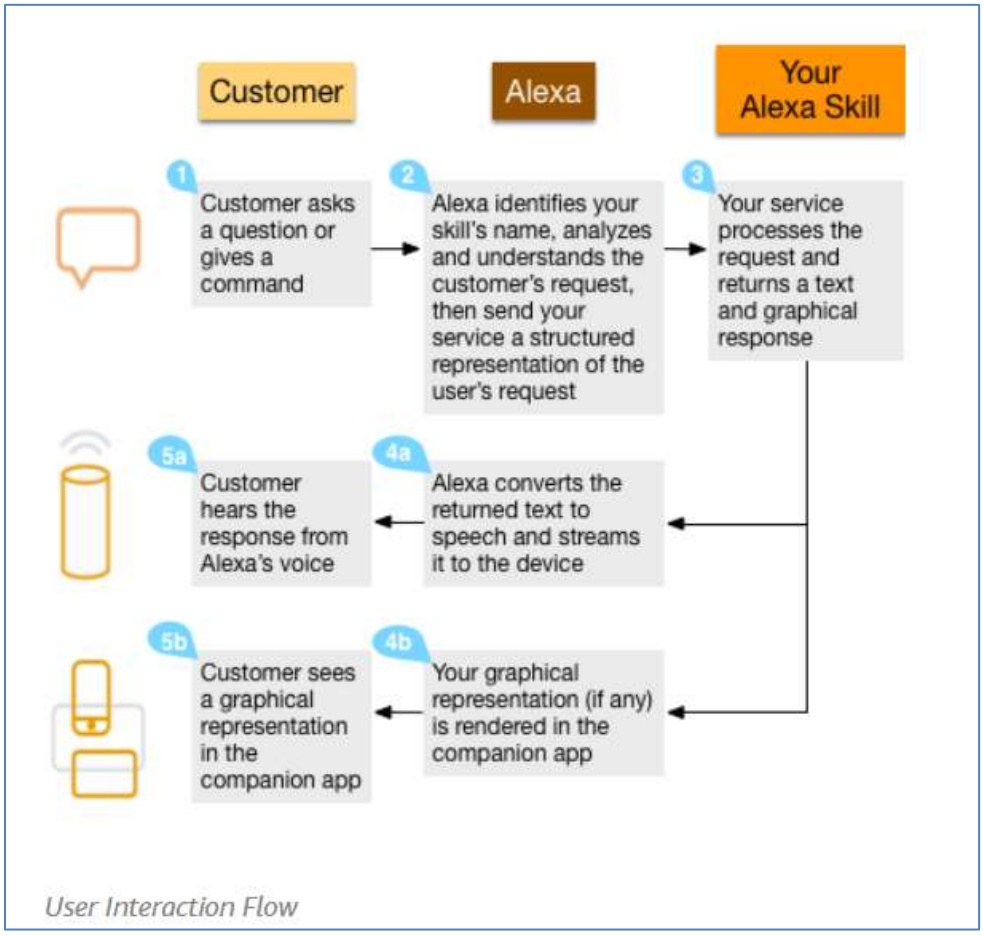
https://www.prnewswire.com/news-releases/high-school-sports-scores-from-scorestream-are-live-on-amazon-alexa-301136840.html

75. The '992 patent claim 1 further recites, in its fourth subsection, "converting the information retrieved from said information source into an audio message by a speech synthesis engine, the speech synthesis engine coupled to the media server." As non-limiting examples, Amazon's speech synthesis engine that is coupled to the media server converted the information retrieved from said information source into an audio message.

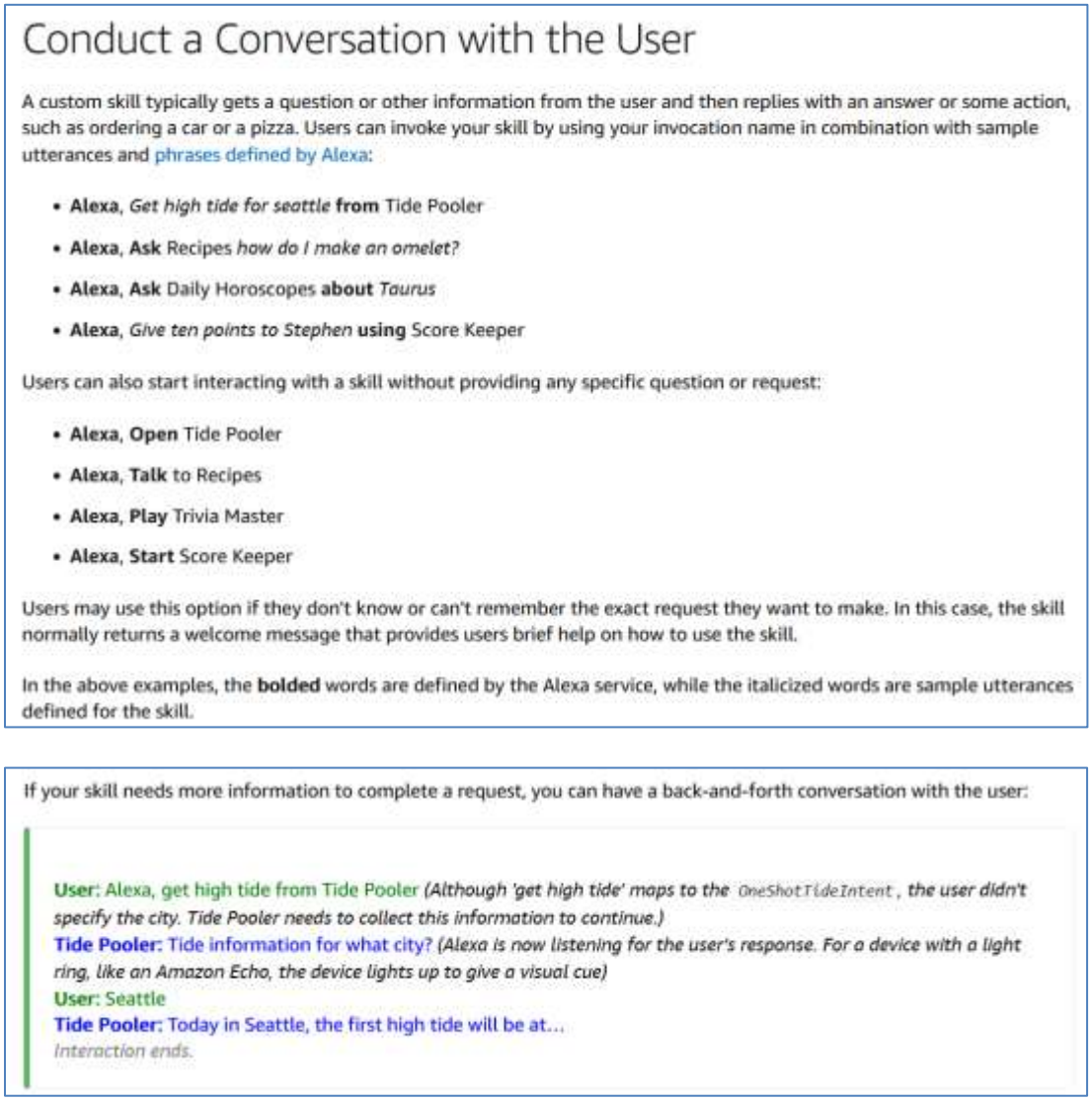
76. For example, the Alexa Voice Service included a speech-synthesis engine, where the Alexa Voice Service converted the returned text to speech.



Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo



https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)



Conduct a Conversation with the User

A custom skill typically gets a question or other information from the user and then replies with an answer or some action, such as ordering a car or a pizza. Users can invoke your skill by using your invocation name in combination with sample utterances and phrases defined by Alexa:

- **Alexa**, *Get high tide for seattle* **from** Tide Pooler
- **Alexa**, **Ask** Recipes *how do I make an omelet?*
- **Alexa**, **Ask** Daily Horoscopes **about** *Taurus*
- **Alexa**, *Give ten points to Stephen* **using** Score Keeper

Users can also start interacting with a skill without providing any specific question or request:

- **Alexa**, **Open** Tide Pooler
- **Alexa**, **Talk** to Recipes
- **Alexa**, **Play** Trivia Master
- **Alexa**, **Start** Score Keeper

Users may use this option if they don't know or can't remember the exact request they want to make. In this case, the skill normally returns a welcome message that provides users brief help on how to use the skill.

In the above examples, the **bolded** words are defined by the Alexa service, while the italicized words are sample utterances defined for the skill.

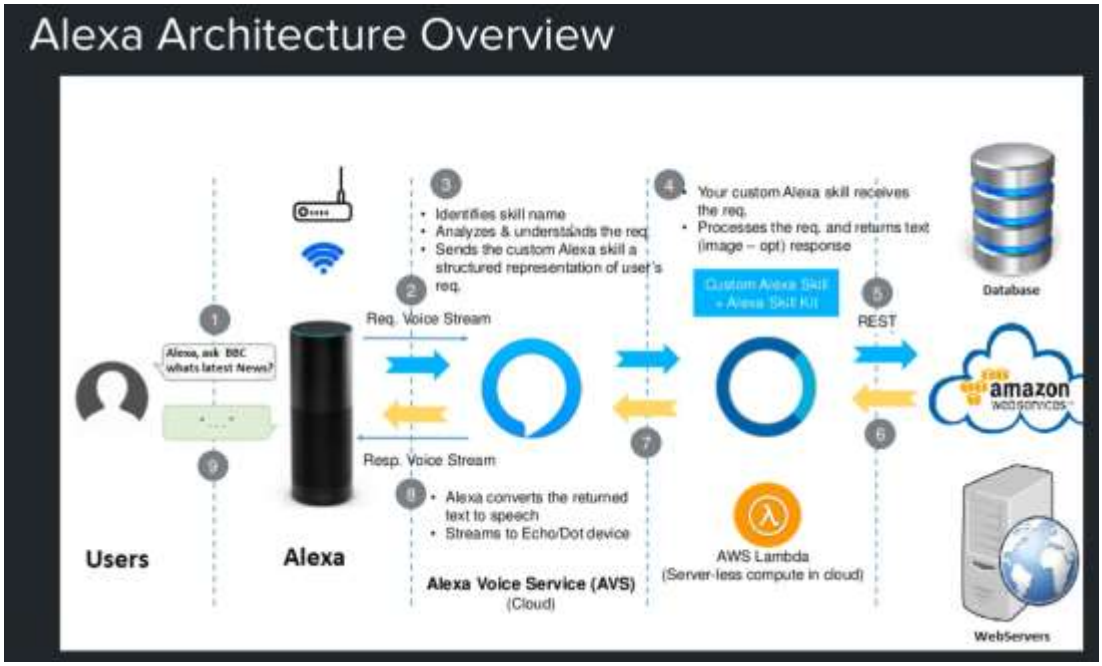
If your skill needs more information to complete a request, you can have a back-and-forth conversation with the user:

User: Alexa, get high tide from Tide Pooler *(Although 'get high tide' maps to the* `OneShotTideIntent`*, the user didn't specify the city. Tide Pooler needs to collect this information to continue.)*
Tide Pooler: Tide information for what city? *(Alexa is now listening for the user's response. For a device with a light ring, like an Amazon Echo, the device lights up to give a visual cue)*
User: Seattle
Tide Pooler: Today in Seattle, the first high tide will be at...
Interaction ends.

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

77. The '992 patent claim 1 further recites, in its fifth subsection, "transmitting said audio message to the electronic communication device for the user." As non-limiting examples, Amazon transmitted said audio message to the electronic communication device for the user.

78. For example, the Alexa Voice Service included a speech-synthesis engine, where the Alexa Voice Service converted the returned text to speech and transmitted to the user.



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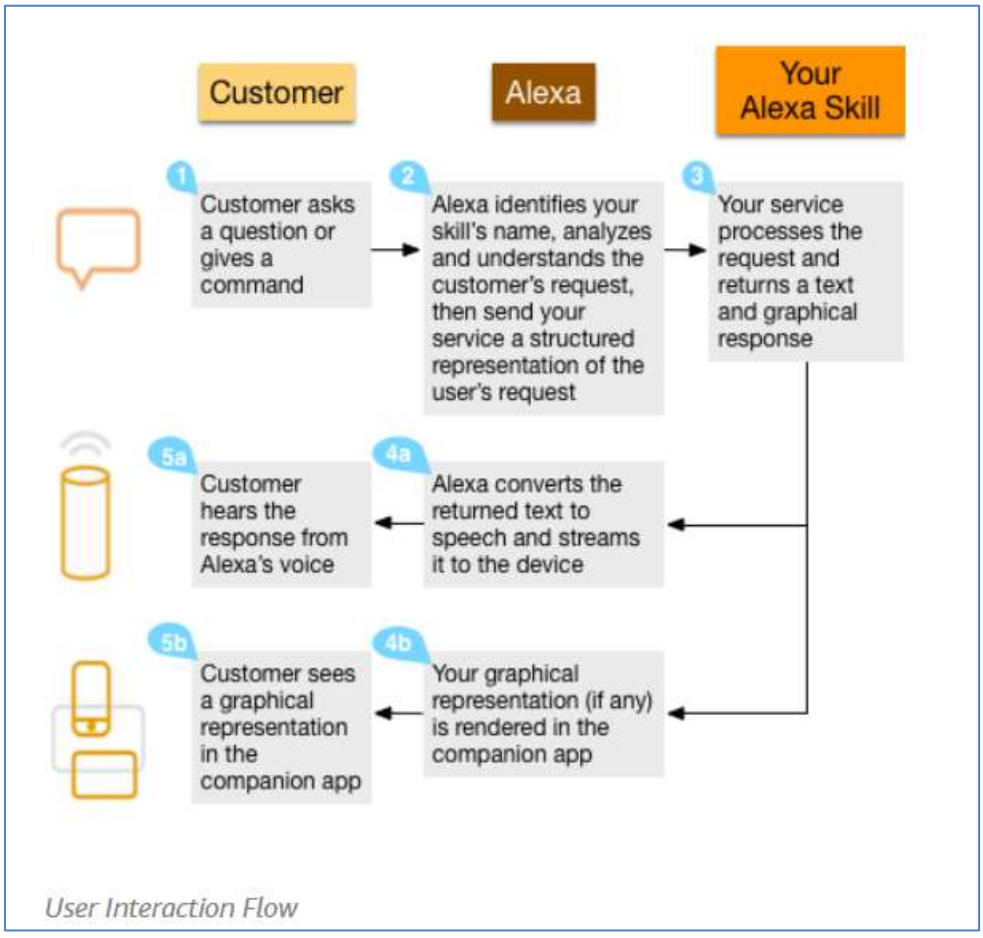


https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

79. The above non-limiting examples illustrate Amazon's infringement of claim 1 of the '992 patent. Amazon infringes additional claims in the '992 patent with the specific infringement contentions to be presented in discovery per the Court's procedure.

COUNT THREE: PATENT INFRINGEMENT OF THE '981 PATENT

80. Parus incorporates by reference the preceding paragraphs as if fully stated herein.

81. Claim 1 of the '981 patent is reproduced below:

> 1. A method, comprising:
>
> (a) receiving a speech command from a voice-enabled device of a particular user, over a network, by a speech-recognition engine coupled to a media server by an interactive voice response application including a user-defined search, the speech-recognition engine adapted to convert the speech command into a data message, the media server adapted to identify and access at least one or more websites containing information of interest to the particular user, the speech-recognition engine adapted to select particular speech-recognition grammar describing the speech command received and assigned to fetching content relating to the data message converted from the speech command and assigned to the user-defined search including a web request, along with a uniform resource locator of an identified web site from the one or more websites containing information of interest to the particular user and responsive to the web request;
>
> (b) selecting, by the media server, at least one information-source-retrieval instruction stored for the particular speech-recognition grammar in a database coupled to the media server and adapted to retrieve information from the at least one or more websites;
>
> (c) accessing, by a web-browsing server, a portion of an information source to retrieve information relating to the speech command, by using a processor of the web-browsing server, which processor (i) performs an instruction that requests information from an identified web site, (ii) utilizes a command to execute a content extractor within the web-browsing server to separate a portion of information that is relevant from other information on the web page using a name of a named object including the information, the information derived from only a portion of the web page containing information pertinent to the speech command, the content extractor adapted to use a content-descriptor file containing a description of the portion of information and the content-descriptor file adapted to indicate a location of the portion of the information within the information source;
>
> (d) selecting, by the web-browsing server, the information relating to the speech command from the information source and retrieving only the portion of the

information requested by the speech command according to the at least one information-source-retrieval instruction;

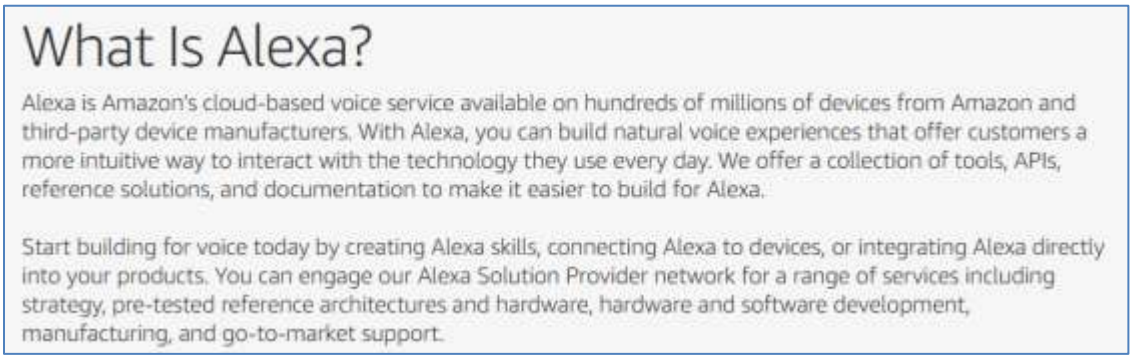
(e) converting the information retrieved from the information source into an audio message by a speech-synthesis engine, the speech-synthesis engine coupled to the media server; and

(f) transmitting the audio message by the voice-enabled device to the particular user.

82. Using its accused products, Amazon performed a method as specified by claim 1. Amazon accused products used to infringe claim 1 (and/or any other claims in the patent) are herein collectively the "'981 accused products." In the following, infringement by way of an Amazon Echo device is illustrated to provide non-limiting examples of Amazon's infringement of the '981 patent.

83. The '981 patent claim 1 begins, "A method, comprising." As non-limiting examples, Amazon performed this method using Amazon Echo smart speaker devices.

84. The Amazon Alexa system included the Alexa cloud based service and at least one Alexa compatible remote device such as the Amazon Echo smart speaker.

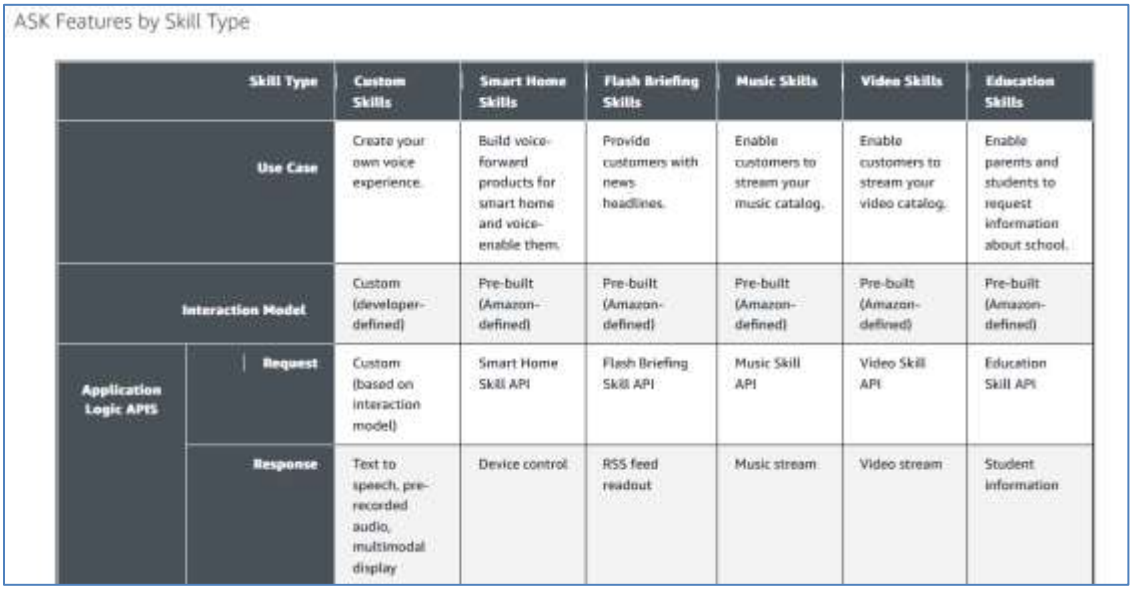


What Is Alexa?

Alexa is Amazon's cloud-based voice service available on hundreds of millions of devices from Amazon and third-party device manufacturers. With Alexa, you can build natural voice experiences that offer customers a more intuitive way to interact with the technology they use every day. We offer a collection of tools, APIs, reference solutions, and documentation to make it easier to build for Alexa.

Start building for voice today by creating Alexa skills, connecting Alexa to devices, or integrating Alexa directly into your products. You can engage our Alexa Solution Provider network for a range of services including strategy, pre-tested reference architectures and hardware, hardware and software development, manufacturing, and go-to-market support.

https://web.archive.org/web/20201111235237/https://developer.amazon.com/en-US/alexa (Internet archive, Sep. 2019)



ASK Features by Skill Type

Skill Type		Custom Skills	Smart Home Skills	Flash Briefing Skills	Music Skills	Video Skills	Education Skills
Use Case		Create your own voice experience.	Build voice-forward products for smart home and voice-enable them.	Provide customers with news headlines.	Enable customers to stream your music catalog.	Enable customers to stream your video catalog.	Enable parents and students to request information about school.
Interaction Model		Custom (developer-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)	Pre-built (Amazon-defined)
Application Logic APIs	Request	Custom (based on interaction model)	Smart Home Skill API	Flash Briefing Skill API	Music Skill API	Video Skill API	Education Skill API
	Response	Text to speech, pre-recorded audio, multimodal display	Device control	RSS feed readout	Music stream	Video stream	Student information

https://web.archive.org/web/20200817142721/https://developer.amazon.com/en-US/alexa/alexa-skills-kit/get-deeper (Internet archive, Mar. 2020)

What is Amazon Echo?

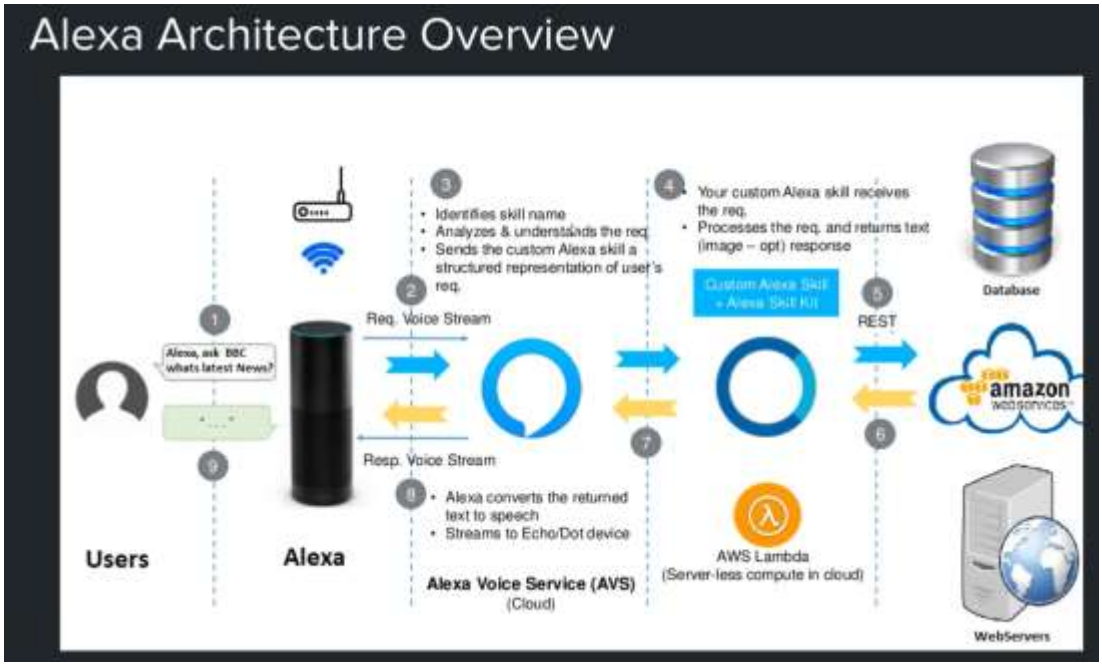
Amazon Echo is designed around your voice. It's hands-free and always on. With seven microphones and beam forming technology, Echo can hear you from across the room—even while music is playing. Echo is also an expertly tuned speaker that can fill any room with immersive sound.

Echo connects to Alexa, a cloud-based voice service, to provide information, answer questions, play music, read the news, check sports scores or the weather, and more—instantly. All you have to do is ask. Echo begins working as soon as it detects the wake word. You can pick Alexa or Amazon as your wake word.

...and adding new skills

We are always adding new capabilities to Echo. Recently, we've added local search from Yelp, streaming music from Pandora, audiobooks from Audible, Google Calendar access, live sports scores and schedules, traffic reports, Amazon.com re-ordering, control of smart home devices with WeMo, Philips Hue, SmartThings, Insteon, Wink, and more.

https://web.archive.org/web/20160131082954/http://www.amazon.com/Amazon-SK705DI-Echo/dp/B00X4WHP5E (Internet archive, Jun. 2015)

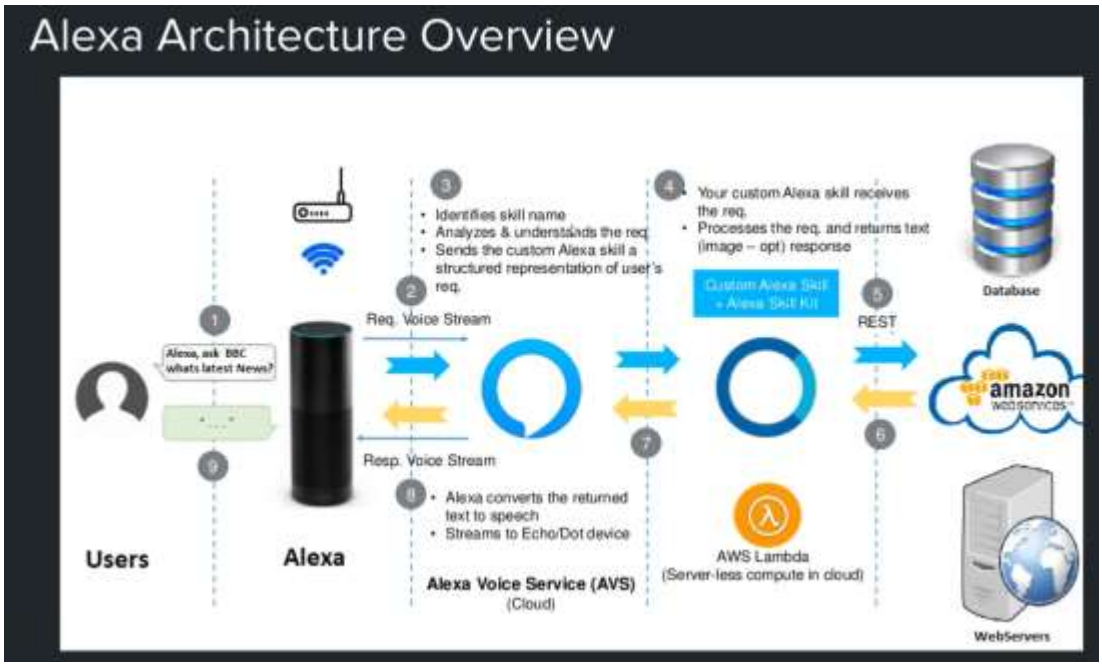


Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo

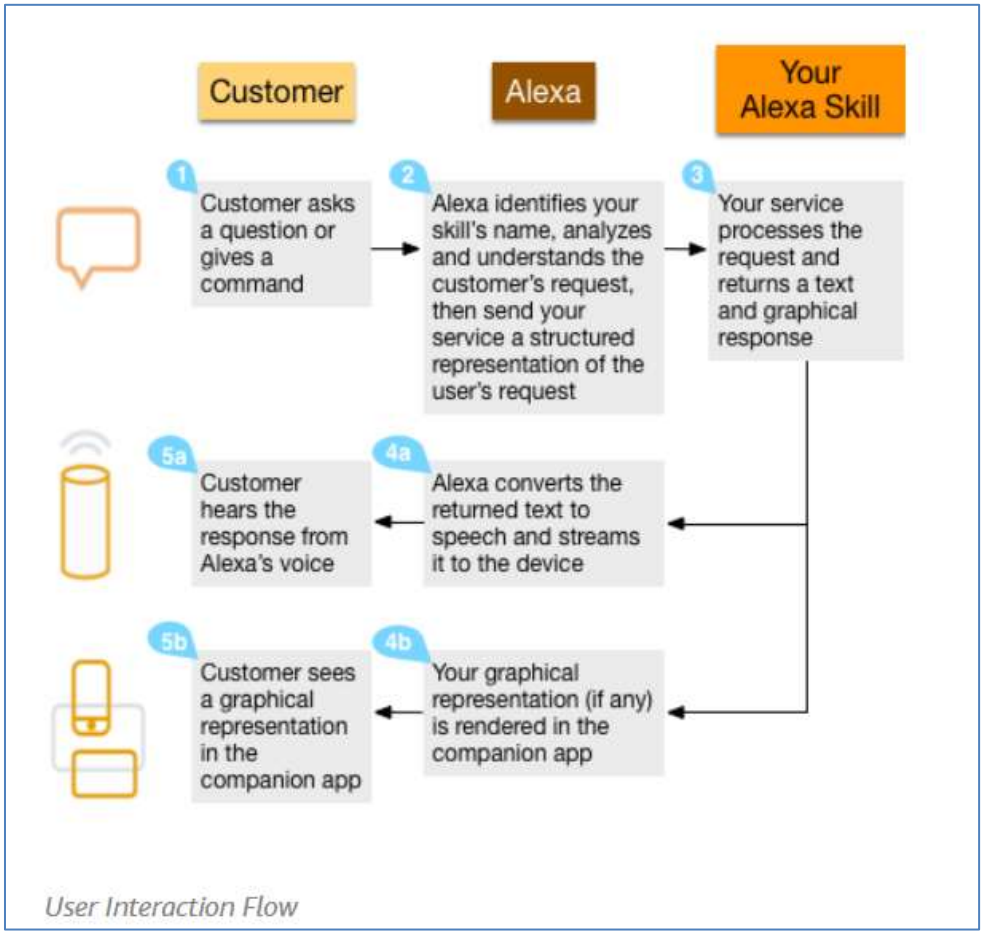
85. The '981 patent claim 1 further recites, in subsection (a), "(a) receiving a speech command from a voice-enabled device of a particular user, over a network, by a speech-recognition engine coupled to a media server by an interactive voice response application including a user-defined search, the speech-recognition engine adapted to convert the speech command into a data message, the media server adapted to identify and access at least one or more websites containing information of interest to the particular user, the speech-recognition engine adapted to select particular speech-recognition grammar describing the speech command received and assigned to fetching content relating to the data message converted from the speech command and assigned to the user-defined search including a web request, along with a uniform resource locator of an identified web site from the one or more websites containing information of interest to the particular user and responsive to the web request." As non-limiting examples, Amazon's speech recognition engine coupled to its media server received a speech command from a voice-enabled device of a particular user, over a network, by an interactive voice response application including a user-defined search, the speech-recognition engine adapted to convert the speech command into

a data message, the media server adapted to identify and access at least one or more websites containing information of interest to the particular user, the speech-recognition engine adapted to select particular speech-recognition grammar describing the speech command received and assigned to fetching content relating to the data message converted from the speech command and assigned to the user-defined search including a web request, along with a uniform resource locator of an identified web site from the one or more websites containing information of interest to the particular user and responsive to the web request.

86. For example, the Amazon Echo was a voice enabled device, the Alexa Voice Service included a speech recognition engine, the Alexa Skills and AWS Lambda were included in a media server, the Alexa Voice Service included an interactive voice response application, and the user defined search was provided by a particular Alexa skill.



Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo



https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

Conduct a Conversation with the User

A custom skill typically gets a question or other information from the user and then replies with an answer or some action, such as ordering a car or a pizza. Users can invoke your skill by using your invocation name in combination with sample utterances and phrases defined by Alexa:

- **Alexa**, *Get high tide for seattle* **from** Tide Pooler
- **Alexa**, **Ask** Recipes *how do I make an omelet?*
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- **Alexa**, *Give ten points to Stephen* **using** Score Keeper

Users can also start interacting with a skill without providing any specific question or request:

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- **Alexa**, **Play** Trivia Master
- **Alexa**, **Start** Score Keeper

Users may use this option if they don't know or can't remember the exact request they want to make. In this case, the skill normally returns a welcome message that provides users brief help on how to use the skill.

In the above examples, the **bolded** words are defined by the Alexa service, while the italicized words are sample utterances defined for the skill.

If your skill needs more information to complete a request, you can have a back-and-forth conversation with the user:

User: Alexa, get high tide from Tide Pooler *(Although 'get high tide' maps to the* `OneShotTideIntent`*, the user didn't specify the city. Tide Pooler needs to collect this information to continue.)*
Tide Pooler: Tide information for what city? *(Alexa is now listening for the user's response. For a device with a light ring, like an Amazon Echo, the device lights up to give a visual cue)*
User: Seattle
Tide Pooler: Today in Seattle, the first high tide will be at...
Interaction ends.

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

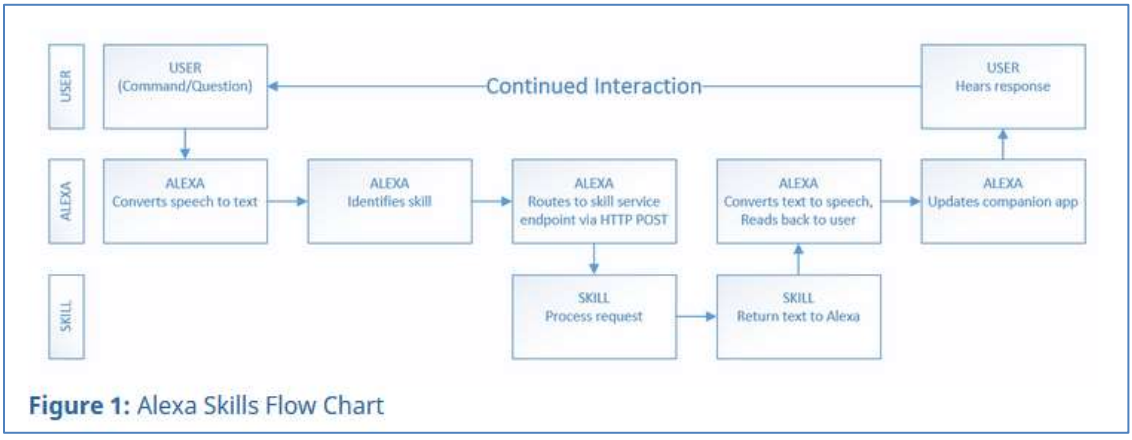
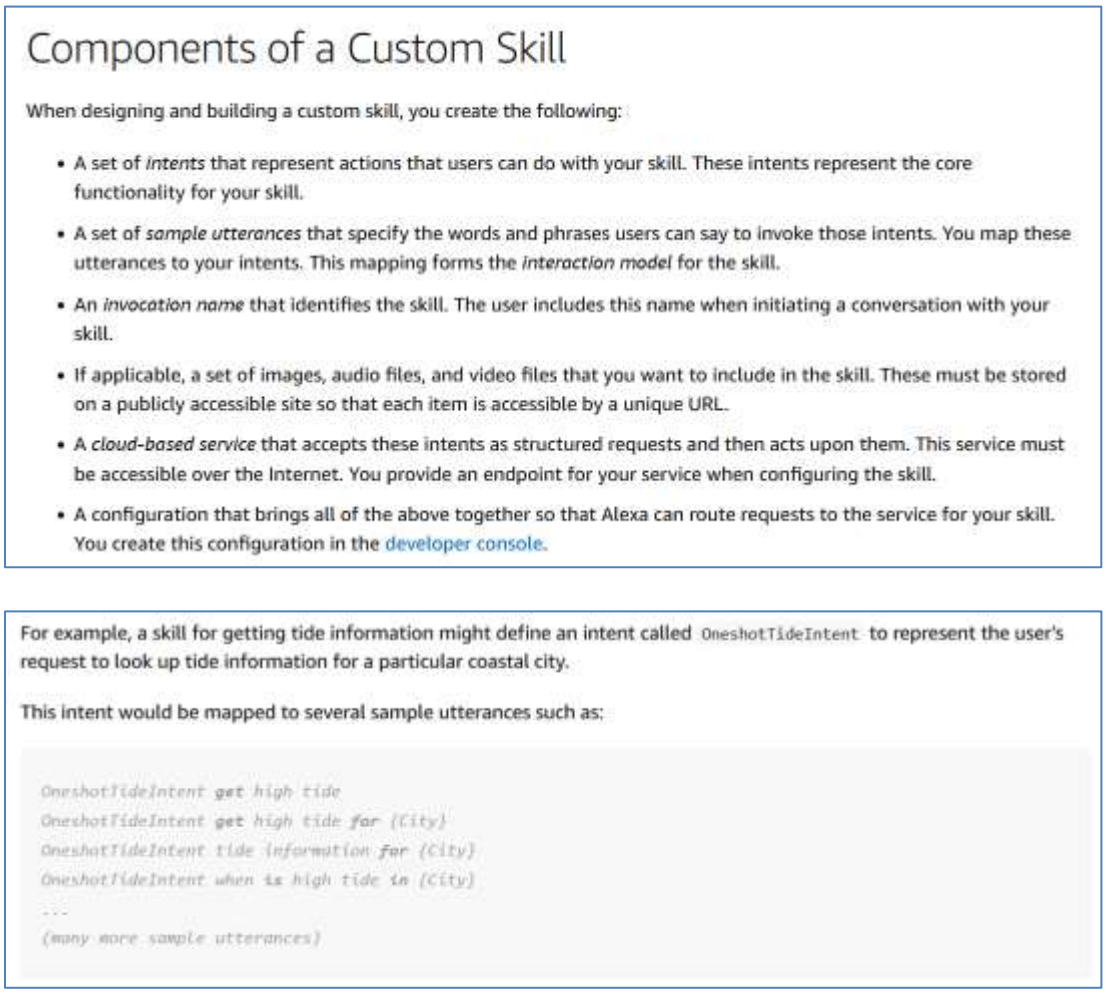


Figure 1: Alexa Skills Flow Chart

https://www.codemag.com/article/1805081/Building-an-Alexa-Skill-with-AWS-Lambda

87. The Alexa Voice Service analyzes and understands the user request and sends a structured representation of the user's request to the particular Alexa skill. For example, the Amazon intents were a data message.



Components of a Custom Skill

When designing and building a custom skill, you create the following:

- A set of *intents* that represent actions that users can do with your skill. These intents represent the core functionality for your skill.
- A set of *sample utterances* that specify the words and phrases users can say to invoke those intents. You map these utterances to your intents. This mapping forms the *interaction model* for the skill.
- An *invocation name* that identifies the skill. The user includes this name when initiating a conversation with your skill.
- If applicable, a set of images, audio files, and video files that you want to include in the skill. These must be stored on a publicly accessible site so that each item is accessible by a unique URL.
- A *cloud-based service* that accepts these intents as structured requests and then acts upon them. This service must be accessible over the Internet. You provide an endpoint for your service when configuring the skill.
- A configuration that brings all of the above together so that Alexa can route requests to the service for your skill. You create this configuration in the developer console.

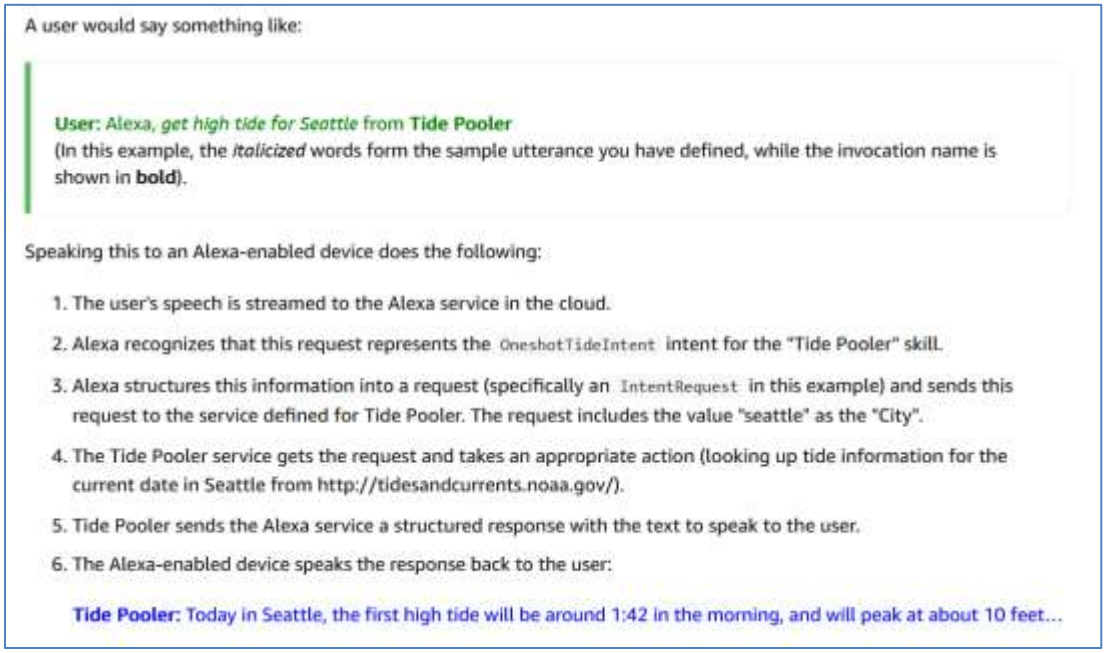
For example, a skill for getting tide information might define an intent called `OneshotTideIntent` to represent the user's request to look up tide information for a particular coastal city.

This intent would be mapped to several sample utterances such as:

```
OneshotTideIntent get high tide
OneshotTideIntent get high tide for {City}
OneshotTideIntent tide information for {City}
OneshotTideIntent when is high tide in {City}
...
{many more sample utterances}
```

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

88. The particular Alexa skill accessed a website containing the information of interest. For example, the Tide Pooler skill accessed the noaa.gov website. Amazon similarly acted as a skill developer for its own Amazon-created skills.



A user would say something like:

> **User:** Alexa, *get high tide for Seattle* from **Tide Pooler**
> (In this example, the *italicized* words form the sample utterance you have defined, while the invocation name is shown in **bold**).

Speaking this to an Alexa-enabled device does the following:

1. The user's speech is streamed to the Alexa service in the cloud.
2. Alexa recognizes that this request represents the `OneshotTideIntent` intent for the "Tide Pooler" skill.
3. Alexa structures this information into a request (specifically an `IntentRequest` in this example) and sends this request to the service defined for Tide Pooler. The request includes the value "seattle" as the "City".
4. The Tide Pooler service gets the request and takes an appropriate action (looking up tide information for the current date in Seattle from http://tidesandcurrents.noaa.gov/).
5. Tide Pooler sends the Alexa service a structured response with the text to speak to the user.
6. The Alexa-enabled device speaks the response back to the user:

   Tide Pooler: Today in Seattle, the first high tide will be around 1:42 in the morning, and will peak at about 10 feet...

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

89. Also, for example, the Amazon AWS Lambda service provided for online information lookup.

Host the Cloud-Based Service for Your Skill

You can host your service in AWS Lambda or as a web service hosted on your own endpoint.

AWS Lambda (an Amazon Web Services offering) is a service that lets you run code in the cloud without managing servers. Alexa sends your Lambda function user requests and your code can inspect the request, take any necessary actions (such as looking up information online) and then send back a response. You can write Lambda functions in Node.js, Java, Python, C#, or Go. This is generally the easiest way to host the service for a skill.

Alternatively, you can write a *web service* and host it with any cloud hosting provider. The web service must accept requests over HTTPS. In this case, Alexa sends requests to your web service and your service takes any necessary actions and then sends back a response. You can write your web service in any language.

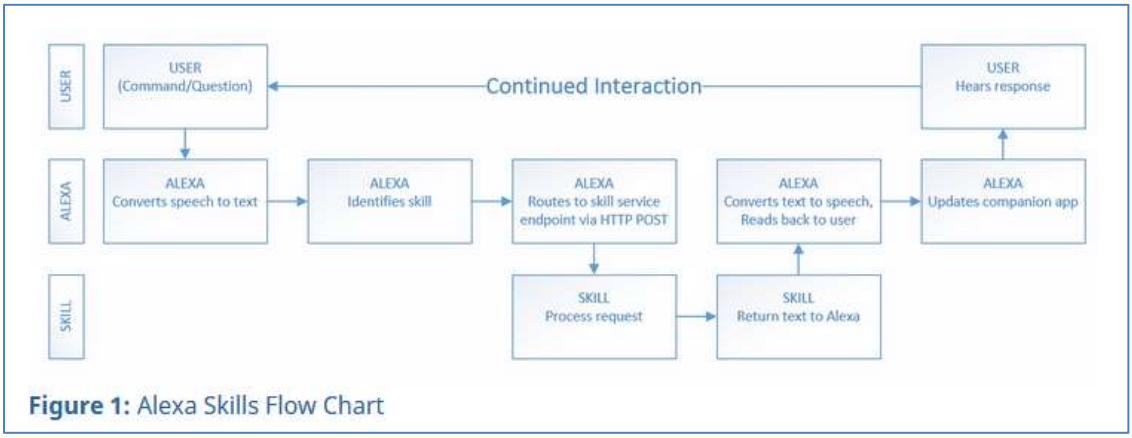
Learn more about using Lambda for a skill:

- Create a Lambda Function for a Skill

Learn more about using a web service for a skill:

- Hosting a Custom Skill as a Web Service

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)



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90. Further, for example, the Alexa Voice Service selected from particular sample utterances.

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https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

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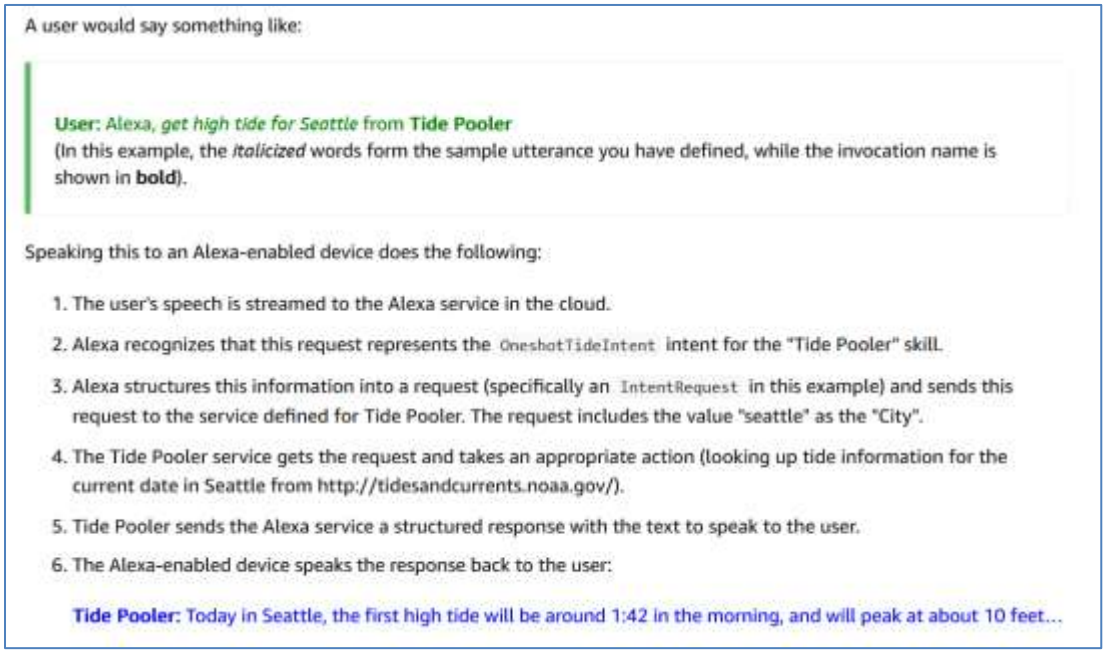

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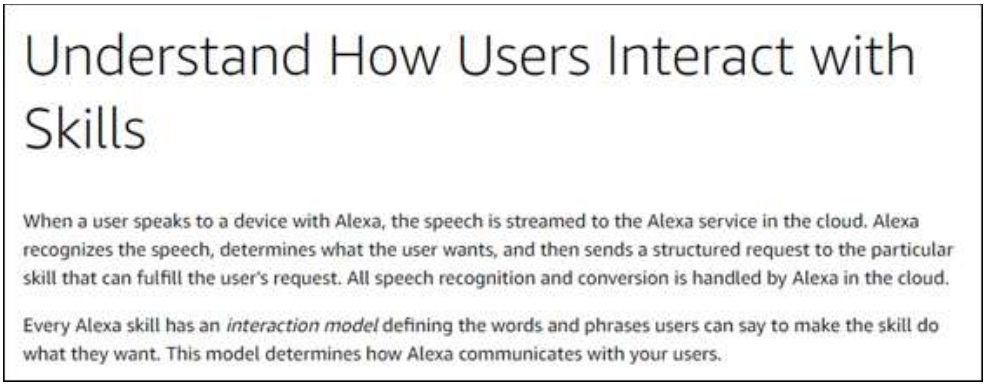
https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

93. The recognition grammar used by Amazon is described in Amazon's developer site.

https://developer.amazon.com/ja-JP/docs/alexa/alexa-gadgets-toolkit/receive-voice-input.html



Understand How Users Interact with Skills

When a user speaks to a device with Alexa, the speech is streamed to the Alexa service in the cloud. Alexa recognizes the speech, determines what the user wants, and then sends a structured request to the particular skill that can fulfill the user's request. All speech recognition and conversion is handled by Alexa in the cloud.

Every Alexa skill has an *interaction model* defining the words and phrases users can say to make the skill do what they want. This model determines how Alexa communicates with your users.

https://web.archive.org/web/20190610015215/https://developer.amazon.com/docs/ask-overviews/understanding-how-users-interact-with-skills.html (Internet archive Jun. 2019)

High-level Steps to Create the Interaction Model and Dialog Model

The developer console is designed around defining each intent, its slots, its utterances, and (optionally) the prompts Alexa uses when conversing with the user to collect and confirm the slot values.

Once you know an intent you want to create for your skill, complete the following high-level steps in the developer console. Click the link in each step for more details.

1. Create or edit a skill that includes the custom interaction model.
2. Create an intent and write some initial utterances. An intent represents a specific user request (for example, `PlanMyTrip` intent for gathering information about a trip to save in a list).
3. Review your initial utterances and identify the words or phrases that represent variable information. Create new intent slots for these words and replace the words with slot notation in the utterances.
4. Choose or create the appropriate slot types for the slots you have identified.
5. For each intent slot, determine whether the slot value is required in order to fulfill the request. Write the prompts and utterances Alexa uses in the conversation to elicit the slot.
6. For each *required slot*, determine whether the user must explicitly confirm the slot value before your skill completes the request. Write the prompts Alexa should use to ask for confirmation.
7. For each slot (required or not), determine whether you need to define validation rules to guide users to provide acceptable values. Set up the rules and write the prompts Alexa should use to ask for corrected values.
8. For the entire intent, decide whether the user must explicitly confirm the action before your skill completes the request. Write the prompts Alexa should use to ask for confirmation.
9. When you are finished defining the intents, save and build the interaction model and dialog model.

If you include any of the dialog model components (required slots, slot confirmation, intent confirmation, or slot validation rules) your code needs to return the Dialog.Delegate directive to let Alexa use your prompts to ask the user for the required slots and confirmations. Also see About Managing the Conversation with the User for other ways to collect and confirm user information.

https://web.archive.org/web/20190525122808/https://developer.amazon.com/docs/custom-skills/create-the-interaction-model-for-your-skill.html (Internet archive May, 2019)

Identify the Slots for the Intent

Once you have written a few utterances, note the words or phrases that represent variable information. These will become the intent's *slots*. For example, in the utterances identified earlier, the variables are highlighted in red.

```
i am going on a trip on friday
i want to visit portland
i want to travel from seattle to portland next friday
i'm driving from seattle to portland
i'm driving to portland to go hiking
```

Create a slot for each of these words or phrases and then replace the original word with the slot name in curly brackets (`{ }`):

1. Click an intent in the left-hand navigation to open the detail page for the intent.
2. In an utterance, highlight the word or phrase representing the slot value.
3. In the drop-down that appears, enter a name for the slot in the edit box and click **Add**.

   This creates a new slot for the intent and replaces the original value in the utterance with the slot name in curly brackets (`{ }`).

   For the example shown above, you would note that "seattle" represents the city the user wants to depart from, so you might call this slot `fromCity` . The utterance would now look like this:

   ```
   i want to travel from {fromCity} to portland next friday
   ```

4. Repeat for all the remaining variable words.

   In the `PlanMyTrip` intent, you might end up with the slots like this:

   - `fromCity`
   - `toCity`
   - `travelDate`
   - `travelMode`
   - `activity`

https://web.archive.org/web/20190610224424/https://developer.amazon.com/docs/custom-skills/create-intents-utterances-and-slots.html#identify-slots (Internet archive Jun. 2019)

JSON for Intents and Utterances (Interaction Model Schema)

You can see and edit the JSON representation of all of your intents and utterances in the JSON Editor. The `interactionModel.languageModel.intents` property contains an array of intent objects. For a given intent, the `samples` property contains an array of sample utterances. If the intent has any slots, the `slots` property contains an array of slot objects. A slot object can also have a `samples` property if you have defined user utterances for the slot as part of the dialog model.

This example shows a portion of the `intent` object for a `PlanMyTrip` intent. The utterances for the intent are in `interactionModel.languageModel.intents[].samples` . Each slot has its own `samples` array. For brevity, other properties within `interactionModel` and `languageModel` are not shown. For details about the interaction model JSON, see Interaction Model Schema.

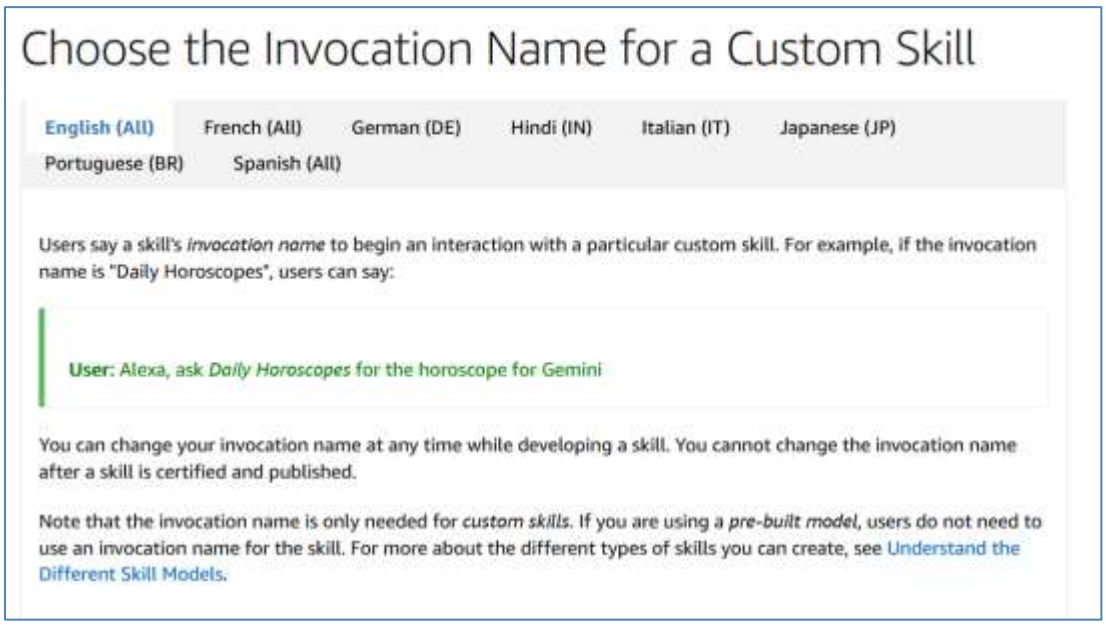
```
{
  "interactionModel": {
    "languageModel": {
      "intents": [
        {
          "name": "PlanMyTrip",
          "slots": [
            {
              "name": "travelDate",
              "type": "AMAZON.DATE",
              "samples": [
                "I am taking this trip on {travelDate}",
                "on {travelDate}",
                "{travelDate}"
              ]
            },
            {
              "name": "toCity",
              "type": "AMAZON.US_CITY",
              "samples": [
                "I'm going to {toCity}",
                "{toCity}"
              ]
            },
            {
              "name": "fromCity",
              "type": "AMAZON.US_CITY",
              "samples": [
                "{fromCity}",
                "I'm starting from {fromCity}"
              ]
            },
```

```
            {
              "name": "travelMode",
              "type": "LIST_OF_TRAVEL_MODES",
              "samples": [
                "I am going to {travelMode}",
                "{travelMode}"
              ]
            },
            {
              "name": "activity",
              "type": "LIST_OF_ACTIVITIES",
              "samples": [
                "{activity}",
                "I plan to {activity}"
              ]
            }
          ],
          "samples": [
            "{toCity}",
            "I want to travel from {fromCity} to {toCity} {travelDate}",
            "i want to visit {toCity}",
            "i am going on trip on {travelDate}",
            "I'm {travelMode} from {fromCity} to {toCity}",
            "i'm {travelMode} to {toCity} to {activity}",
            "plan a trip",
            "plan a trip to {toCity} ",
            "plan a trip starting from {fromCity} ",
            "I'd like to leave on {travelDate} ",
            "I'd like to leave on the {travelDate} ",
            "I'd like to fly out of {fromCity} "
          ]
        }
      ]
    }
  }
}
```

https://web.archive.org/web/20190610224424/https://developer.amazon.com/docs/custom-skills/create-intents-utterances-and-slots.html#identify-slots (Internet archive Jun. 2019)

94. The '981 patent claim 1 further recites, in subsection (b), "(b) selecting, by the media server, at least one information-source-retrieval instruction stored for the particular speech-recognition grammar in a database coupled to the media server and adapted to retrieve information from the at least one or more websites." As non-limiting examples, Amazon's media server selects at least one information-source-retrieval instruction stored for the particular speech-recognition grammar in a database coupled to the media server and adapted to retrieve information from the at least one or more websites.

95. Alexa identifies (selects) a skill and performs an invocation of the skill. For example, an invocation name is used to begin an interaction with a skill. On information and belief an information-source-retrieval instruction is associated with a skill invocation name, where the skill is adapted to retrieve information.



https://web.archive.org/web/20201216182909/https://developer.amazon.com/en-US/docs/alexa/custom-skills/choose-the-invocation-name-for-a-custom-skill.html (Internet archive Nov. 2020)

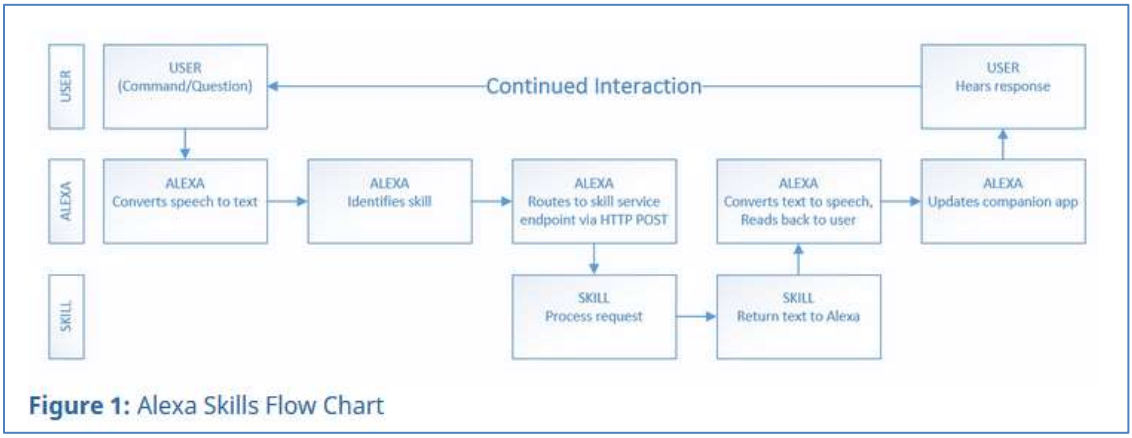


Figure 1: Alexa Skills Flow Chart

https://www.codemag.com/article/1805081/Building-an-Alexa-Skill-with-AWS-Lambda

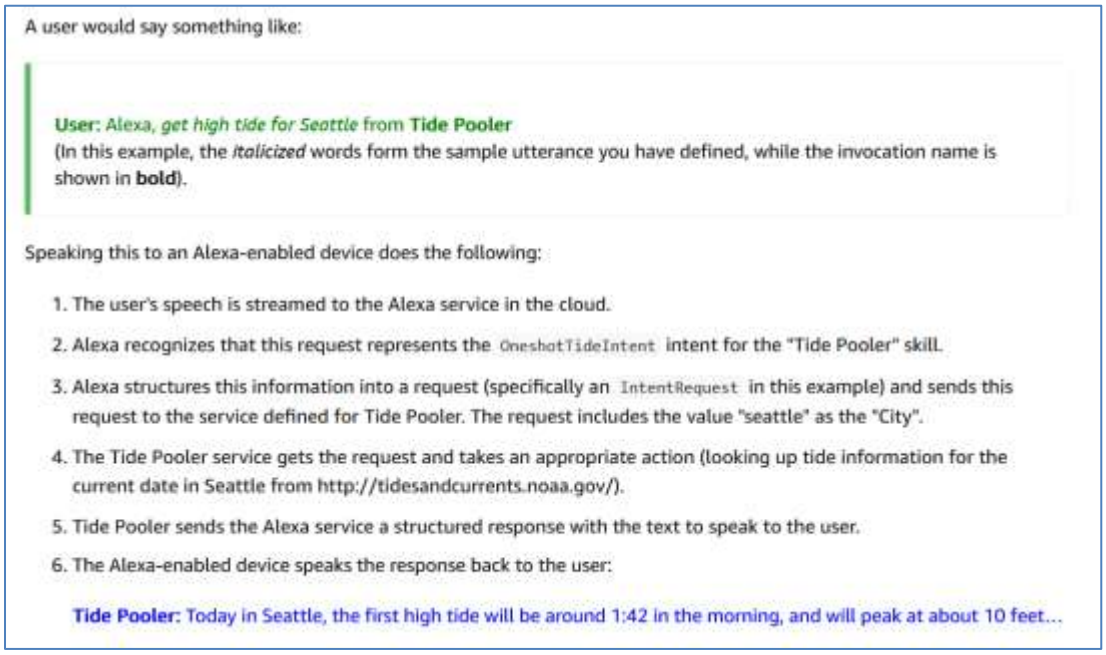
96. The '981 patent claim 1 further recites, in subsection (c), "(c) accessing, by a web-browsing server, a portion of an information source to retrieve information relating to the speech command, by using a processor of the web-browsing server, which processor (i) performs an instruction that requests information from an identified web site, (ii) utilizes a command to execute a content extractor within the web-browsing server to separate a portion of information that is relevant from other information on the web page using a name of a named object including the information, the information derived from only a portion of the web page containing information pertinent to the speech command, the content extractor adapted to use a content-descriptor file containing a description of the portion of information and the content-descriptor file adapted to indicate a location of the portion of the information within the information source." As non-limiting examples, Amazon's web-browsing server accesses a portion of an information source to retrieve information relating to the speech command, by using a processor of the web-browsing server, which processor (i) performs an instruction that requests information from an identified web site, (ii) utilizes a command to execute a content extractor within the web-browsing server to separate a portion of information that is relevant from other information on the web page using a name of a named object including the information, the information derived from only a portion of the web page containing information pertinent to the speech command, the content extractor

adapted to use a content-descriptor file containing a description of the portion of information and the content-descriptor file adapted to indicate a location of the portion of the information within the information source.

97. The particular Alexa skill performed as a web browsing server to access a portion of an information source. For example, the Tide Pool skill accessed a portion of the web page at http://tidesandcurrents.noaa.gov/. Amazon similarly acted as a skill developer for its own Amazon-created skills.

(i) The API call would be an instruction

(ii) The Alexa skill would process the returned information from the website to extract/format the requested information.


A user would say something like:

User: Alexa, *get high tide for Seattle* from **Tide Pooler**
(In this example, the *italicized* words form the sample utterance you have defined, while the invocation name is shown in **bold**).

Speaking this to an Alexa-enabled device does the following:

1. The user's speech is streamed to the Alexa service in the cloud.
2. Alexa recognizes that this request represents the `OneshotTideIntent` intent for the "Tide Pooler" skill.
3. Alexa structures this information into a request (specifically an `IntentRequest` in this example) and sends this request to the service defined for Tide Pooler. The request includes the value "seattle" as the "City".
4. The Tide Pooler service gets the request and takes an appropriate action (looking up tide information for the current date in Seattle from http://tidesandcurrents.noaa.gov/).
5. Tide Pooler sends the Alexa service a structured response with the text to speak to the user.
6. The Alexa-enabled device speaks the response back to the user:

Tide Pooler: Today in Seattle, the first high tide will be around 1:42 in the morning, and will peak at about 10 feet...

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

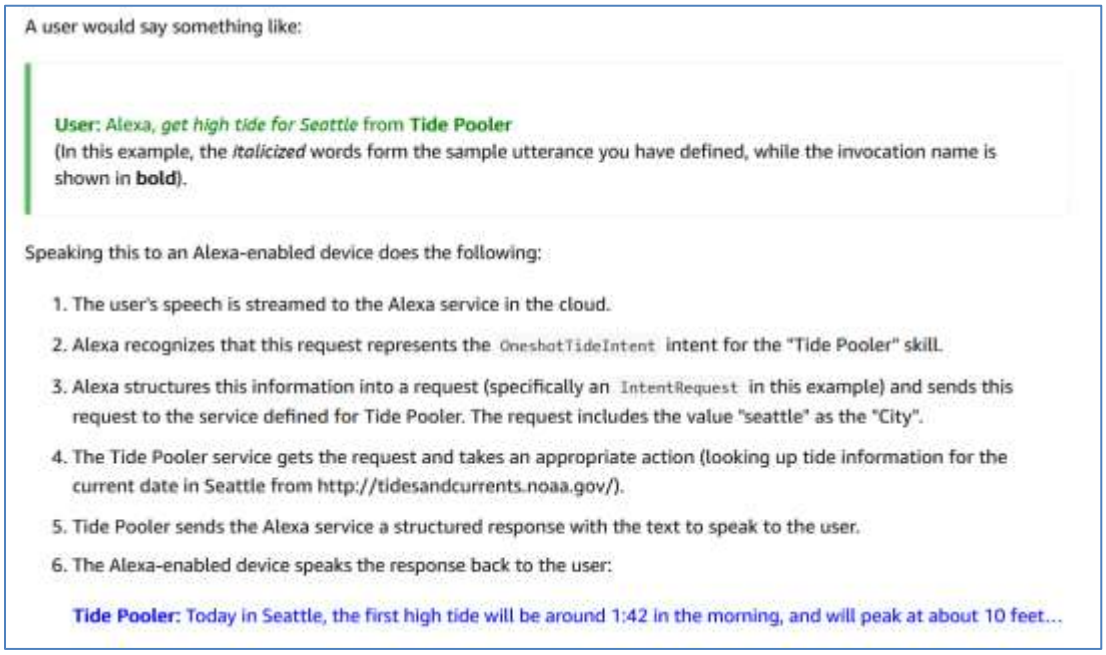
98. The '981 patent claim 1 further recites, in subsection (d), "(d) selecting, by the web-browsing server, the information relating to the speech command from the information source and retrieving only the portion of the information requested by the speech command according to the

at least one information-source-retrieval instruction." As non-limiting examples, Amazon's web-browsing server selected the information relating to the speech command from the information source and retrieved only the portion of the information requested by the speech command according to the at least one information-source-retrieval instruction.

99. For example, the Tide Pool skill accessed a portion of the web page at http://tidesandcurrents.noaa.gov/. Amazon similarly acted as a skill developer for its own Amazon-created skills.

(i) The API call would be an instruction

(ii) The Alexa skill would process the returned information from the website to extract/format the requested information.



A user would say something like:

> **User:** Alexa, *get high tide for Seattle* from **Tide Pooler**
> (In this example, the *italicized* words form the sample utterance you have defined, while the invocation name is shown in **bold**).

Speaking this to an Alexa-enabled device does the following:

1. The user's speech is streamed to the Alexa service in the cloud.
2. Alexa recognizes that this request represents the `OneshotTideIntent` intent for the "Tide Pooler" skill.
3. Alexa structures this information into a request (specifically an `IntentRequest` in this example) and sends this request to the service defined for Tide Pooler. The request includes the value "seattle" as the "City".
4. The Tide Pooler service gets the request and takes an appropriate action (looking up tide information for the current date in Seattle from http://tidesandcurrents.noaa.gov/).
5. Tide Pooler sends the Alexa service a structured response with the text to speak to the user.
6. The Alexa-enabled device speaks the response back to the user:

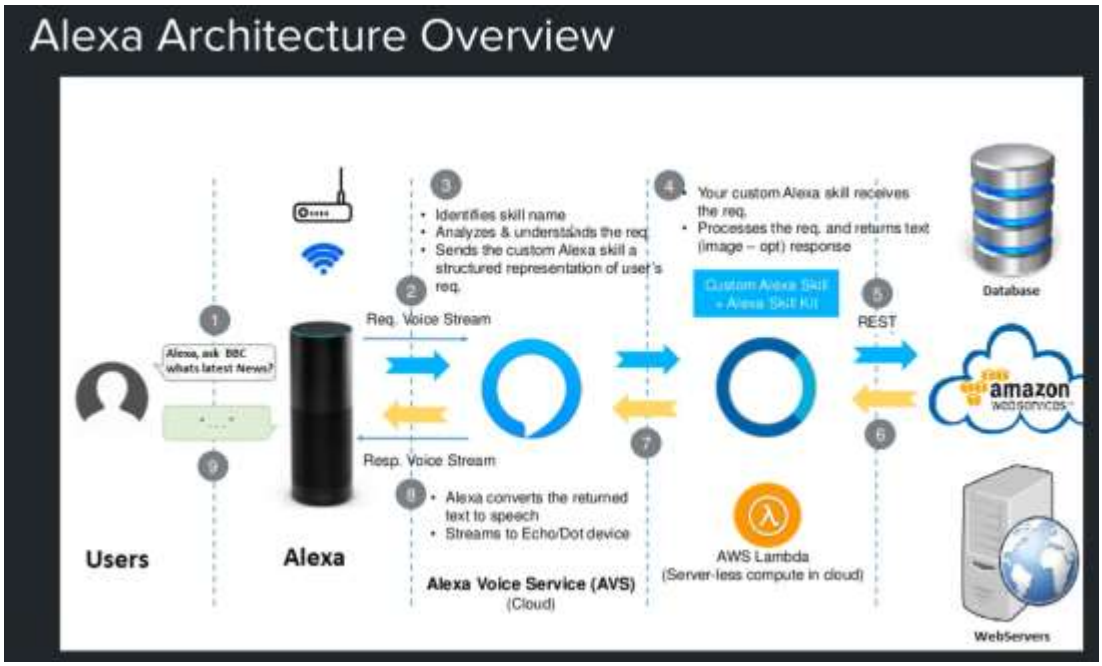
   Tide Pooler: Today in Seattle, the first high tide will be around 1:42 in the morning, and will peak at about 10 feet...

https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

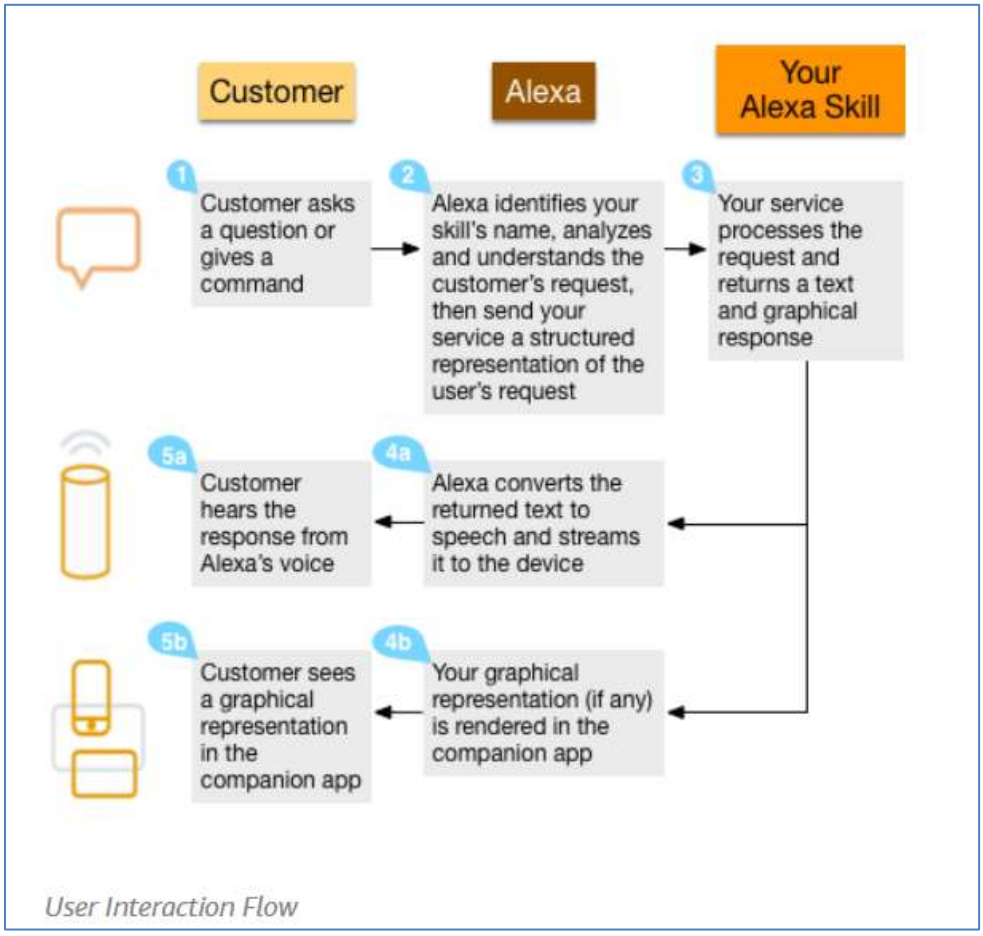
100. The '981 patent claim 1 further recites, in subsection (e), "(e) converting the information retrieved from the information source into an audio message by a speech-synthesis engine, the speech-synthesis engine coupled to the media server." As non-limiting examples,

Amazon's speech-synthesis engine, coupled to the media server, converted the information retrieved from the information source into an audio message.

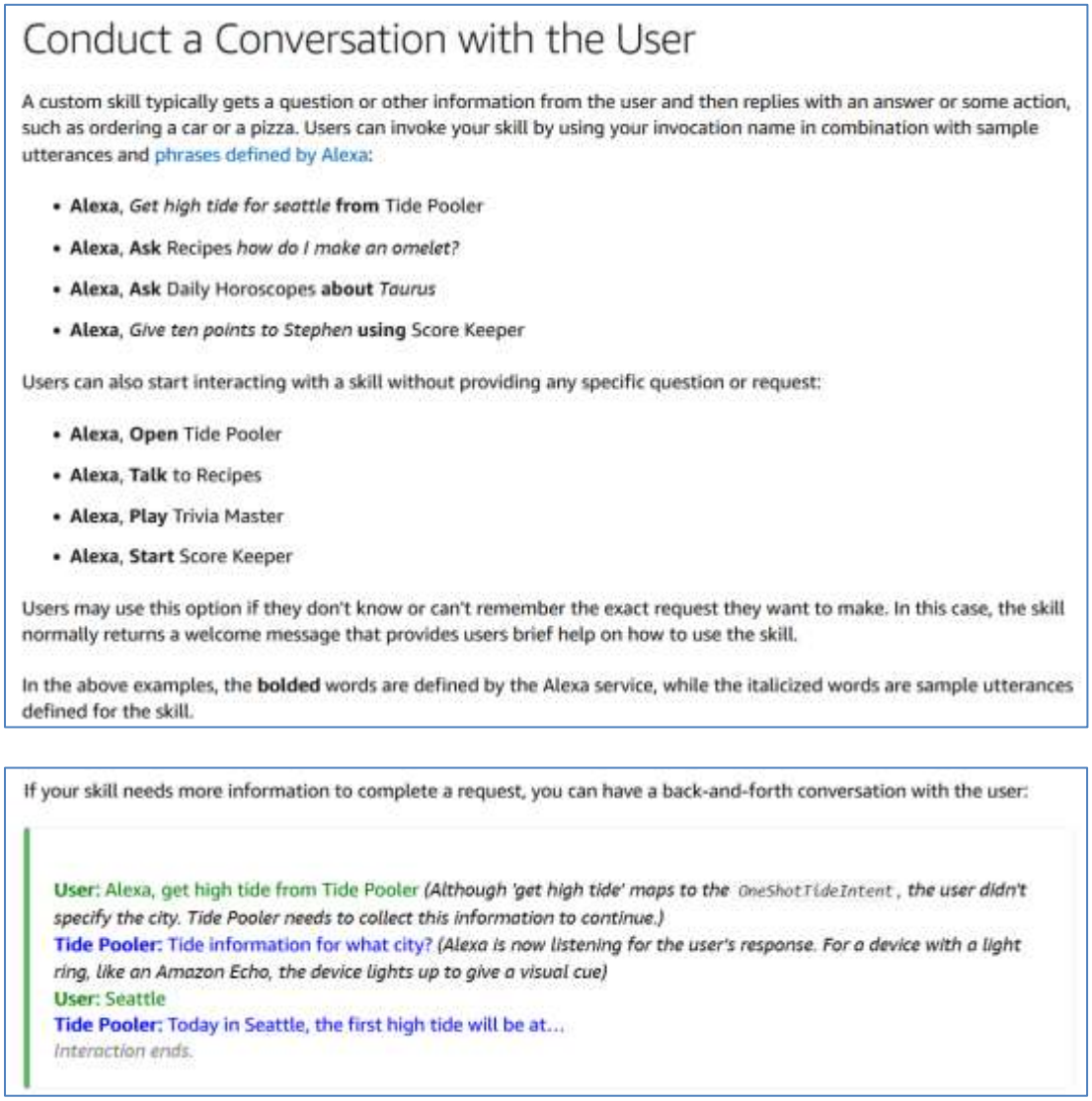
101. For example, the Alexa Voice Service included a speech-synthesis engine, where the Alexa Voice Service converted the returned text to speech.



Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo



https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)



Conduct a Conversation with the User

A custom skill typically gets a question or other information from the user and then replies with an answer or some action, such as ordering a car or a pizza. Users can invoke your skill by using your invocation name in combination with sample utterances and phrases defined by Alexa:

- **Alexa**, *Get high tide for seattle* **from** Tide Pooler
- **Alexa**, **Ask** Recipes *how do I make an omelet?*
- **Alexa**, **Ask** Daily Horoscopes **about** *Taurus*
- **Alexa**, *Give ten points to Stephen* **using** Score Keeper

Users can also start interacting with a skill without providing any specific question or request:

- **Alexa**, **Open** Tide Pooler
- **Alexa**, **Talk** to Recipes
- **Alexa**, **Play** Trivia Master
- **Alexa**, **Start** Score Keeper

Users may use this option if they don't know or can't remember the exact request they want to make. In this case, the skill normally returns a welcome message that provides users brief help on how to use the skill.

In the above examples, the **bolded** words are defined by the Alexa service, while the italicized words are sample utterances defined for the skill.

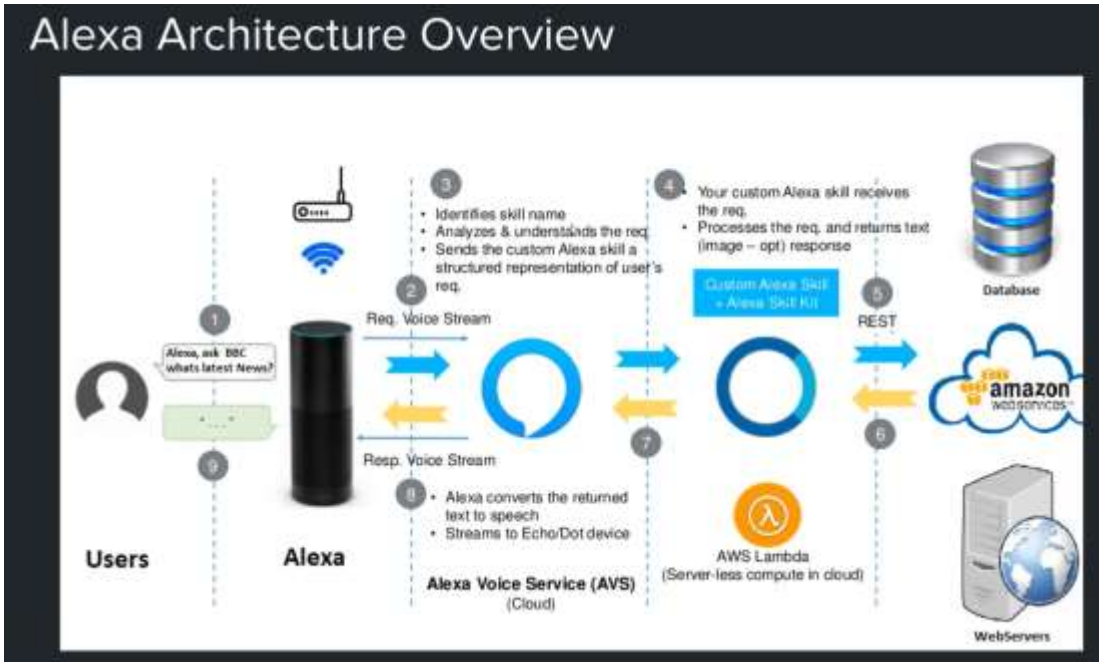
If your skill needs more information to complete a request, you can have a back-and-forth conversation with the user:

User: Alexa, get high tide from Tide Pooler *(Although 'get high tide' maps to the* `OneShotTideIntent`*, the user didn't specify the city. Tide Pooler needs to collect this information to continue.)*
Tide Pooler: Tide information for what city? *(Alexa is now listening for the user's response. For a device with a light ring, like an Amazon Echo, the device lights up to give a visual cue)*
User: Seattle
Tide Pooler: Today in Seattle, the first high tide will be at...
Interaction ends.

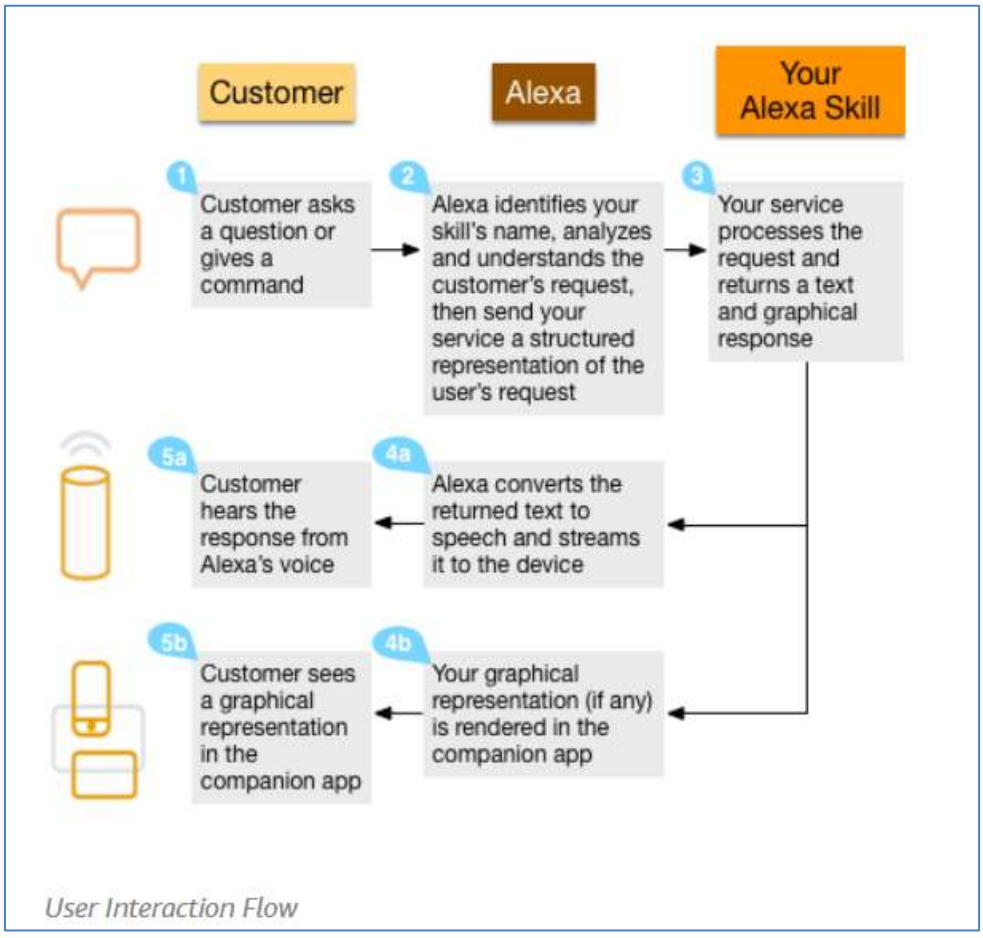
https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

102. The '981 patent claim 1 further recites, in subsection (f), "(f) transmitting the audio message by the voice-enabled device to the particular user." As non-limiting examples, Amazon's voice-enabled devices transmitted the audio message to the particular user.

103. For example, the Alexa Voice Service included a speech-synthesis engine, where the Alexa Voice Service converted the returned text to speech and transmitted to the user.



Source: https://www.youtube.com/watch?v=VQVZ2hvNVfo



https://web.archive.org/web/20201112015825/https://developer.amazon.com/en-US/docs/alexa/custom-skills/understanding-custom-skills.html (Internet archive Nov. 2020)

104. The above non-limiting examples illustrate Amazon's infringement of claim 1 of the '981 patent. Amazon infringes additional claims in the '981 patent with the specific infringement contentions to be presented in discovery per the Court's procedure.

DEMAND FOR JURY TRIAL

105. Plaintiff demands a trial by jury of any and all issues triable of right before a jury, except for future patent infringement, which is an issue in equity to be determined by the Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for the following relief:

A. A judgment in favor of Plaintiff that Amazon has directly infringed one or more claims of each of the patents-in-suit;

B. An award of damages to which Plaintiff is entitled under 35 U.S.C. § 284 for Amazon's past infringement;

C. Award Plaintiff pre-judgment interest and post-judgment interest on the damages awarded, including pre-judgment interest, pursuant to 35 U.S.C. § 284, from the date of each act of infringement of the patents-in-suit by Amazon to the day a damages judgment is entered, and an award of post-judgment interest, pursuant to 28 U.S.C. § 1961, continuing until such judgment is paid, at the maximum rate allowed by law;

D. A judgment and order finding this to be an exceptional case and requiring Amazon to pay the costs of this action (including all disbursements) and attorneys' fees, pursuant to 35 U.S.C. § 285;

E. Order an accounting for damages;

F. A judgment and order requiring Amazon pay to Plaintiff its actual damages in an amount sufficient to compensate Plaintiff for Amazon's infringement of the patents-in-suit; and

G. Such other and further relief in law or in equity to which Plaintiff may be justly entitled.

Dated: February 17, 2023

Respectfully submitted,

FARNAN LLP

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ATTORNEYS FOR PLAINTIFF PARUS HOLDINGS, INC.

EXHIBIT A

US007516190B2

(12) **United States Patent**
Kurganov

(10) **Patent No.: US 7,516,190 B2**
(45) **Date of Patent: Apr. 7, 2009**

(54) **PERSONAL VOICE-BASED INFORMATION RETRIEVAL SYSTEM**

(75) Inventor: **Alexander Kurganov**, Buffalo Grove, IL (US)

(73) Assignee: **Parus Holdings, Inc.**, Bannockburn, IL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 458 days.

(21) Appl. No.: **09/777,406**

(22) Filed: **Feb. 6, 2001**

(65) **Prior Publication Data**

US 2001/0054085 A1 Dec. 20, 2001

Related U.S. Application Data

(60) Provisional application No. 60/180,343, filed on Feb. 4, 2000.

(51) **Int. Cl.**
G06F 15/16 (2006.01)
G10L 21/00 (2006.01)

(52) **U.S. Cl.** **709/217**; 709/203; 704/270.1; 704/275

(58) **Field of Classification Search** ..... 709/218, 709/219, 317, 224, 203; 379/105, 67, 88; 370/354, 79; 179/2 A, 18; 364/188, 514; 455/417; 704/275, 270.1
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,313,035	A	1/1982	Jordan et al.	179/18
4,585,906	A	4/1986	Matthews et al.	179/18
4,596,900	A	6/1986	Jackson	179/2 A
4,696,028	A	9/1987	Morganstein et al.	379/88
4,761,807	A	8/1988	Matthews et al.	379/89
4,776,016	A	10/1988	Hansen	381/42
4,809,321	A	2/1989	Morganstein et al.	379/211
4,837,798	A	6/1989	Cohen et al.	379/88
4,850,012	A	7/1989	Mehta et al.	379/157
4,873,719	A	10/1989	Reese	379/215
4,907,079	A	3/1990	Turner et al.	358/84
4,922,526	A	5/1990	Morganstein et al.	379/157

(Continued)

FOREIGN PATENT DOCUMENTS

GB	2317782	1/1998
WO	96/09710	3/1996
WO	WO 97/37481	10/1997
WO	98/23058	5/1998

OTHER PUBLICATIONS

Ly, "Chatter A: A Conversational Telephone Agent," *submitted to Program in Media Arts and Sciences*, Massachusetts Institute of Technology, (1993), pp. 1-130.

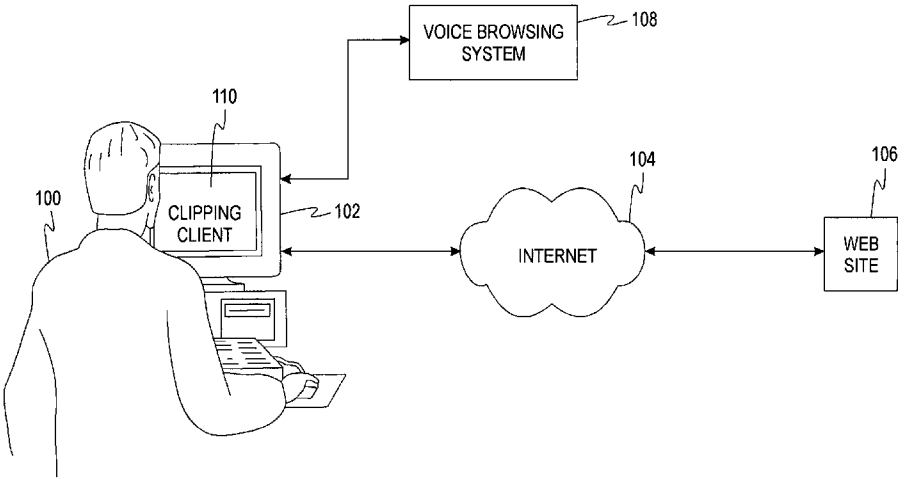
(Continued)

Primary Examiner—William C Vaughn, Jr.
Assistant Examiner—Kristie D Shingles
(74) *Attorney, Agent, or Firm*—Foley & Lardner LLP

(57) **ABSTRACT**

The present invention relates to a system for retrieving information from a network such as the Internet. A user creates a user-defined record in a database that identifies an information source, such as a web site, containing information of interest to the user. This record identifies the location of the information source and also contains a recognition grammar based upon a speech command assigned by the user. Upon receiving the speech command from the user that is described within the recognition grammar, a network interface system accesses the information source and retrieves the information requested by the user.

21 Claims, 5 Drawing Sheets



U.S. PATENT DOCUMENTS

4,933,966	A		6/1990	Hird et al. 379/132
4,935,958	A		6/1990	Morganstein et al. 379/372
4,953,204	A		8/1990	Cuschleg, Jr. et al. 379/266
4,955,047	A		9/1990	Morganstein et al. 379/112
4,972,462	A		11/1990	Shibata 379/89
4,975,941	A		12/1990	Morganstein et al. 379/88
4,994,926	A		2/1991	Gordon et al. 358/400
5,020,095	A		5/1991	Morganstein et al. 379/67
5,027,384	A		6/1991	Morganstein et al. 379/67
5,029,196	A		7/1991	Morganstein 379/67
5,086,385	A		2/1992	Launey et al. 364/188
5,099,509	A		3/1992	Morganstein et al. 379/84
5,109,405	A		4/1992	Morganstein 379/89
5,131,024	A		7/1992	Pugh et al. 379/67
5,166,974	A		11/1992	Morganstein et al. 379/67
5,195,086	A		3/1993	Baumgartner et al. 370/264
5,243,645	A		9/1993	Bissell et al. 379/211
5,249,219	A		9/1993	Morganstein et al. 379/84
5,263,084	A		11/1993	Chaput et al. 379/215
5,291,302	A		3/1994	Gordon et al. 358/400
5,291,479	A		3/1994	Vaziri
5,303,298	A		4/1994	Morganstein et al. 379/67
5,307,399	A		4/1994	Dai
5,309,504	A		5/1994	Morganstein et al. 379/67
5,325,421	A		6/1994	Hou et al. 379/67
5,327,486	A		7/1994	Wolff et al. 379/96
5,327,529	A		7/1994	Fults et al. 395/155
5,329,578	A		7/1994	Brennan et al. 379/67
5,333,266	A		7/1994	Boaz et al. 709/206
5,347,574	A		9/1994	Morganstein et al. 379/210
5,355,403	A		10/1994	Richardson, Jr. et al. 379/88
5,375,161	A		12/1994	Fuller et al. 379/57
5,384,771	A		1/1995	Isidoro et al. 370/58.2
5,404,231	A		4/1995	Bloomfield 358/400
5,408,526	A		4/1995	McFarland et al. 379/202
5,414,754	A		5/1995	Pugh et al. 379/67
5,436,963	A		7/1995	Fitzpatrick et al. 379/212
5,459,584	A		10/1995	Gordon et al. 358/434
5,463,684	A		10/1995	Morduch et al. 379/202
5,475,791	A		12/1995	Schalk et al. 395/2.42
5,497,373	A		3/1996	Hulen et al. 370/79
5,499,288	A		3/1996	Hunt et al. 379/88
5,517,558	A		5/1996	Schalk 379/88
5,555,100	A		9/1996	Bloomfield 358/402
5,559,611	A		9/1996	Bloomfield et al. 358/407
5,559,859	A		9/1996	Dai
5,566,236	A		10/1996	MeLampy et al. 379/201
5,603,031	A		2/1997	White et al. 709/317
5,608,786	A		3/1997	Gordon 379/100
5,610,970	A		3/1997	Fuller et al. 455/417
5,611,031	A		3/1997	Hertzfeld et al. 345/433
5,652,789	A		7/1997	Miner et al. 379/201
5,657,376	A		8/1997	Espeut et al.
5,659,597	A		8/1997	Bareis 455/563
5,666,401	A		9/1997	Morganstein et al. 379/67
5,675,507	A		10/1997	Bobo, II ..... 364/514 R
5,675,811	A		10/1997	Broedner et al. 395/750
5,689,669	A		11/1997	Lynch et al. 345/355
5,692,187	A		11/1997	Goldman et al. 395/619
5,699,486	A	*	12/1997	Tullis et al. 704/270.1
5,719,921	A		2/1998	Vystosky et al. 379/88
5,721,908	A	*	2/1998	Lagarde et al. 707/10
5,724,408	A		3/1998	Morganstein et al. 379/88
5,742,905	A		4/1998	Pepe et al. 455/461
5,752,191	A		5/1998	Fuller et al. 455/445
5,787,298	A		7/1998	Broedner et al. 395/750
5,793,993	A		8/1998	Broedner et al. 395/306
5,799,065	A		8/1998	Junqua et al.
5,809,282	A		9/1998	Cooper et al. 359/500
5,812,796	A		9/1998	Broedner et al. 395/283
5,819,220	A	*	10/1998	Sarukkai et al. 704/270.1
5,819,306	A		10/1998	Goldman et al. 711/100
5,867,494	A		2/1999	Krishnaswamy et al. 370/352
5,867,495	A		2/1999	Elliott et al. 370/352
5,873,080	A		2/1999	Coden et al. 707/3
5,881,134	A		3/1999	Foster et al. 379/88
5,884,262	A		3/1999	Wise et al. 704/270
5,884,266	A	*	3/1999	Dvorak 704/270.1
5,890,123	A	*	3/1999	Brown et al. 704/270.1
5,915,001	A	*	6/1999	Uppaluru 379/88.22
5,953,392	A	*	9/1999	Rhie et al. 379/88.13
5,974,413	A		10/1999	Beauregard et al. 707/6
5,999,525	A		12/1999	Krishnaswamy et al. 370/352
6,012,088	A		1/2000	Li et al. 709/219
6,014,437	A		1/2000	Acker et al. 379/219
6,018,710	A		1/2000	Wynblatt et al. 704/260
6,021,181	A		2/2000	Miner et al. 379/88.23
6,031,904	A		2/2000	An et al. 379/201
6,038,305	A		3/2000	McAllister et al. 379/207
6,047,053	A		4/2000	Miner et al. 379/201
6,078,580	A		6/2000	Mandalia et al. 370/352
6,081,518	A		6/2000	Bowman-Amuah 370/352
6,091,808	A		7/2000	Wood et al. 379/201
6,101,472	A	*	8/2000	Giangarra et al. 704/275
6,104,803	A		8/2000	Weser et al. 379/230
6,115,742	A		9/2000	Franklin et al. 709/224
6,208,638	B1		3/2001	Rieley et al. 370/354
6,233,318	B1		5/2001	Picard et al. 379/88.17
6,243,373	B1		6/2001	Turock 370/352
6,252,944	B1		6/2001	Hansen, II et al. 379/67.1
6,269,336	B1	*	7/2001	Ladd et al. 704/270
6,285,745	B1		9/2001	Bartholomew et al. ... 379/88.17
6,327,572	B1	*	12/2001	Morton et al. 705/10
6,349,132	B1	*	2/2002	Wesemann et al. 379/88.17
6,353,661	B1	*	3/2002	Bailey, III 379/93.25
6,366,578	B1		4/2002	Johnson 370/353
6,434,529	B1	*	8/2002	Walker et al. 704/275
6,446,076	B1	*	9/2002	Burkey et al. 707/102
6,456,699	B1	*	9/2002	Burg et al. 379/88.17
6,477,420	B1		11/2002	Struble et al. 379/67.1
6,505,163	B1		1/2003	Zhang et al. 704/275
6,529,948	B1	*	3/2003	Bowman-Amuah 709/217
6,532,444	B1	*	3/2003	Weber 704/257
6,539,359	B1	*	3/2003	Ladd et al. 704/275
6,546,393	B1		4/2003	Khan 707/10
6,594,348	B1	*	7/2003	Bjurstrom et al. 379/88.13
6,618,726	B1	*	9/2003	Colbath et al. 707/6
6,636,831	B1	*	10/2003	Profit et al. 704/275
6,665,640	B1	*	12/2003	Bennett et al. 704/257
6,687,341	B1	*	2/2004	Koch et al. 379/88.17
6,718,015	B1	*	4/2004	Berstis 379/88.17
6,732,142	B1	*	5/2004	Bates et al. 709/203
6,771,743	B1	*	8/2004	Butler et al. 379/67.1
6,823,370	B1	*	11/2004	Kredo et al. 709/206
6,888,929	B1	*	5/2005	Saylor et al. 379/88.16
6,922,733	B1	*	7/2005	Kuiken et al. 709/246
6,941,273	B1	*	9/2005	Loghmani et al. 705/26
6,964,012	B1	*	11/2005	Zirngibl et al. 715/513
6,965,864	B1	*	11/2005	Thrift et al. 704/275
6,996,609	B2	*	2/2006	Hickman et al. 709/218
7,050,977	B1	*	5/2006	Bennett 704/270.1
2001/0032234	A1	*	10/2001	Summers et al. 709/201
2001/0048676	A1	*	12/2001	Jimenez et al. 370/352
2002/0006126	A1	*	1/2002	Johnson et al. 370/356

OTHER PUBLICATIONS

Schmandt et al., "Phone Slave: A Graphical Telecommunications Interface," *Proceedings of the SID* (1985), vol. 26/1, pp. 79-82.

Don Hunt and Brian Edwards "*Long-Distance Remote Control to the Rescue*." Chicago Tribune, Jun. 15, 2002, Section 4, p. 15.

* cited by examiner

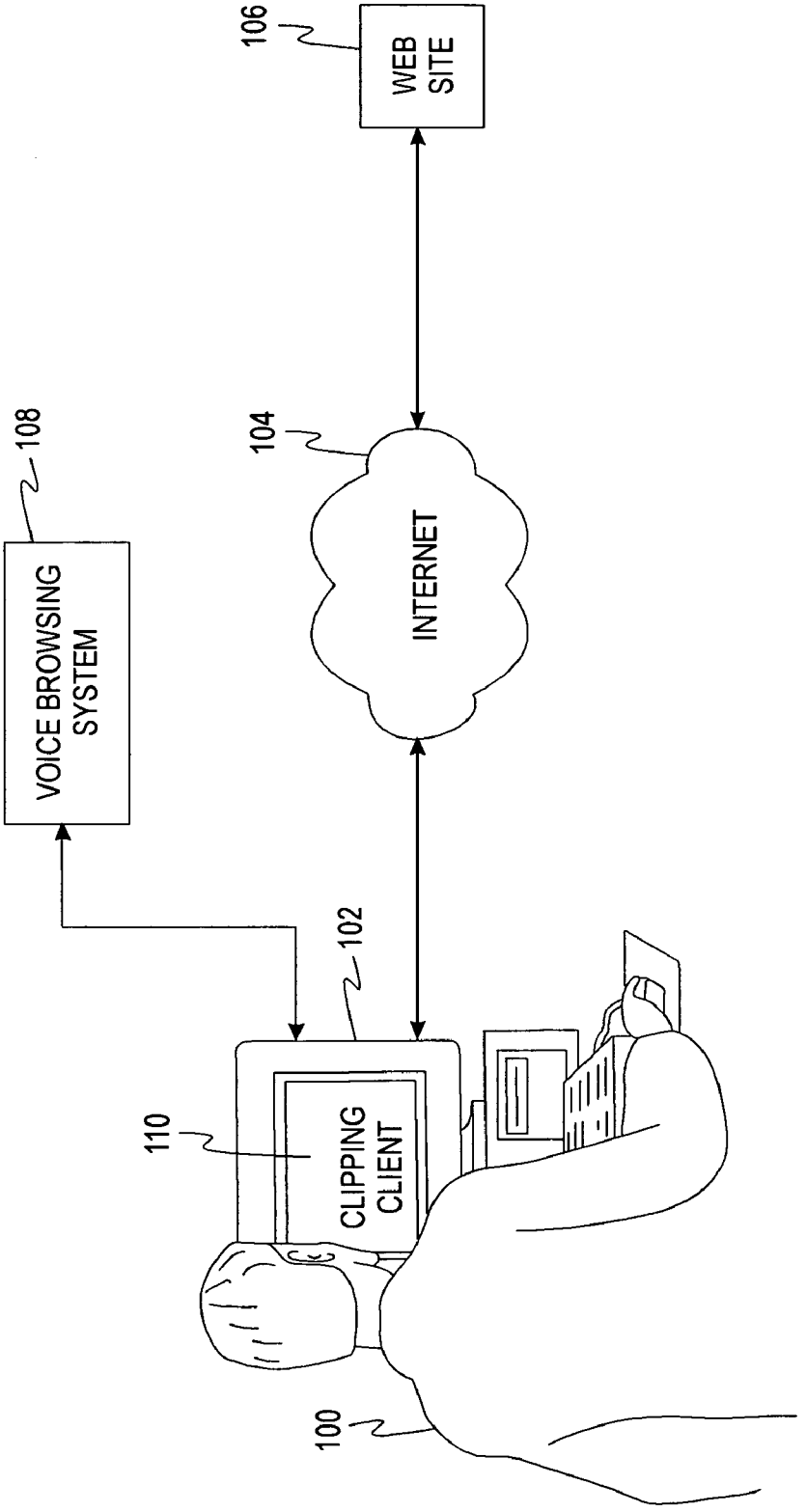

106
WEB SITE
104
INTERNET
108
VOICE BROWSING SYSTEM
102
110
CLIPPING CLIENT
100

FIG. 1

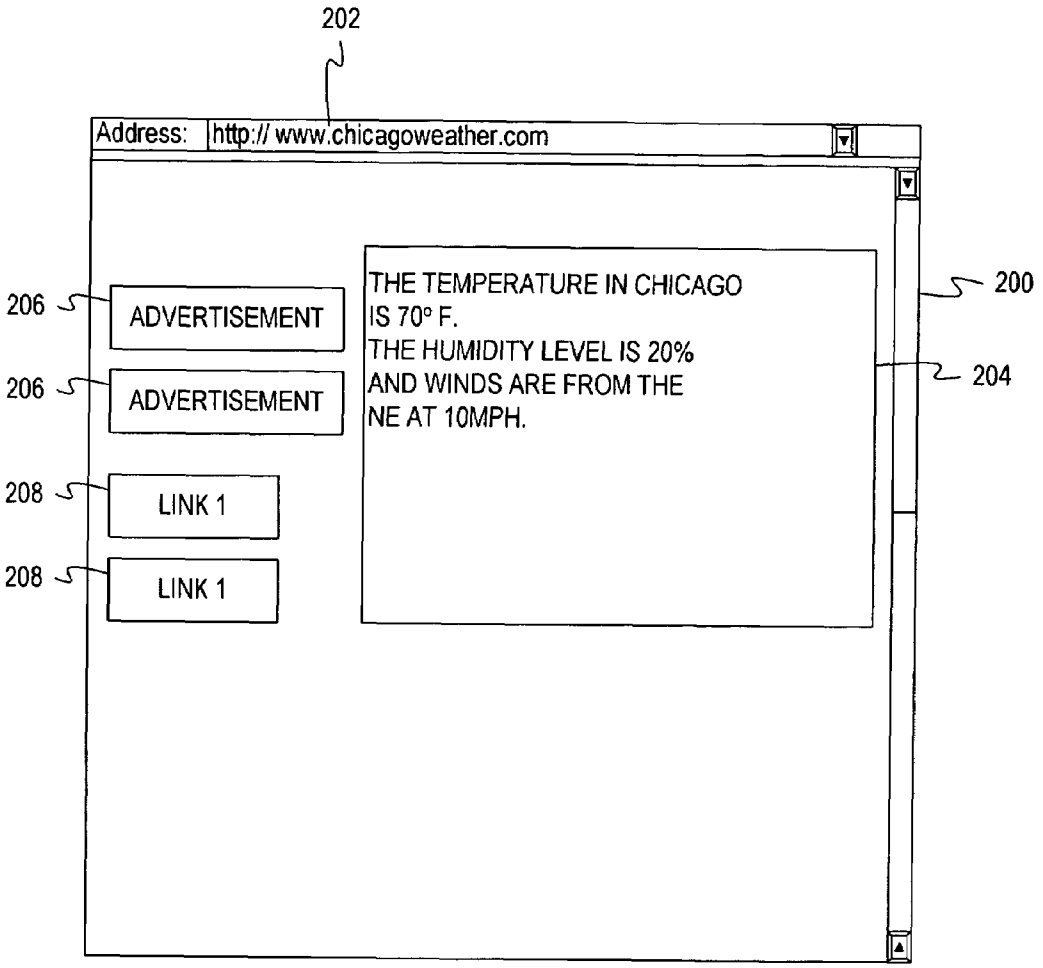

202
Address: http:// www.chicagoweather.com
206
ADVERTISEMENT
206
ADVERTISEMENT
208
LINK 1
208
LINK 1
THE TEMPERATURE IN CHICAGO IS 70° F.
THE HUMIDITY LEVEL IS 20% AND WINDS ARE FROM THE NE AT 10MPH.
200
204

FIG. 2

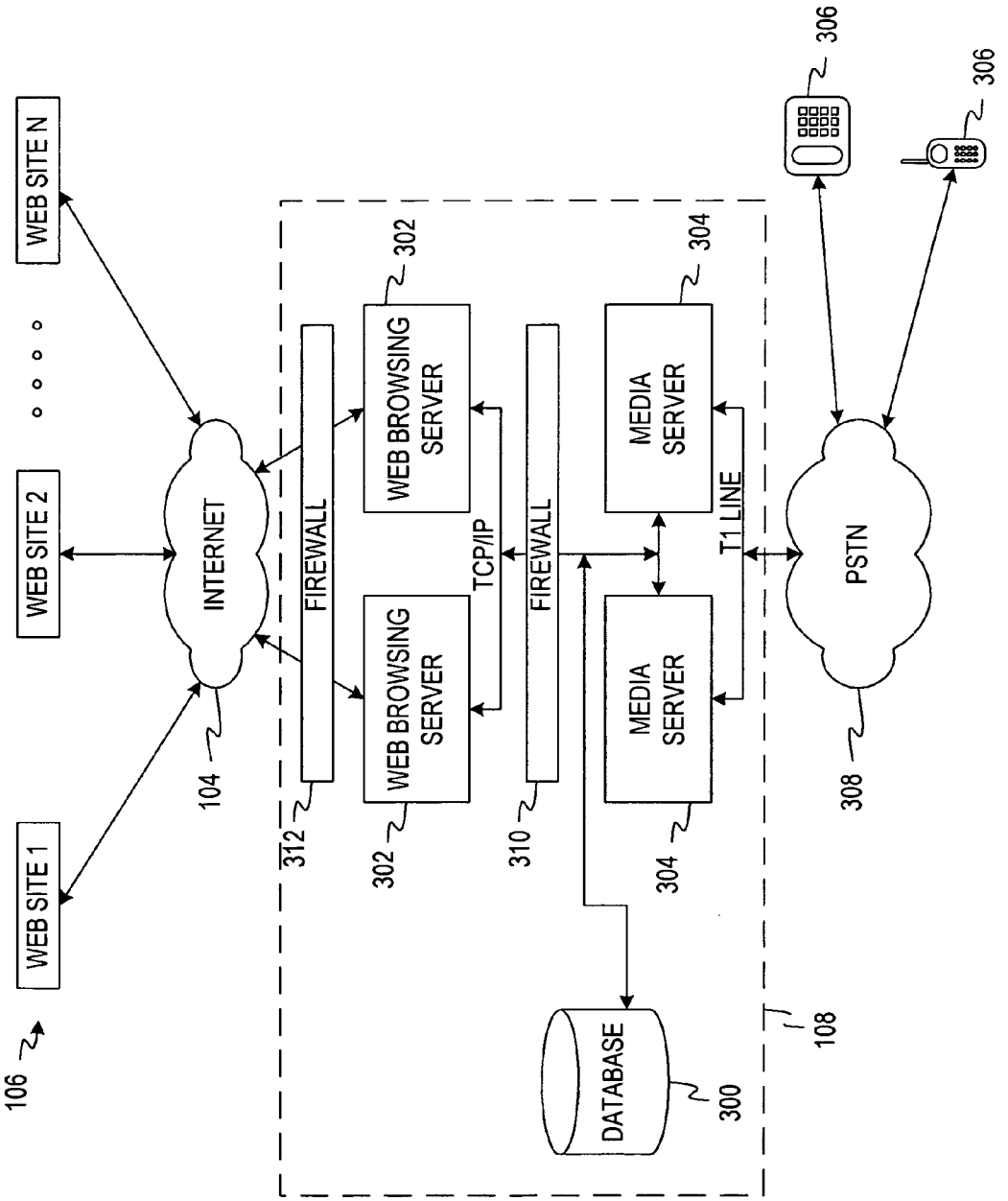

WEB SITE N
WEB SITE 2
WEB SITE 1
106
INTERNET
104
FIREWALL
312
WEB BROWSING SERVER
302
WEB BROWSING SERVER
302
TCP/IP
FIREWALL
310
MEDIA SERVER
304
MEDIA SERVER
304
T1 LINE
PSTN
308
306
306
DATABASE
300
108

FIG. 3

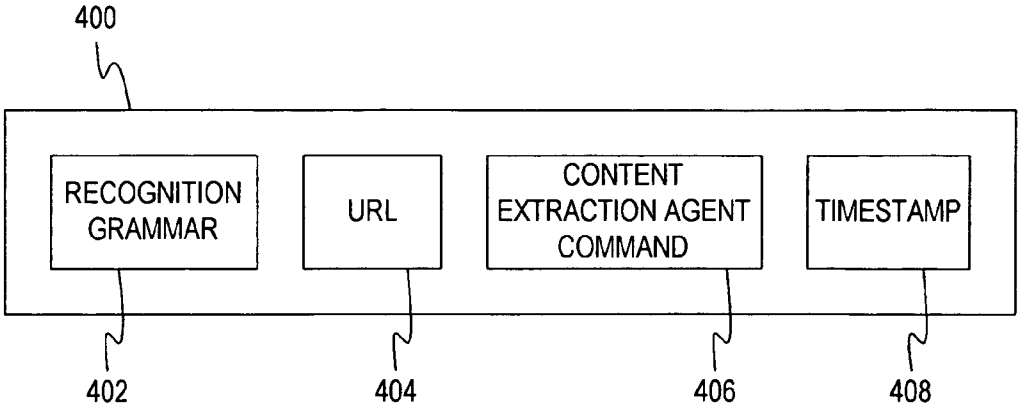

400
RECOGNITION GRAMMAR
URL
CONTENT EXTRACTION AGENT COMMAND
TIMESTAMP
402
404
406
408

FIG. 4

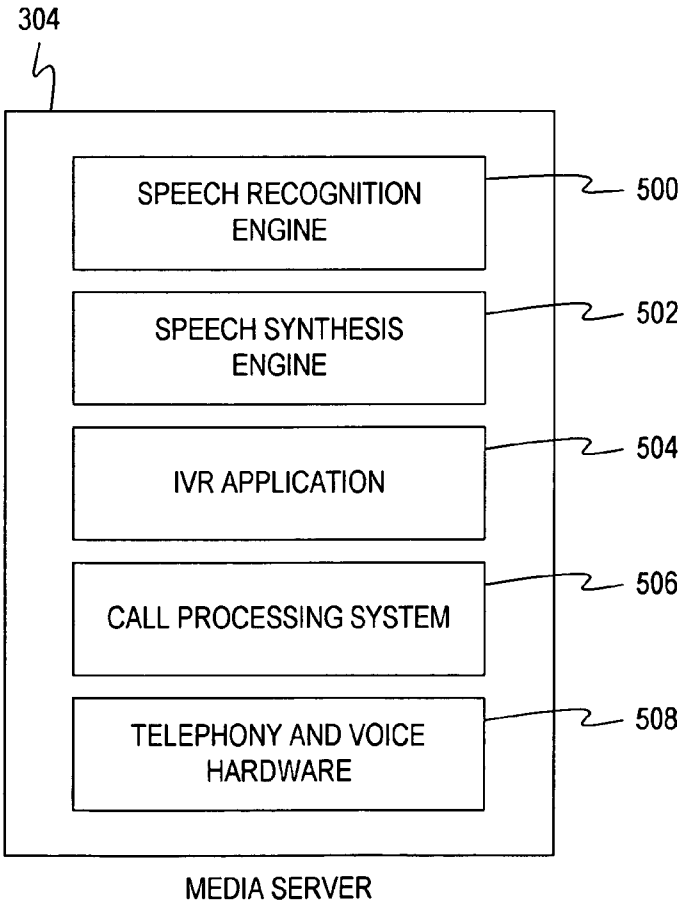

304
SPEECH RECOGNITION ENGINE
500
SPEECH SYNTHESIS ENGINE
502
IVR APPLICATION
504
CALL PROCESSING SYSTEM
506
TELEPHONY AND VOICE HARDWARE
508
MEDIA SERVER

FIG. 5

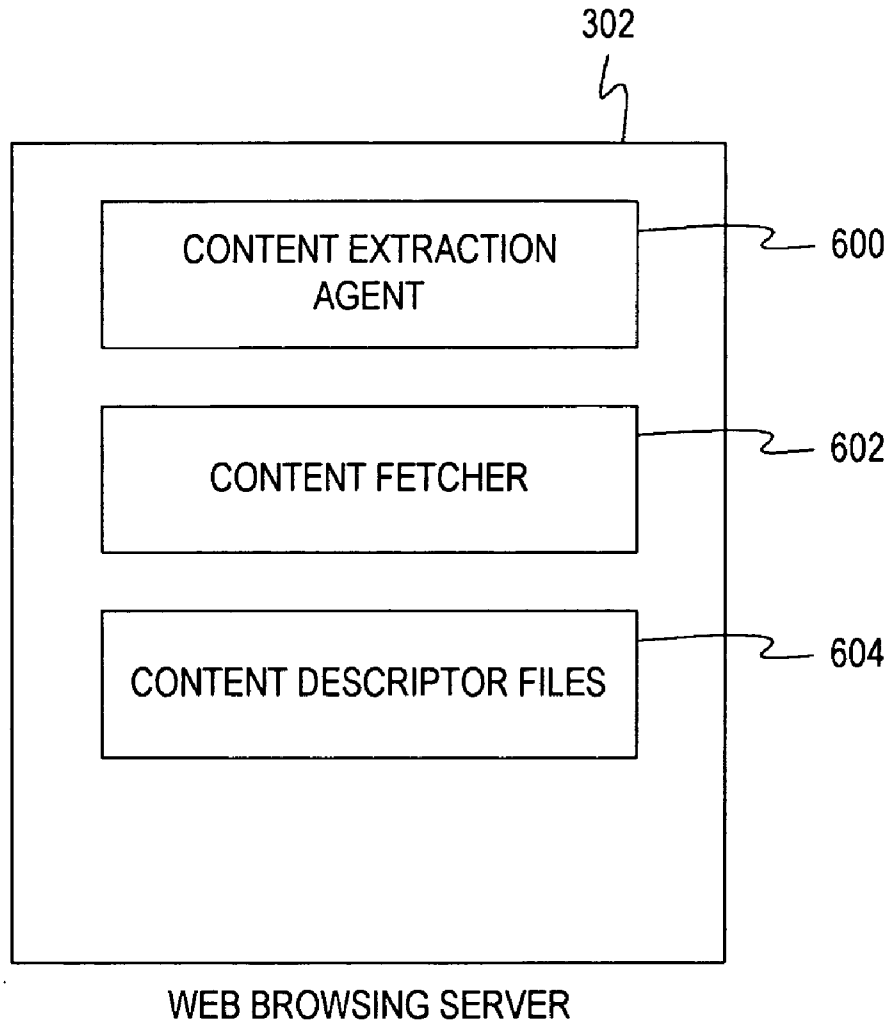

302
CONTENT EXTRACTION AGENT
600
CONTENT FETCHER
602
CONTENT DESCRIPTOR FILES
604
WEB BROWSING SERVER

FIG. 6

PERSONAL VOICE-BASED INFORMATION RETRIEVAL SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is related to U.S. Provisional Application Ser. No. 60/180,343, filed Feb. 4, 2000 entitled "Personal Voice-Based Information Retrieval System."

FIELD OF THE INVENTION

The present invention relates generally to the field of providing information access. In particular, the invention relates to a personalized system for accessing information from the Internet or other information sources using speech commands.

BACKGROUND OF THE INVENTION

Popular methods of information access and retrieval using the Internet or other computer networks can be time-consuming and complicated. A user must frequently wade through vast amounts of information provided by an information source or web site in order obtain a small amount of relevant information. This can be time-consuming, frustrating, and, depending on the access method, costly. A user is required to continuously identify reliable sources of information and, if these information sources are used frequently, repeatedly access these sources.

Current methods of accessing information stored on computer networks, such as Wide Area Networks (WANs), Local Area Network (LANs) or the Internet, require a user to have access to a computer. While computers are becoming increasingly smaller and easier to transport, using a computer to access information is still more difficult than simply using a telephone. Since speech recognition systems allow a user to convert his voice into a computer-usable message, telephone access to digital information is becoming more and more feasible. Voice recognition technology is growing in its ability to allow users to use a wide vocabulary. Further, such technology is quite accurate when a single, known user only needs to use a small vocabulary.

Therefore, a need exists for an information access and retrieval system and method that allows users to access frequently needed information from information sources on networks by using a telephone and simple speech commands.

SUMMARY OF THE INVENTION

One object of the preferred embodiment of the present invention is to allow users to customize a voice browsing system.

A further object of the preferred embodiment is to allow users to customize the information retrieved from the Internet or other computer networks and accessed by speech commands over telephones.

Another object of the preferred embodiment is to provide a secure and reliable retrieval of information over the Internet or other computer networks using predefined verbal commands assigned by a user.

The present invention provides a solution to these and other problems by providing a new system for retrieving information from a network such as the Internet. A user creates a user-defined record in a database that identifies an information source, such as a web site, containing information of interest to the user. This record identifies the location of the information source and also contains a recognition grammar assigned by the user. Upon receiving a speech command from the user that is described in the assigned recognition grammar, a network interface system accesses the information source and retrieves the information requested by the user.

In accordance with the preferred embodiment of the present invention, a customized, voice-activated information access system is provided. A user creates a descriptor file defining specific information found on a web site the user would like to access in the future. The user then assigns a pronounceable name or identifier to the selected content and this pronounceable name is saved in a user-defined database record as a recognition grammar along with the URL of the selected web site.

In the preferred embodiment, when a user wishes to retrieve the previously defined web-based information, a telephone call is placed to a media server. The user provides speech commands to the media server that are described in the recognition grammar assigned to the desired search. Based upon the recognition grammar, the media server retrieves the user-defined record from a database and passes the information to a web browsing server which retrieves the information from associated web site. The retrieved information is then transmitted to the user using a speech synthesis software engine.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** displays a personal information selection system used with the preferred embodiment of the present invention;

FIG. **2** displays a web page displayed by the clipping client of the preferred embodiment,

FIG. **3** is a block diagram of a voice browsing system used with preferred embodiment of the present invention;

FIG. **4** is a block diagram of a user-defined database record created by preferred embodiment of the present invention;

FIG. **5** is a block diagram of a media server used by the preferred embodiment, and

FIG. **6** is a block diagram of a web browsing server used by the preferred embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention uses various forms of signal and data transmission to allow a user to retrieve customized information from a network using speech communication. In the preferred embodiment of the present invention, a user associates information of interest found on a specific information source, such as a web site, with a pronounceable name or identification word. This pronounceable name/identification word forms a recognition grammar in the preferred embodiment. When the user wishes to retrieve the selected information, he may use a telephone or other voice enabled device to access a voice browser system. The user then speaks a command described in the recognition grammar associated with the desired information. The voice browsing system then accesses the associated information source and returns to the user, using a voice synthesizer, the requested information.

Referring to FIG. **1**, a user **100** uses a computer **102** to access a network, such as a WAN, LAN, or the Internet, containing various information sources. In the preferred embodiment, the user **100** access the Internet **104** and begins searching for web sites **106**, which are information sources that contain information of interest to the user. When the user **100** identifies a web site **106** containing information the user would like to access using only a voice enabled device, such

as a telephone, and the voice browsing system **108**, the user initiates a "clipping client" engine **110** on his computer **102**.

The clipping client **110** allows a user **100** to create a set of instructions for use by the voice browsing system **108** in order to report personalized information back to the user upon request. The instruction set is created by "clipping" information from the identified web site A user **100** may be interested in weather for a specific city, such as Chicago. The user **100** identifies a web site from which he would like to obtain the latest Chicago weather information. The clipping client **110** is then activated by the user **100**.

The clipping client **110** displays the selected web site in the same manner as a conventional web browser such as Microsoft's® Internet Explorer. FIG. **2** depicts a sample of a web page **200** displayed by the clipping client **110**. The user **100** begins creation of the instruction set for retrieving information from the identified web site by selecting the uniform resource locator (URL) address **202** for the web site (i.e., the web site address). In the preferred embodiment, this selection is done by highlighting and copying the URL address **202**. Next, the user selects the information from the displayed web page that he would like to have retrieved when a request is made. Referring to FIG. **2**, the user would select the information regarding the weather conditions in Chicago **204**. The web page **200** may also contain additional information such as advertisements **206** or links to other web sites **208** which are not of interest to the user. The clipping client **110** allows the user to select only that portion of the web page containing information of interest to the user. Therefore, unless the advertisements **206** and links **208** displayed on the web page are of interest to the user, he would not select this information. Based on the web page information **204** selected by the user, the clipping client **110** creates a content descriptor file containing a description of the content of the selected web page. This content descriptor file indicates where the information selected by the user is located on the web page. In the preferred embodiment, the content descriptor file is stored within the web browsing server **302** shown in FIG. **3**. The web browsing server **302** will be discussed below.

Table 1 below is an example of a content descriptor file created by the clipping client of the preferred embodiment. This content descriptor file relates to obtaining weather information from the web site www.cnn.com.

TABLE 1

```
table name : portalServices
column :
      service
content:
            weather
column:
      config
content:
      [cnn]
      Input=__zip
      URL=http://cgi.cnn.com/cgi-bin/weather/redirect?zip=__zip
      Pre-filter="\n"    "
      Pre-filter="<[^<>]+>" "
      Pre-filter=/\s+/ /
      Pre-filter=" [\(\)\|]" ! "
      Output=__location
      Output=first__day__name
      Output=first__day__weather
      Output=first__day__high__F
      Output=first__day__high__C
      Output=first__day__low__F
      Output=first__day__low__C
      Output=second__day__name
      Output=second__day__weather
      Output=second__day__high__F
```

TABLE 1-continued

```
      Output=second__day__high__C
      Output=second__day__low__F
      Output=second__day__low__C
      Output=third__day__name
      Output=third__day__weather
      Output=third__day__high__F
      Output=third__day__high__C
      Output=third__day__low__F
      Output=third__day__low__C
      Output=fourth__day__name
      Output=fourth__day__weather
      Output=fourth__day__high__F
      Output=fourth__day__high__C
      Output=fourth__day__low__F
      Output=fourth__day__low__C
      Output=undef
      Output=__current__time
      Output=__current__month
      Output=__current__day
      Output=__current__weather
      Output=__current__temperature__F
      Output=__current__temperature__C
      Output=__humidity
      Output=__wind
      Output=__pressure
      Output=__sunrise
      Output=__sunset
      Regular__expression=WEB SERVICES: (.+) Forecast FOUR-DAY
FORECAST (\S+)
(\S+) HI
GH (\S+) F (\S+) C LOW (\S+) F (\S+) C (\S+) (\S+) HIGH
(\S+) F (\S+) C LOW
(\S+
) F (\S+) C (\S+) (\S+) HIGH (\S+) F (\S+) C LOW (\S+) F
(\S+) C (\S+) (\S+)
HIG
H (\S+) F (\S+) C LOW (\S+) F (\S+) C WEATHER MAPS RADAR
(.+) Forecast
CURRENT C
ONDITIONS (.+) !local!, (\S+) (\S+) (.+) Temp: (\S+) F,
(\S+) C Rel.
Humidity: (
\S+) Wind: (.+) Pressure: (.+) Sunrise: (.+) Sunset: (.+)
```

Finally, the clipping client **110** prompts the user to enter an identification word or phrase that will be associated with the identified web site and information. For example, the user could associate the phrase "Chicago weather" with the selected URL **202** and related weather information **204**. The identification word or phrase is stored as a personal recognition grammar that can now be recognized by a speech recognition engine of the voice browsing system **108** which will be discussed below. The personal recognition grammar, URL address **202**, and a command for executing a content extraction agent are stored within a database used by the voice browser system **108** which will be discussed below.

The voice browsing system **108** used with the preferred embodiment will now be described in relation to FIG. **3**. A database **300** designed by Webley Systems Incorporated is connected to one or more web browsing servers **302** as well as to one or more media servers **304**. The database may store information on magnetic media, such as a hard disk drive, or it may store information via other widely acceptable methods for storing data, such as optical disks. The media servers **304** function as user interface systems that provide access to the voice browsing system **108** from a user's voice enabled device **306** (i.e, any type of wireline or wireless telephone, Internet Protocol (IP) phones, or other special wireless units). The database **300** contains a section that stores the personal recognition grammars and related web site information generated by the clipping client **110**. A separate record exists for each web site defined by the user. An example of a user-

defined web site record is shown in FIG. **4**. Each user-defined web site record **400** contains the recognition grammar **402** assigned by the user, the associated Uniform Resource Locator CURL) **404**, and a command that enables the "content extraction agent" **406** and retrieves the appropriate content descriptor file required to generate proper requests to the web site and to properly format received data. The web-site record **400** also contains the timestamp **408** indicating the last time the web site was accessed. The content exaction agent is described in more detail below.

The database **300** may also contain a listing of pre-recorded audio files used to create concatenated phrases and sentences. Further, database **300** may contain customer profile information, system activity reports, and any other data or software servers necessary for the testing or administration of the voice browsing system **108**.

The operation of the media servers **304** will now be discussed in relation to FIG. **5**. The media servers **304** function as user interface systems since they allow a user to access the voice browsing system **108** via a voice enabled device **306**. In the preferred embodiment, the media servers **304** contain a speech recognition engine **500**, a speech synthesis engine **502**, an Interactive Voice Response (IVR) application **504**, a call processing system **506**, and telephony and voice hardware **508** that is required to enable the voice browsing system **108** to communicate with the Public Switched Telephone Network (PSTN) **308**. In the preferred embodiment, each media server is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

The speech recognition function is performed by a speech recognition engine **500** that converts voice commands received from the user's voice enabled device **306** (i.e., any type of wireline or wireless telephone, Internet Protocol (IP) phones, or other special wireless units) into data messages. In the preferred embodiment, voice commands and audio messages are transmitted using the PSTN **308** and data is transmitted using the TCP/IP communications protocol. However, one skilled in the art would recognize that other transmission protocols may be used. Other possible transmission protocols would include SIP/VoIP (Session Initiation Protocol/Voice over IP), Asynchronous Transfer Mode (ATM) and Frame Relay. A preferred speech recognition engine is developed by Nuance Communications of 1380 Willow Road, Menlo Park, Calif. 94025 (www.nuance.com). The Nuance engine capacity is measured in recognition units based on CPU type as defined in the vendor specification. The natural speech recognition grammars (i e., what a user can say that will be recognized by the speech recognition grammars (i,e., what a user can say that will be recognized by the speech recognition engine) were developed by Webley Systems.

In the preferred embodiment, when a user access the voice browsing system **108**, he will be prompted if he would like to use his "user-defined searches." If the user answers affirmatively, the media servers **304** will retrieve from the database **300** the personal recognition grammars **402** defined by the user while using the clipping client **110**.

The media servers **304** also contain a speech synthesis engine **502** that converts the data retrieved by the web browsing servers **302** into audio messages that are transmitted to the user's voice enabled device **306**. A preferred speech synthesis engine is developed by Lernout and Hauspie Speech Products, 52 Third Avenue, Burlington, Mass. 01803 (www.lhsl.com)

A further description of the web browsing server **302** will be provided in relation to FIG. **6**. The web browsing servers **302** provide access to data stored on any computer network including the Internet **104**, WANs or LANs. The web browsing servers **302** receive responses from web sites **106** and extract the data requested by the user. This task is known as "content extraction." The web browsing server **302** is comprised of a content extraction agent **600**, a content fetcher **602**, and the content descriptor file **604**. Each of these are software applications and will be discussed below.

Upon receiving a user-defined web site record **400** from the database **300** in response to a user request, the web browsing server **302** invokes the "content extraction agent" command **406** contained in the record **400**. The content extraction agent **600** retrieves the content descriptor file **604** associated with the user-defined record **400**. As mentioned, the content descriptor file **604** directs the extraction agent where to extract data from the accessed web page and how to format a response to the user utilizing that data. For example, the content descriptor file **604** for a web page providing weather information would indicate where to insert the "city" name or ZIP code in order to retrieve Chicago weather information. Additionally, the content descriptor file **604** for each supported URL indicates the location on the web page where the response information is provided. The extraction agent **600** uses this information to properly extract from the web page the information requested by the user.

The content extraction agent **600** can also parse the content of a web page in which the user-desired information has changed location or format. This is accomplished based on the characteristic that most hypertext documents include named objects like tables, buttons, and forms that contain textual content of interest to a user. When changes to a web page occur, a named object may be moved within a document, but it still exists. Therefore, the content extraction agent **600** simply searches for the relevant name of desired object. In this way, the information requested by the user may still be found and reported regardless of changes that have occurred.

Table 2 below contains source code for a content extraction agent **600** used by the preferred embodiment.

TABLE 2

```
#!/usr/local/www/bin/sybper15
#$Header:
/usr/local/cvsroot/webley/agents/service/web_dispatch.pl,v
1.6
# Dispatches all web requests
#http://wcorp.itn.net/cgi/flstat?carrier=ua&flight_no=155&m
on_abbr=jul&date=
6&stamp=OhLN~PdbuuE*itn/ord,itn/cb/sprint_hd
#http://cgi.cnnfn.com/flightview/rlm?airline=amt&number=300
require "config_tmp.pl";
# check parameters
die "Usage: $0 service [params]\n" if $#ARGV < 1;
#print STDERR @ARGV;
# get parameters
my ( $service, @param ) = @ARGV;
# check service
my %Services = (
                    weather_cnn => 'webget.pl weather_cnn',
                    weather_lycos => 'webget.pl
weather_lycos',
                    weather_weather => 'webget.pl
weather_weather',
                    weather_snap => 'webget.pl
weather_snap',
                    weather_infospace => 'webget.pl
weather_infospace',
                    stockQuote_yahoo => 'webget.pl stock',
                    flightStatus_itn => 'webget.pl
flight_delay',
                    yellowPages_yahoo => 'yp_data.pl',
                    yellowPages_yahoo => 'yp_data.pl',
                    newsHeaders_newsreal => 'news.pl',
                    newsArticle_newsreal => 'news.pl',
                    );
```

TABLE 2-continued

```
# test param
my $date = `date`;
chop ( $date );
my ( $short_date ) = $date =~ /\s+(\w{3}\s+\d{1,2})\s+/;
my %Test = (
                        weather_cnn => '60053',
                        weather_lycos => '60053',
                        weather_weather => '60053',
                        weather_snap => '60053',
                        weather_infospace => '60053',
                        stockQuote_yahoo => 'msft',
                        flightStatus_itn => 'ua 155 ' .
$short_date,
                        yellowPages_yahoo => 'tires 60015',
                        newsHeaders_newsreal => '1',
                        newsArticle_newsreal => '1  1',
                        );
die "$date: $0: error: no such service: $service (check
this script)\n"
unless $Services{ $service };
# prepare absolute path to run other scripts
my ( $path, $script ) = $0 =~ m|^(.*/) ([^/]*) |;
# store the service to compare against datatable
my $service_stored = $service;
# run service
while( ! ( $response = `$path$Services{ $service } @param` )
)   {
        # response failed
        # check with test parameters
        $response = `$path$Services{ $service } $Test{
$service }`;
#       print "test: $path$Services{ $service } $Test{
$service }";
        if ( $response )    {
                $service = &switch_service( $service );
#               print "Wrong parameter values were supplied:
$service -
@param\n";
#               die "$date: $0: error: wrong parameters: $service
-
@param\n";
        }
        else {
                # change priority and notify
                $service = &increase_attempt( $service );
        }
}
# output the response
print $response;
sub increase_attempt {
        my ( $service ) = @_;
        my ( $service_name ) = split( /_/, $service );
        print STDERR "$date: $0: attn: changing priority for
service:
$service\n";
        # update priority
        &db_query( "update mcServiceRoute "
                        . "set priority = ( select max( priority
) from
mcServiceRoute "
                        . "where service = '$service_name' ) + 1,
"
                        . "date = getdate( ), "
                        . "attempt = attempt + 1 "
                        . "where route = '$script $service' " );
#       print "---$route===\n";
        # find new route
        my $route = @{ &db_query( "select route from
mcServiceRoute "
                                        . "where service =
'$service_name'  "
                                        . "and attempt < 5
"
                                        . "order by
priority ")
                                } -> [ 0 ] { route };
        &db_query( "update mcServiceRoute "
                        . "set attempt = 0 "
                        . "where route = '$script $service' " )
```

TABLE 2-continued

```
                if ( $route eq "$script $service"
                        or $route eq "$script $service_stored" );
        ( $service_name, $service ) = split( /\s+/, $route );
        die "$date: $0: error: no route for the service:
$service (add
more) \n"
                unless $service;
        return $service;
}
sub switch_service {
        my ( $service ) = @_;
        my ( $service_name ) = split( /_/, $service );
        print STDERR "$date: $0: attn: changing priority for
service:
$service\n";
        # update priority
        &db_query( "update mcServiceRoute "
                        . "set priority = ( select max( priority
) from
mcServiceRoute "
                        . "where service = '$service_name' ) + 1,
"
                        . "date = getdate( ) "
                        . "where route = '$script $service' " );
#       print "---$route===\n";
        # find new route
        my $route = @{ &db_query( "select route from
mcServiceRoute "
                                        . "where service =
'$service_name'  "
                                        . "and attempt < 5
"
                                        . "order by
priority ")
                                } -> [ 0 ] { route };
        die "$date: $0: error: there is the only service:
$route (add
more)\n"
                if ( $route eq "$script $service"
                        or $route eq "$script $service_stored" );
        ( $service_name, $service ) = split( /\s+/, $route );
        die "$date: $0: error: no route for the service:
$service (add
more)\n"
                unless $service;
        return $service;
}
```

Table 3 below contains source code of the content fetcher **602** used with the content extraction agent **600** to retrieve information from a web site

TABLE 3

```
#!/usr/local/www/bin/sybper15
#-T
# -w
# $Header:
/usr/local/cvsroot/webley/agents/service/webget.pl,v 1.4
# Agent to get info from the web.
# Parameters: service_name [service_parameters], i.e. stock
msft or weather
60645
# Configuration stored in files service_name.ini
# if this file is absent the configuration is received from
mcServices table
# This script provides autoupdate to datatable if the .ini
file is newer.
$debug = 1;
use URI::URL;
use LWP::UserAgent;
use HTTP::Request::Common;
use Vail::VarList;
use Sybase::CTlib;
use HTTP::Cookies;
#print "Sybase::CTlib $DB_USR, $DB_PWD, $DB_SRV;";
open( STDERR, ">>$0.log" ) if $debug;
```

TABLE 3-continued

```
#open( STDERR, ">&STDOUT" );
$log = `date`;
#$response = `./url.pl
"http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605"`;
#$response = `pwd`;
#print STDERR "pwd = $response\n";
#$response = `ls`;
#print STDERR "ls = $response\n";
chop( $log );
$log .= "pwd=" . `pwd`;
chop( $log );
#$debug2 = 1;
my $service = shift;
$log .= " $service: ". join( ':', @ARGV ) . "\n";
print STDERR $log if $debug;
#$response = `./url.pl
"http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605"`;
my @ini = &read__ini( $service );
chop( @ini );
my $section = " ";
do { $section = &process__section( $section ) } while
$section;
#$response = `./url.pl
"http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605"`;
exit;
################################################
sub read__ini {
        my ( $service ) = @__;
        my @ini = ( );
        # first, try to read file
        $0 =~ m|^(.*/) [^/]*|;
        $service = $1 . $service;
        if ( open( INI, "$service.ini" ) ) {
                @ini = ( <INI> );
                return @ini unless ( $DB__SRV );
                # update datatable
                my $file__time = time - int( ( -M "$service.ini" )
* 24 *
3600 );
#               print "time $file__time\n";
                my $dbh = new Sybase::CTlib $DB__USR, $DB__PWD,
$DB__SRV;
                unless ( $dbh ) {
                        print STDERR "webget.pl: Cannot connect to
dataserver $DB__SRV:$DB__USR:$DB__PWD\n";
                        return @ini;
                }
                my @row__refs = $dbh->ct__sql( "select lastUpdate
from
mcServices where service = '$service' ", undef, 1 );
                if ( $dbh->{ RC } == CS__FAIL ) {
                        print STDERR "webget.pl: DB select from
mcServices
failed\n";
                        return @ini;
                }
                unless ( defined @row__refs ) {
                        # have to insert
                        my ( @ini__escaped ) = map {
                                ( my $x = $__ ) =~ s/\'/\'\'/g;
                                $x;
                        } @ini;
                        $dbh->ct__sql( "insert mcServices values(
'$service',
'@ini__escaped', $file__time )" );
                        if ( $dbh->{ RC } == CS__FAIL ) {
                                print STDERR "webget.pl: DB insert to
mcServices failed\n";
                        }
                        return @ini;
                }
#               print "time $file__time:".$row__refs[ 0 ]->{
'lastUpdate'
}."\n";
                if ( $file__time > $row__refs[ 0 ]->{ 'lastUpdate'
} ) {
                        # have to update
                        my ( @ini__escaped ) = map {
                                ( my $x = $__ ) =~ s/\'/\'\'/g;
                                $x;
                        } @ini;
                        $dbh->ct__sql( "update mcServices set config
=
'@ini__escaped', lastUpdate = $file__time where service =
'$service' " );
                        if ( $dbh->{ RC } == CS__FAIL ) {
                                print STDERR "webget.pl: DB update to
mcServices failed\n";
                        }
                }
                return @ini;
        }
        else {
                print STDERR "$0: WARNING: $service.ini n/a in "
. `pwd`
                        . "Try to read DB\n";
        }
        # then try to read datatable
        die "webget.pl: Unable to find service $service\n"
unless ( $DB__SRV
);
        my $dbh = new Sybase::CTlib $DB__USR, $DB__PWD,
        $DB__SRV;
        die "webget.pl: Cannot connect to dataserver
$DB__SRV:$DB__USR:$DB__PWD\n" unless ( $dbh );
        my @row__refs = $dbh->ct__sql( "select config from
mcServices where
service = '$service' ", undef, 1 );
        die "webget.pl: DB select from mcServices failed\n" if
$dbh->{ RC }
== CS__FAIL;
        die "webget.pl: Unable to find service $service\n"
unless ( defined
@row__refs );
        $row__refs[ 0 ]->{ 'config' } =~ s/\n /\n\r/g;
        @ini = split( /\r/, $row__refs[ 0 ]->{ 'config' } );
        return @ini;
}
################################################
sub process__section {
        my ( $prev__section ) = @__;
        my ( $section, $output, $content );
        my %Param;
        my %Content;
#       print"############################\n";
        foreach ( @ini ) {
#               print;
#               chop;
                s/\s+$//;
                s/^\s+//;
                # get section name
                if ( /^\[(.*)\]/ ) {
#                       print "$__: $section:$prev__section\n";
                        last if $section;
                        next if $1 eq "print";
#                       next if $prev__section ne " " and
$prev__section ne $1;
                        if ( $prev__section eq $1 ) {
                                $prev__section = " ";
                                next;
                        }
                        $section = $1;
                }
                # get parameters
                push( @{ $Param{ $1 } }, $2 ) if $section and
/([^=]+)=(.*)/;
        }
#       print"++++++++++++++++++++++++++++++\n";
        return 0 unless $section;
#       print "section $section\n";
        # substitute parameters with values
        map { $Param{ URL }->[ 0 ] =~ s/$Param{ Input }->[ $__
]/$ARGV[ $__
]/g
        } 0 . . $#{ $Param{ Input } };
        # get page content
        ( $Content{ 'TIME' }, $content ) = &get__url__content(
```

TABLE 3-continued

```
${ $Param{ URL
} } [ 0 ] );
        # filter it
        map {
            if ( /\"([^\"]+)\"([^\"]*)\"/ or
/\/([^\/]+)\/([^\/]*)\// )
{
                my $out = $2; $content =~ s/$1/$out/g;
            }
        } @{ $Param{ "Pre-filter" } };
#print STDERR $content;
        # do main regular expression
        unless( @values = $content =~ /${ $Param{
Regular_expression } } [ 0
]/ ) {
            &die_hard( ${ $Param{ Regular_expression } } [ 0
], $content
);
            return $section;
        }
        %Content = map { ( $Param{ Output }->[ $_ ], $values[
$_ ] )
        } 0 . . $#{ $Param{ Output } };
        # filter it
        map {
            if ( /([^\"]+)\"([^\"]+)\"([^\"]*)\"/
                or /([^\/]+)\/([^\/]+)\/([^\/]*)\// ) {
                  my $out = $3;
                  $Content{ $1 } =~ s/$2/$out/g;
            }
        } @{ $Param{ "Post-filter" } };
        # calculate it
        map {
            if ( /([^=]+)=(.*)/ ) {
                my $eval = $2;
                map { $eval =~ s/$_/$Content{ $_ }/g
                } keys %Content;
               $Content{ $1 } = eval( $eval );
            }
        } @{ $Param{ Calculate } };
        # read section [print]
       foreach $i ( 0 . . $#ini ) {
            next unless $ini[ $i ] =~ /^\[print\]/;
            foreach ( $i + 1 . . $#ini ) {
                last if $ini[ $_ ] =~ /^\[.+\]/;
                $output .= $ini[ $_ ] . "\n";
            }
            last;
        }
        # prepare output
        map { $output =~ s/$_/$Content{ $_ }/g
        } keys %Content;
        print $output;
        return 0;
}
##################################################
sub get_url_content {
        my ( $url ) = @_;
        print STDERR $url if $debug;
#       $response = `./url.pl '$url'`;
        $response = `./url.pl '$url'`;
        return( $time - time, $response );
        my $ua = LWP::UserAgent->new;
        $ua->agent( 'Mozilla/4.0 [en] (X11; I; FreeBSD 2.2.8-
STABLE i386) '
);
#       $ua->proxy( ['http', 'https'],
'http://proxy.webley:3128/' );
#       $ua->no_proxy( 'webley', 'vail' );
        my $cookie = HTTP::Cookies->new;
        $ua->cookie_jar( $cookie );
        $url = url $url;
        print "$url\n" if $debug2;
        my $time = time;
        my $res = $ua->request( GET $url );
        print "Response: " . ( time - $time ) . "sec\n" if
$debug2;
        return( $time - time, $res->content );
}
```

TABLE 3-continued

```
##################################################
sub die_hard {
        my( $re, $content ) = @_;
        my ( $re_end, $pattern );
        while( $content !~ /$re/ ) {
            if ( $re =~ s/(\([^\(\)]+\) [^\(\)]*$)// ) {
                $re_end = $1 . $re_end;
            }
            else {
                $re_end = $re;
                last;
            }
        }
        $content =~ /$re/;
        print STDERR "The regular expression did not match:\n
$re\n
Possible misuse:
$re_end:\n
Matched:
$&\n
Mismatched:
$'\n
" if $debug;
            if ( $debug ) {
                print STDERR "Content:\n $content\n" unless
$';
            }
}
##################################################
```

Once the web browsing server **302** accesses the web site specified in the URL **404** and retrieves the requested information, it is forwarded to the media server **304**. The media server uses the speech synthesis engine **502** to create an audio message that is then transmitted to the user's voice enabled device **306**. In the preferred embodiment, each web browsing server is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

Referring to FIG. **3**, the operation of the personal voice-based information retrieval system will be described. A user establishes a connection between his voice enabled device **306** and a media server **304** of the voice browsing system **108**. This may be done using the Public Switched Telephone Network (PSTN) **308** by calling a telephone number associated with the voice browsing system **108**. Once the connection is established, the media server **304** initiates an interactive voice response (IVR) application. The IVR application plays audio message to the user presenting a list of options, which includes "perform a user-defined search." The user selects the option to perform a user-defined search by speaking the name of the option into the voice enabled device **306**.

The media server **304** then accesses the database **300** and retrieves the personal recognition grammars **402**. Using the speech synthesis engine **502**, the media server **304** then asks the user, "Which of the following user-defined searches would you like to perform" and reads to the user the identification name, provided by the recognition grammar **402**, of each user-defined search. The user selects the desired search by speaking the appropriate speech command or pronounceable name described within the recognition grammar **402**. These speech recognition grammars **402** define the speech commands or pronounceable names spoken by a user in order to perform a user-defined search. If the user has a multitude of user-defined searches, he may speak the command or pronounceable name described in the recognition grammar **402** associated with the desired search at anytime without waiting for the media server **304** to list all available user-defined searches. This feature is commonly referred to as a "barge-in" feature.

The media server **304** uses the speech recognition engine **500** to interpret the speech commands received from the user. Based upon these commands, the media server **304** retrieves the appropriate user-defined web site record **400** from the database **300**. This record is then transmitted to a web browsing server **302**. A firewall **310** may be provided that separates the web browsing server **302** from the database **300** and media server **304**. The firewall provides protection to the media server and database by preventing unauthorized access in the event the firewall **312** for the web browsing server fails or is compromised. Any type of firewall protection technique commonly known to one skilled in the art could be used, including packet filter, proxy server, application gateway, or circuit-level gateway techniques.

The web browsing server **302** accesses the web site **106** specified by the URL **404** in the user-defined web site record **400** and retrieves the user-defined information from that site using the content extraction agent and specified content descriptor file specified in the content extraction agent command **406**. Since the web browsing server **302** uses the URL and retrieves new information from the Internet each time a request is made, the requested information is always updated.

The content information received from the responding web site **106** is then processed by the web browsing server **302** according to the associated content descriptor file. This processed response is then transmitted to the media server **304** for conversion into audio messages using either the speech synthesis engine **502** or selecting among a database of prerecorded voice responses contained within the database **300**.

It should be noted that the web sites accessible by the personal information retrieval system and voice browser of the preferred embodiment may use any type of mark-up language, including Extensible Markup Language (XML), Wireless Markup Language (WML), Handheld Device Markup Language (HDML), Hyper Text Markup Language (HTML), or any variation of these languages.

The descriptions of the preferred embodiments described above are set forth for illustrative purposes and are not intended to limit the present invention in any manner Equivalent approaches are intended to be included within the scope of the present invention. While the present invention has been described with reference to the particular embodiments illustrated, those skilled in the art will recognize that many changes and variations may be made thereto without departing from the spirit and scope of the present invention. These embodiments and obvious variations thereof are contemplated as falling within the scope and spirit of the claimed invention.

I claim:

1. A method for allowing users to use speech commands to obtain information from a pre-defined portion of a pre-selected web site in audio format, said method comprising the steps of:

(a) providing a computer having a speech processor, said computer being operatively connected to the internet and to at least one phone;

(b) providing a URL to said computer, said URL indicating a pre-selected web site from which the information is to be retrieved;

(c) using said computer to designate a pre-defined portion of the pre-selected web site which contains the information to be retrieved;

(d) using said computer to identify a named object associated with the content of the information to be retrieved;

(e) using said computer to generate a regular expression based on said pre-defined portion of said pre-selected web site and said named object, said regular expression corresponding to said content of said information to be retrieved, wherein said regular expression is a text string used for describing a search pattern;

(f) providing a speech command to said speech processor, said speech command corresponding to said regular expression;

(g) said speech processor converting said speech command to a digital-form command;

(h) said computer receiving said digital-form command from said speech processor, said computer assigning said regular expression to said digital-form command;

(i) after steps (a) through (h) are completed, transmitting an audio speech command to said speech processor, said speech command corresponding to said regular expression;

(j) said speech processor converting said speech command to said digital-form command;

(k) said computer receiving said digital-form command from said speech processor;

(l) said computer retrieving said regular expression corresponding to said digital-form command;

(m) said computer retrieving the information from the pre-defined portion of the pre-selected web site corresponding to said regular expression when the requested information is found in the pre-defined portion of the pre-selected website;

(n) said computer searching said pre-selected web site for said named object when the requested information is not found in the pre-defined portion of the pre-selected web site;

(o) said computer providing said retrieved information to said speech processor;

(p) said speech processor converting said retrieved information into an audio message; and

(q) said speech processor forwarding said audio message to a user.

2. The method of claim **1** wherein the pre-defined portion of the pre-selected web site being retrieved is periodically updated.

3. The method of claim **1** wherein the step of providing a URL to a computer is performed by a user.

4. The method of claim **1** wherein the step of using said computer to designate a pre-defined portion of the web site which contains the information to be retrieved comprises the steps of:

displaying the web site on a graphical display operatively connected to the computer; and

using computer software to select the pre-defined portion of the pre-selected web site which contains the information to be retrieved.

5. The method of claim **4** wherein the step of using said computer to designate a pre-defined portion of the web site which contains the information to be retrieved is performed by a user.

6. A system for retrieving information from a pre-defined portion of a pre-selected web site by uttering speech commands into a phone and for providing to a user retrieved information in an audio form, said system comprising:

a server, said server operatively connected to the internet and to at least one phone, said server comprising:

telephony hardware, said telephony hardware operatively connected to said phone and to said server;

at least one speech recognition engine, said speech recognition engine operatively connected to said server and to said telephony hardware;

a speech synthesis engine, said speech synthesis engine operatively connected to said server and to said telephony hardware; and

a call processing system, said call processing system configured to receive speech commands through said telephony hardware and forward said speech commands to said speech recognition engine and said call processing system further configured to receive an audio message from said speech synthesis engine and forward said audio message through said telephony hardware;

a first instruction set stored on said server, said first instruction set configured to identify the pre-defined portion of the pre-selected web site and to identify a named object associated with the content of the information to be retrieved, said pre-defined portion containing the information to be retrieved from the web site, said first instruction set comprising:

a uniform resource locator address for said web site; and

the named object;

a second instruction set stored on said server, said second instruction set configured to generate a regular expression based on said pre-defined portion of said pre-selected web site and said named object, said regular expression corresponding to said content of said information to be retrieved, wherein said regular expression is a text string used for describing a search pattern;

a recognition grammar corresponding to each said instruction set and corresponding to a speech command;

said speech recognition engine configured to receive said speech command and to select the corresponding recognition grammar, said speech recognition engine further configured to retrieve each said instruction set corresponding to said recognition grammar upon receiving said speech command;

a web browser operatively connected to said server, said web browser including at least a content extraction agent, a content fetcher, and a content descriptor file, said web browser configured to access said pre-defined portion of said web she defined by said instruction sets and to retrieve said information defined by said instruction sets;

said speech synthesis engine configured to convert the retrieved information from said pre-defined portion of said pre-selected web site into an audio message, and said speech synthesis engine further configured to transmit said audio message to said user.

7. The system of claim **6** wherein the phone is a landline telephone.

8. The system of claim **6** wherein the phone is a wireless telephone.

9. The system of claim **6** wherein the phone is an internet protocol telephone.

10. The system of claim **6** wherein the server is operatively connected to a local area network.

11. The system of claim **6** wherein the server is operatively connected to a wide area network.

12. The system of claim **6** wherein the server is operatively connected to the Internet.

13. The system of claim **6** further comprising a database operatively connected to the server, the database configured to store said instruction set and said recognition grammars.

14. The system of claim **6** further comprising computer software stored on the server, said computer software configured to create said instruction set based on user-defined information.

15. The system of claim **6** further comprising:

a graphical display operatively connected to the server, said graphical display configured to display the pre-selected web site; and

computer software stored on the server, said computer software configured to select the pre-defined portion of the pre-selected web site which contains the information to be retrieved.

16. A method for allowing a phone user to set up and subsequently retrieve information in an audio format from a pre-defined portion of a pre-selected web she, said method comprising the steps of:

providing a server operatively connected to the internet and to at least one phone, said server being operatively connected to a speech recognition engine and to a speech synthesis engine;

providing a first instruction set stored on said server for identifying the pre-defined portion of a pre-selected web she containing the content of the information to be retrieved from the web site, said first instruction set comprising:

a uniform resource locater address for said web site; and

a named object associated with the content of the information to be retrieved;

providing a second instruction set stored on said server for generating a regular expression based on said pre-defined portion of said pre-selected web site and said named object, said regular expression corresponding to said content of said information to be retrieved, wherein said regular expression is a text string used for describing a search pattern;

providing a speech command to said speech recognition engine, said speech command corresponding to said instruction sets;

said speech recognition engine assigning said speech command to a recognition grammar, said speech command and said recognition grammar corresponding to each said instruction set;

transmitting said speech command to said speech recognition engine;

said speech recognition engine receiving said speech command and selecting the corresponding recognition grammar;

said server retrieving each said instruction set corresponding to said recognition grammar;

said server accessing said pre-defined portion of said pre-selected web site defined by said instruction sets and retrieving said information defined by said instruction sets when the requested information is found in the pre-defined portion of the pre-selected web site;

said server searching said pre-selected website when the requested information is not found in the pre-defined portion of the pre-selected web site;

said speech synthesis engine converting the retrieved information from said pre-selected web site into an audio message; and

said speech synthesis engine transmitting said audio message to said user.

17. The method of claim **16** wherein the step of providing at least one instruction set to the server is performed by the user.

18. The method of claim **16** wherein the step of providing at least one instruction set to the server comprises the steps of:

displaying the web site on a graphical display operatively connected to the server; and

using computer software to select the pre-defined portion of the pre-selected web site which contains the information to be retrieved.

19. The method of claim **18** wherein the step of providing at least one instruction set to the server is performed by the user.

20. The method of claim **16** wherein the pre-defined portion of the pre-selected web site being retrieved is periodically updated.

21. The system of claim **6** wherein the named object is selected from the group consisting of: "weather", "forecast", "high", "low", "radar", "temp", "temperature", "humidity", "humidity level", "wind", "wind speed", "wind direction", "pressure", "sunrise", "sunset", "time", "month", "day", "stock", "stock quote", "news", "news reel", "airline", "carrier", "flight", and "flight number".

* * * * *

EXHIBIT B

US009377992B2

(12) **United States Patent**
Kurganov

(10) **Patent No.: US 9,377,992 B2**
(45) **Date of Patent: Jun. 28, 2016**

(54) **PERSONAL VOICE-BASED INFORMATION RETRIEVAL SYSTEM**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D174,465 S 3/1876 Bell
3,728,486 A 4/1973 Kraus
(Continued)

FOREIGN PATENT DOCUMENTS

CA 1329852 5/1994
EP 0 572 544 B1 9/1996
(Continued)

OTHER PUBLICATIONS

"A PABX that Listens and Talks", Speech Technology, Jan./Feb. 1984, pp. 74-79.
(Continued)

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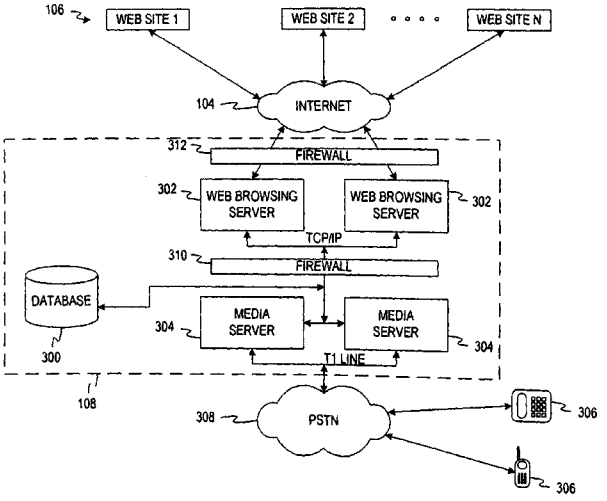
(57) **ABSTRACT**

The present invention relates to a system for retrieving information from a network such as the Internet. A user creates a user-defined record in a database that identifies an information source, such as a web site, containing information of interest to the user. This record identifies the location of the information source and also contains a recognition grammar based upon a speech command assigned by the user. Upon receiving the speech command from the user that is described within the recognition grammar, a network interface system accesses the information source and retrieves the information requested by the user.

12 Claims, 5 Drawing Sheets



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(56) **References Cited**

U.S. PATENT DOCUMENTS

4,058,838	A	11/1977	Crager et al.
4,100,377	A	7/1978	Flanagan
4,313,035	A	1/1982	Jordan et al.
4,327,251	A	4/1982	Fomenko et al.
4,340,783	A	7/1982	Sugiyama et al.
4,371,752	A	2/1983	Matthews et al.
4,481,574	A	11/1984	DeFino et al.
4,489,438	A	12/1984	Hughes
4,500,751	A	2/1985	Darland et al.
4,513,390	A	4/1985	Walter et al.
4,523,055	A	6/1985	Hohl et al.
4,549,047	A	10/1985	Brian et al.
4,584,434	A	4/1986	Hashimoto
4,585,906	A	4/1986	Matthews et al.
4,596,900	A	6/1986	Jackson
4,602,129	A	7/1986	Matthews et al.
4,635,253	A	1/1987	Urui et al.
4,652,700	A	3/1987	Matthews et al.
4,696,028	A	9/1987	Morganstein et al.
4,713,837	A	12/1987	Gordon
4,747,127	A	5/1988	Hansen et al.
4,748,656	A	5/1988	Gibbs et al.
4,755,932	A	7/1988	Diedrich
4,757,525	A	7/1988	Matthews et al.
4,761,807	A	8/1988	Matthews et al.
4,763,317	A	8/1988	Lehman et al.
4,769,719	A	9/1988	Endo
4,771,425	A	9/1988	Baran et al.
4,776,016	A	10/1988	Hansen
4,782,517	A	11/1988	Bernardis et al.
4,792,968	A	12/1988	Katz
4,799,144	A	1/1989	Parruck et al.
4,809,321	A	2/1989	Morganstein et al.
4,811,381	A	3/1989	Woo et al.
4,837,798	A	6/1989	Cohen et al.
4,847,891	A	7/1989	Kotani
4,850,012	A	7/1989	Mehta et al.
4,852,149	A	7/1989	Zwick et al.
4,852,170	A	7/1989	Bordeaux
4,866,758	A	9/1989	Heinzelmann
4,873,719	A	10/1989	Reese
4,879,743	A	11/1989	Burke et al.
4,893,333	A	1/1990	Baran et al.
4,903,289	A	2/1990	Hashimoto
4,903,291	A	2/1990	Tsurufuji et al.
4,905,273	A	2/1990	Gordon et al.
4,907,079	A	3/1990	Turner et al.
4,918,722	A	4/1990	Duehren et al.
4,922,518	A	5/1990	Gordon et al.
4,922,520	A	5/1990	Bernard et al.
4,922,526	A	5/1990	Morganstein et al.
4,926,462	A	5/1990	Ladd et al.
4,930,150	A	5/1990	Katz
4,933,966	A	6/1990	Hird et al.
4,935,955	A	6/1990	Neudorfer
4,935,958	A	6/1990	Morganstein et al.
4,941,170	A	7/1990	Herbst
4,942,598	A	7/1990	Davis
4,953,204	A	8/1990	Cuschleg, Jr. et al.
4,955,047	A	9/1990	Morganstein et al.
4,956,835	A	9/1990	Grover
4,959,854	A	9/1990	Cave et al.
4,967,288	A	10/1990	Mizutori et al.
4,969,184	A	11/1990	Gordon et al.
4,972,462	A	11/1990	Shibata
4,974,254	A	11/1990	Perine et al.
4,975,941	A	12/1990	Morganstein et al.
4,985,913	A	1/1991	Shalom et al.
4,994,926	A	2/1991	Gordon et al.
4,996,704	A	2/1991	Brunson
5,003,575	A	3/1991	Chamberlin et al.
5,003,577	A	3/1991	Ertz et al.
5,008,926	A	4/1991	Misholi
5,020,095	A	5/1991	Morganstein et al.
5,027,384	A	6/1991	Morganstein
5,029,196	A	7/1991	Morganstein
5,036,533	A	7/1991	Carter et al.
5,054,054	A	10/1991	Pessia et al.
5,065,254	A	11/1991	Hishida
5,086,385	A	2/1992	Launey et al.
5,095,445	A	3/1992	Sekiguchi
5,099,509	A	3/1992	Morganstein et al.
5,109,405	A	4/1992	Morganstein
5,128,984	A	7/1992	Katz
5,131,024	A	7/1992	Pugh et al.
5,133,004	A	7/1992	Heileman, Jr. et al.
5,145,452	A	9/1992	Chevalier
5,166,974	A	11/1992	Morganstein et al.
5,179,585	A	1/1993	MacMillan, Jr. et al.
5,193,110	A	3/1993	Jones et al.
5,195,086	A	3/1993	Baumgartner et al.
5,233,600	A	8/1993	Pekarske
5,243,643	A	9/1993	Sattar et al.
5,243,645	A	9/1993	Bissell et al.
5,249,219	A	9/1993	Morganstein et al.
5,255,305	A	10/1993	Sattar
5,263,084	A	11/1993	Chaput et al.
5,276,729	A	1/1994	Higuchi et al.
5,287,199	A	2/1994	Zoccolillo
5,291,302	A	3/1994	Gordon et al.
5,291,479	A	3/1994	Vaziri et al.
5,303,298	A	4/1994	Morganstein et al.
5,307,399	A	4/1994	Dai et al.
5,309,504	A	5/1994	Morganstein
5,325,421	A	6/1994	Hou et al.
5,327,486	A	7/1994	Wolff et al.
5,327,529	A	7/1994	Fults et al.
5,329,578	A	7/1994	Brennan et al.
5,333,266	A	7/1994	Boaz et al.
5,347,574	A	9/1994	Morganstein
5,355,403	A	10/1994	Richardson, Jr. et al.
5,359,598	A	10/1994	Steagall et al.
5,365,524	A	11/1994	Hiller et al.
5,365,574	A	11/1994	Hunt et al.
5,375,161	A	12/1994	Fuller et al.
5,384,771	A	1/1995	Isidoro et al.
5,404,231	A	4/1995	Bloomfield
5,408,526	A	4/1995	McFarland et al.
5,414,754	A	5/1995	Pugh et al.
5,416,834	A	5/1995	Bales et al.
5,426,421	A	6/1995	Gray
5,432,845	A	7/1995	Burd et al.
5,436,963	A	7/1995	Fitzpatrick et al.
5,459,584	A	10/1995	Gordon et al.
5,463,684	A	10/1995	Morduch et al.
5,475,791	A	12/1995	Schalk et al.
5,479,487	A	12/1995	Hammond
5,495,484	A	2/1996	Self et al.
5,497,373	A	3/1996	Hulen et al.
5,499,288	A	3/1996	Hunt et al.
5,515,427	A	5/1996	Carlsen et al.
5,517,558	A	5/1996	Schalk
5,526,353	A	6/1996	Henley et al.
5,533,115	A	7/1996	Hollenbach et al.
5,537,461	A	7/1996	Bridges et al.
5,555,100	A	9/1996	Bloomfield et al.
5,559,611	A	9/1996	Bloomfield et al.
5,559,859	A	9/1996	Dai et al.
5,566,236	A	10/1996	McLampy et al.
5,603,031	A	2/1997	White et al.
5,608,786	A	3/1997	Gordon
5,610,910	A	3/1997	Focsaneanu et al.
5,610,970	A	3/1997	Fuller et al.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,611,031	A		3/1997	Hertzfeld et al.
5,630,079	A		5/1997	McLaughlin
5,652,789	A		7/1997	Miner et al.
5,657,376	A		8/1997	Espeut et al.
5,659,597	A		8/1997	Bareis et al.
5,666,401	A		9/1997	Morganstein et al.
5,675,507	A		10/1997	Bobo, II
5,675,811	A		10/1997	Broedner et al.
5,689,669	A		11/1997	Lynch et al.
5,692,187	A		11/1997	Goldman et al.
5,699,486	A		12/1997	Tullis et al.
5,712,903	A		1/1998	Bartholomew et al.
5,719,921	A		2/1998	Vysotsky et al.
5,721,908	A		2/1998	Lagarde et al.
5,724,408	A		3/1998	Morganstein
5,737,395	A		4/1998	Irribarren
5,742,596	A		4/1998	Baratz et al.
5,742,905	A		4/1998	Pepe et al.
5,752,191	A		5/1998	Fuller et al.
5,758,322	A		5/1998	Rongley
5,761,294	A		6/1998	Shaffer et al.
5,764,639	A		6/1998	Staples et al.
5,764,736	A		6/1998	Shachar et al.
5,764,910	A		6/1998	Shachar
5,774,860	A		6/1998	Bayya et al.
5,787,298	A		7/1998	Broedner et al.
5,793,993	A		8/1998	Broedner et al.
5,794,205	A		8/1998	Walters
5,799,063	A		8/1998	Krane
5,799,065	A		8/1998	Junqua et al.
5,809,282	A		9/1998	Cooper et al.
5,812,796	A		9/1998	Broedner et al.
5,819,220	A		10/1998	Sarukkai et al.
5,819,306	A		10/1998	Goldman et al.
5,822,727	A		10/1998	Garberg et al.
5,823,879	A		10/1998	Goldberg et al.
5,832,063	A		11/1998	Vysotsky et al.
5,835,570	A		11/1998	Wattenbarger
5,838,682	A		11/1998	Dekelbaum et al.
5,867,494	A		2/1999	Krishnaswamy et al.
5,867,495	A		2/1999	Elliott et al.
5,870,550	A		2/1999	Wesinger, Jr. et al.
5,873,080	A		2/1999	Coden et al.
5,881,134	A		3/1999	Foster et al.
5,884,032	A		3/1999	Bateman et al.
5,884,262	A		3/1999	Wise et al.
5,884,266	A		3/1999	Dvorak
5,890,123	A		3/1999	Brown et al.
5,905,476	A		5/1999	McLaughlin et al.
5,914,951	A		6/1999	Bentley et al.
5,915,001	A		6/1999	Uppaluru
5,917,817	A		6/1999	Dunn et al.
5,940,598	A		8/1999	Strauss et al.
5,943,399	A		8/1999	Bannister et al.
5,946,389	A		8/1999	Dold
5,953,392	A		9/1999	Rhie et al.
5,974,413	A		10/1999	Beauregard et al.
5,991,292	A		11/1999	Focsaneanu et al.
5,995,615	A		11/1999	Miloslavsky
5,999,525	A		12/1999	Krishnaswamy et al.
5,999,611	A		12/1999	Tatchell et al.
5,999,965	A		12/1999	Kelly
6,012,088	A		1/2000	Li et al.
6,014,437	A		1/2000	Acker et al.
6,018,710	A		1/2000	Wynblatt et al.
6,021,181	A		2/2000	Miner et al.
6,031,904	A		2/2000	An et al.
6,038,305	A		3/2000	McAllister et al.
6,044,107	A		3/2000	Gatherer et al.
6,047,053	A		4/2000	Miner et al.
6,052,372	A		4/2000	Gittins et al.
6,067,516	A		5/2000	Levay et al.
6,078,580	A		6/2000	Mandalia et al.
6,081,518	A		6/2000	Bowman-Amuah
6,091,808	A		7/2000	Wood et al.
6,101,472	A		8/2000	Giangarra et al.
6,104,803	A		8/2000	Weser et al.
6,115,737	A		9/2000	Ely et al.
6,115,742	A		9/2000	Franklin et al.
6,130,933	A		10/2000	Miloslavsky
6,131,095	A		10/2000	Low et al.
6,157,705	A	*	12/2000	Perrone 379/88.01
6,161,128	A		12/2000	Smyk
6,178,399	B1		1/2001	Takebayashi et al.
6,188,683	B1		2/2001	Lang et al.
6,195,357	B1		2/2001	Polcyn
6,199,076	B1		3/2001	Logan et al.
6,201,814	B1		3/2001	Greenspan
6,201,863	B1		3/2001	Miloslavsky
6,208,638	B1		3/2001	Rieley et al.
6,233,318	B1		5/2001	Picard et al.
6,243,373	B1		6/2001	Turock
6,252,944	B1		6/2001	Hansen, II et al.
6,269,336	B1		7/2001	Ladd et al.
6,285,745	B1		9/2001	Bartholomew et al.
6,327,572	B1		12/2001	Morton et al.
6,343,529	B1		2/2002	Pool
6,349,132	B1		2/2002	Wesemann et al.
6,353,661	B1		3/2002	Bailey, III
6,366,575	B1		4/2002	Barkan et al.
6,366,578	B1		4/2002	Johnson
6,430,282	B1		8/2002	Bannister et al.
6,445,694	B1		9/2002	Swartz
6,446,076	B1		9/2002	Burkey et al.
6,456,699	B1		9/2002	Burg et al.
6,459,910	B1		10/2002	Houston
6,477,420	B1		11/2002	Struble et al.
6,505,163	B1		1/2003	Zhang et al.
6,529,948	B1		3/2003	Bowman-Amuah
6,532,444	B1		3/2003	Weber
6,539,359	B1		3/2003	Ladd et al.
6,546,393	B1		4/2003	Khan
6,587,822	B2	*	7/2003	Brown et al. 704/275
6,594,348	B1		7/2003	Bjurstrom et al.
6,606,611	B1	*	8/2003	Khan 706/10
6,618,039	B1		9/2003	Grant et al.
6,618,726	B1		9/2003	Colbath et al.
6,636,831	B1		10/2003	Profit, Jr. et al.
6,665,640	B1		12/2003	Bennett et al.
6,687,341	B1		2/2004	Koch et al.
6,718,015	B1	*	4/2004	Berstis 704/270.1
6,721,705	B2		4/2004	Kurganov et al.
6,724,868	B2	*	4/2004	Pradhan et al. 379/90.01
6,732,142	B1		5/2004	Bates et al.
6,771,743	B1		8/2004	Butler et al.
6,775,264	B1		8/2004	Kurganov
6,785,266	B2		8/2004	Swartz
6,823,370	B1		11/2004	Kredo et al.
6,888,929	B1		5/2005	Saylor et al.
6,922,733	B1		7/2005	Kuiken et al.
6,941,273	B1		9/2005	Loghmani et al.
6,964,012	B1		11/2005	Zirngibl et al.
6,965,864	B1		11/2005	Thrift et al.
6,996,609	B2		2/2006	Hickman et al.
7,050,977	B1		5/2006	Bennett
7,076,431	B2	*	7/2006	Kurganov et al. 704/275
7,146,323	B2	*	12/2006	Guenther et al. 704/275
7,327,723	B2	*	2/2008	Kurganov 370/352
7,386,455	B2	*	6/2008	Kurganov et al. 704/270.1
7,506,022	B2	*	3/2009	Wang et al. 709/203
7,516,190	B2	*	4/2009	Kurganov 709/217
7,881,941	B2	*	2/2011	Kurganov et al. 704/275
8,098,600	B2	*	1/2012	Kurganov 370/260
8,131,267	B2	*	3/2012	Lichorowic et al. 455/412.2
8,185,402	B2	*	5/2012	Kurganov et al. 704/275
8,380,505	B2	*	2/2013	Konig et al. 704/251
8,775,176	B2	*	7/2014	Gilbert et al. 704/235
2001/0011302	A1	*	8/2001	Son 709/225
2001/0032234	A1		10/2001	Summers et al.
2001/0040885	A1		11/2001	Jonas et al.
2001/0048676	A1		12/2001	Jimenez et al.
2002/0006126	A1		1/2002	Johnson et al.
2002/0087327	A1	*	7/2002	Lee et al. 704/270.1
2003/0002635	A1	*	1/2003	Koch et al. 379/88.17

(56) **References Cited**

U.S. PATENT DOCUMENTS

2005/0025133	A1	2/2005	Swartz	
2005/0074104	A1	4/2005	Swartz	
2005/0102147	A1*	5/2005	Ullrich et al.	704/270.1
2007/0206737	A1*	9/2007	Hickman	379/93.02
2007/0263601	A1*	11/2007	Kurganov	370/352
2008/0228494	A1*	9/2008	Cross	G10L 15/22 704/272
2011/0054898	A1*	3/2011	Phillips et al.	704/235
2011/0091023	A1*	4/2011	Kurganov et al.	379/88.17
2012/0179464	A1*	7/2012	Newman	G10L 15/30 704/231
2012/0253800	A1*	10/2012	Goller	G06F 8/65 704/231
2013/0006638	A1*	1/2013	Lindahl	704/251
2013/0191122	A1*	7/2013	Mason	G06F 17/30017 704/231
2013/0317823	A1*	11/2013	Mengibar	G06Q 30/0277 704/251
2014/0039898	A1*	2/2014	Reich	G10L 15/22 704/275
2014/0046660	A1*	2/2014	Kamdar	G10L 25/63 704/235
2014/0111415	A1*	4/2014	Gargi	G06F 3/017 345/156
2014/0123010	A1*	5/2014	Goldstein	H04M 1/05 715/716
2015/0185985	A1*	7/2015	Kang	H04M 1/72561 715/728
2015/0234636	A1*	8/2015	Barnes, Jr.	G06F 3/167 715/728
2015/0334080	A1*	11/2015	Tamayo	H04L 61/10 709/203
2015/0339745	A1*	11/2015	Peter	G06Q 30/0613 705/26.42

FOREIGN PATENT DOCUMENTS

EP	0794650	9/1997
GB	2 211 698	7/1989
GB	2 240 693 A	8/1991
GB	2317782	4/1998
JP	1-258526	10/1989
WO	WO 91/07838	5/1991
WO	WO 91/18466	11/1991
WO	WO 96/09710	3/1996
WO	9734401 A1	9/1997
WO	WO 97/37481	10/1997
WO	WO 98/23058	5/1998
WO	9823058 A1	9/1998

OTHER PUBLICATIONS

Amended Complaint, *Parus Holdings. Inc.* v. *Web Telephony LLC & Robert Swartz*, Case No. 06-cv-01146 (N.D. III.),, Jul. 10, 2006, 14 pages.

AT&T, Press Release, "AT&T Customers Can Teach Systems to Listen and Respond to Voice", Jan. 17, 1995, pp. 1-2, Basking Ridge, NJ., available at www.lucent.com/press/0195/950117.gbb.html (accessed Mar. 15, 2005).

Bellcore Technology Licensing, "The Electronic Receptionist—A Knowledge-Based Approach to Personal Communications", 1994, pp. 1-8.

Brachman et al., "Fragmentation in Store-and-Forward Message Transfer", IEEE Communications Magazine, vol. 26(7), Jul. 1998, pp. 18-27.

"Business Phone Systems for Advanced Offices", NTT Review, vol. 2 (6), Nov. 1990, pp. 52-54.

Cole et al., "An Architecture for a Mobile OSI Mail Access System", IEEE Journal on Selected Areas in Communications, vol. 7 (2), Feb. 1989, pp. 249-256.

"Data Communications Networks: Message Handling Systems", Fasciele, VIII. 7-Recommendations X.400-X.430, 38 pages, date unknown.

DAX Systems, Inc., Press Release, "Speech Recognition Success in DAX's Grasp", Nov. 22, 1995, pp. 1-2, Pine Brook, NJ.

Defendants Answer to the Amended Complaint and Demand for Jury Trial, *Parus Holdings, Inc.* v. *Web Telephone LLC & Robert Swartz*, Case No. 06-cv-01146 (N.D. III.), Aug. 10, 2006, 14 pages.

Faxpak Store and Forward Facsimile Transmission Service, Electrical Communication, vol. 54 (3), 1979, pp. 251-55.

Garcia et al., "Issues in Multimedia Computer-Based Message Systems Design and Standardization", NATO ASI Series, vol. 1-6, 1984, 18 pgs.

"Globecom '85 IEEE Global Telecommunications Conference,"New Orleans, LA., Dec. 2-5, 1985, pp. 1295-1300.

Hemphill et al., "Speech-Aware Multimedia," *IEEE MultiMedia*, Spring 1996, vol. 3, No. 1, pp. 74-78, IEEE. As indicated on the cover page of the journal, which is attached hereto as Attachment 4, the reference was received by Cornell University on Mar. 25, 1996.

Hunt et al., "Long-Distance Remote Control to the Rescue", Chicago Tribune, Jun. 15, 2002, Section 4, p. 15.

"Introducing PIC SuperFax, First PC/Fax System to Run Under Windows", Pacific Image Communications, Pasadena, CA, Date Unknown, (received at COMDEX show, Nov. 3, 1987). 4 pgs.

Kubala et al., "BYBLOS Speech Recognition Benchmark Results", *Workshop on Speech & Natural Language*, Feb. 19-22, 1991. According to the web site http://portal.acm.org/citation.cfm?id=112405.112415&coll . . . , attached hereto as Attachment 3, the reference was published in 1991, Morgan Kaufman Publishers, San Franscisco, CA. The distribution date is not presently known.

Ly, "Chatter: A Conversational Telephone Agent", submitted to Program in Media Arts & Sciences, MIT, 1993, pp. 1-130.

Maeda, et al., "An Intelligent Customer-Controlled Switching System", IEEE Global Telecommunications Conference, Hollywood, Florida, Nov. 28-Dec. 1, 1988, pp. 1499-1503.

Markowitz, J., "The Ultimate Computer Input Device May Be Right Under Your Nose", *Byte*, Dec. 1995, pp. 1-13, available at www.byte.com/art/9512/sec8/art1.htm (accessed Mar. 15, 2005).

Marx et al., "Mail Call: Message Presentation and Navigation in a Nonvisual Environment," *SIGCHI Conference on Human Factors in Computing Systems*, Vancouver, B.C., Canada, Apr. 13-18, 1996. As shown on Attachment 2, the web site http://www.usabilityviews.com/uv001673.html shows a date of Apr. 16, 1996. The distribution date is not presently known.

Marx, M., "Toward Effective Conversational Messaging" (Thesis). As indicated on the cover page, the thesis was presented to the Departmental Committee on Graduate Students, Program in Media Arts and Sciences, School of Architecture and Planning, Massachusetts Institute of Technology on May 12, 1995. According to the web site http://www.thesis.mit.edu/Dienst/Repository/2.0/Body/0018.mit.theses/1995-314/rfc1807bib, attached hereto as Attachment 1, the thesis was indexed on Mar. 21, 2000.

Oye, Phil, "Juggler", p. 1, available at http://www.philove.com/work/juggler/index.shtml (accessed on Dec. 8, 2006).

Oye, Phil, "Juggler", p. 1, available at http://www.philoye.com/work/juggler_2.shtml (accessed on Dec. 8, 2006).

Oye, Phil, "Juggler", p. 1, available at http://www.philoye.com/work/juggler_3.shtml (accessed on Dec. 8, 2006).

Perdue et al., "Conversant® 1 Voice System: Architecture and Applications", Jul. 17, 1986, AT&T Technical Journal, pp. 1-14.

Plaintiff Parus Holdings, Inc.'s Supplemental Responses to Defendant Web Telephone LLC's First Set of Interrogatories (Nos. 1-12), *Parus Holdings, Inc.* v. *Web Telephony LLC Y Robert Swartz*, Case No. 06-cv-01146 (N.D. III.), Oct. 31, 2006, 32 pages.

Plaintiff Parus Holdings, Inc.'s Supplemental Responses to Defendant Web Telephony LLC's Second Set of Interrogatories (Nos. 13-17), *Parus Holdings,Inc.* v. *Web Telephony LLC & Robert Swartz*, Case No. 06-cv-01146 (N.D. III.), Oct. 31, 2006, 31 pages.

Print outs of Internet web site, "Wildfire Communications, Inc.,", Nov. 5, 1997, including print outs of the following web pages: http://www.wildfire.com; http://www.wildfire.com/consumerhome.html; http://www.wildfire.com/106.html; http://www.wildfire.com/carrierhome.html; http://www.wildfire.com/sfandb.html; http://www.wildfire.com/about.html; http://www.wildfire.com/abtmgmt.html; http://www.wildfire.com/scoop.html; http://www.wildfire.com/intel.html; and http://www.wildfire.com/msft.html.

(56) **References Cited**

OTHER PUBLICATIONS

"Proceedings of the IFIP 10th World Computer Congress", Dublin, Ireland, Sep. 1-5, 1986.
"PureSpeech Announces Juggler PC Systemfor First Quarter of 1997", HighBeam Research, Sep. 19, 1996, pp. 1-3, available at http://www.highbeam.com/doc/1G1-186909545.html (accessed on Dec. 8, 2006).
PureSpeech, "Meet the Voice of Juggler!", pp. 1-3, the date of Nov. 18, 1996 is shown at the top of p. 1.
"PureSpeech's Juggler", *Teleconnect*, Dec. 1996 issue, p. 36.
Ross, randy, "Retrieve E-mail from a Telephone", Oct. 7, 1996, pp. 1-2, available at http://resna.org/ProfessOrg?Sigs?SIGSites/sig11/archive/juggler.htm (accessed on Dec. 8, 2006). Printout indicates that the article was originally printed in PC world.
Sartori, M., "Speech Recognition", Apr. 1995, pp. 1-9, Mercury Communications, available at www.gar.co.uk/technology_watch/speech.htm (accessed Mar. 15, 2005).
Schmandt et al., "A Conversational Telephone Messaging Systems", IEEE Transactions on Consumer Electronics, 1984, vol. CE-30, No. 3, pp. xxi-xxiv.
Schmandt et al., "Phone Shell: The Telephone as Computer Terminal", ACM Multimedia, 1993, 11 pgs.
Schmandt et al., "Phone Slave: A Graphical Telecommunications Interface", Proceedings of the SID, 1985, vol. 26/1, pp. 79-82.
"Secretarial Branch Exchanged", IBM Technical Disclosure Bulletin, vol. 26 (5), Oct. 1983, pp. 2645-2647.
Shimamura, et al., "Review of the Electrical Communication Laboratories", vol. 418 (33), No. 1, Tokyo, Japan, 1985, pp. 31-39.
"The VMX Systems Product Reference Manual: Product Description Volume", May 1994, vol. 1, release 7.1, VMX, Inc. (Octel Communications Corp.) San Jose, CA USA.
"VMXworks Product Reference Manual: vol. 3 Programmer's Guide", Jul. 1994, vols. 3 & 4, Release 3.1, Octel Communications corp., Milpitas, CA, USA.
"Wildfire Communication, Inc.", Harvard Business School, Mar. 21, 1996, Publ. No. 9-396-305, pp. 1-22.
"WordPerfect: New Telephony Features Boost Office", WordPerfect Office TechBrief, 1994, Info-World Publishing. Co., vol. 10, Issue 2, pp. 2-3.
Yang, C., "INETPhone—Telephone Services and Servers on the Internet", Apr. 1995, University of North Texas, pp. 1-6.
Bellcore Technology Licensing, "The Electronic Receptionist—A Knowledge-Based Approach to Personal Communications," 1994, pp. 1-8.
Examples: Abstract Ideas, 20 pages.
IBM AIX DirectTalk/6000 Version 1 Release 6 Improves Your Voice Processing Services to Callers and Customers, Announcement No. 295-489, Nov. 28, 1995, 27 pages.
IBM Announcement Letter No. A95-893, retrieved on Mar. 9, 2015, 10 pages.
IBM, AIX DirectTalk/6000 Release 6: Speech Recognition with the BBN Hark Recognizer, SC33-1734-00, Feb. 1996, 250 pages.
IBM, AIX DirectTalk/6000: General Information and Planning, Release 6, GC33-1720-00, Dec. 1995, 162 pages.
IBM, DirectTalkMail: Administration, Release 6, SC33-1733-00, Feb. 1996, 274 pages.
"McGraw-Hill Dictionary of Scientific & Technical Terms 1101, 6th ed. 2003," No copy is provided but please inform if a copy of this dictionary is required.
Newton, Harry, Newtons Telecom Dictionary—The Official Glossary of Telecommunications and Voice Processing Terms, Dec. 1992, 6 pages.
Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00109 and CBM2015-00149, Nov. 9, 2015, 19 pages.
Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00110 and CBM2015-00150, Nov. 9, 2015, 20 pages.
Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00111 and CBM2015-00151, Nov. 9, 2015, 19 pages.
Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00112 and CBM2015-00152, Nov. 9, 2015, 18 pages.
Putz, Steve, Interactive Information Services Using World-Wide Web Hypertext, First Int'l Conference on World-Wide Web (May 25-27, 1994), 10 pages.
Memorandum Opinion and Order, Oct. 8, 2015, 27 pages.
Update Subject Matter Eligibility, Jul. 2015, 33 pages.
Wikipedia Definition of "Internet", available at http://en.wikipedia.org/wiki/Internet pp. 24-26.

* cited by examiner

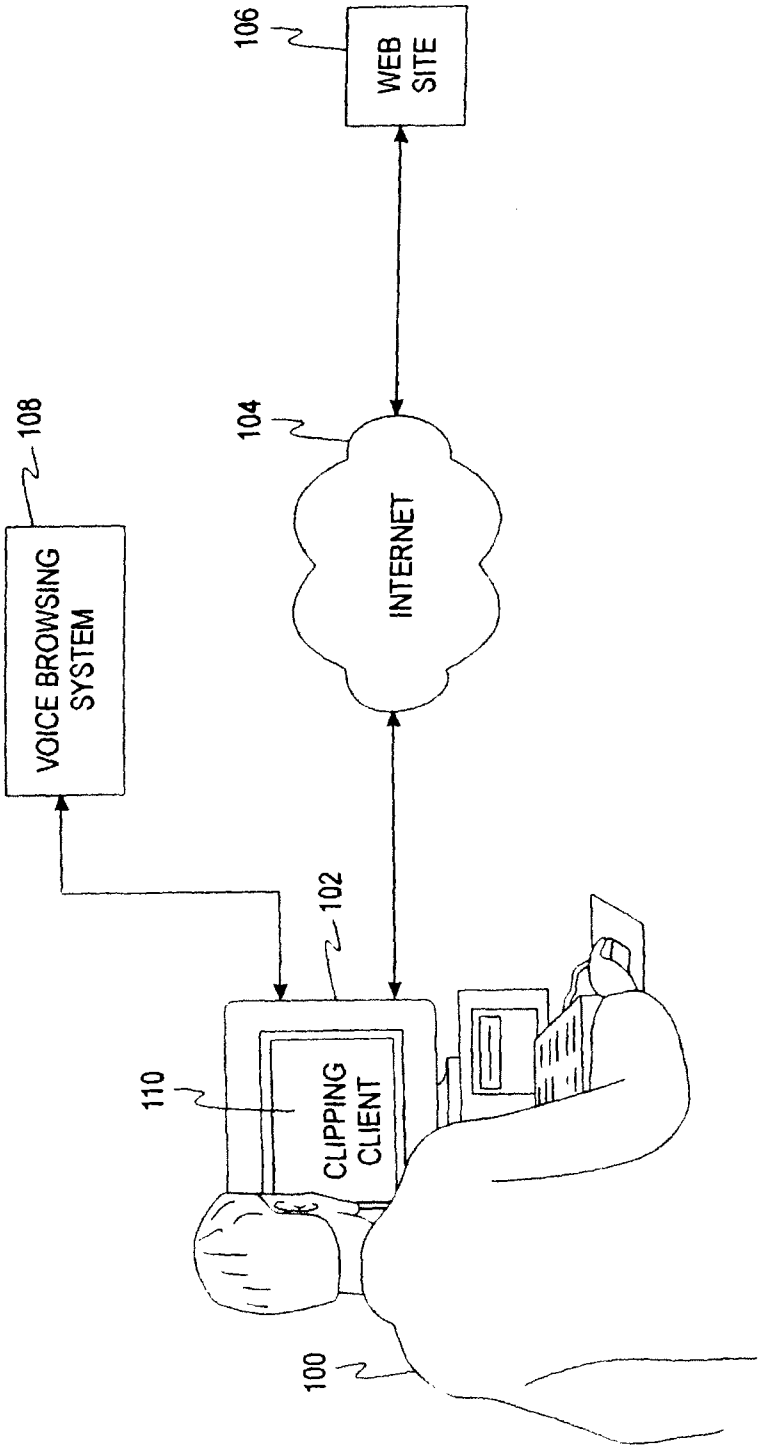
106
WEB SITE
104
INTERNET
108
VOICE BROWSING SYSTEM
102
110
CLIPPING CLIENT
100

FIG. 1

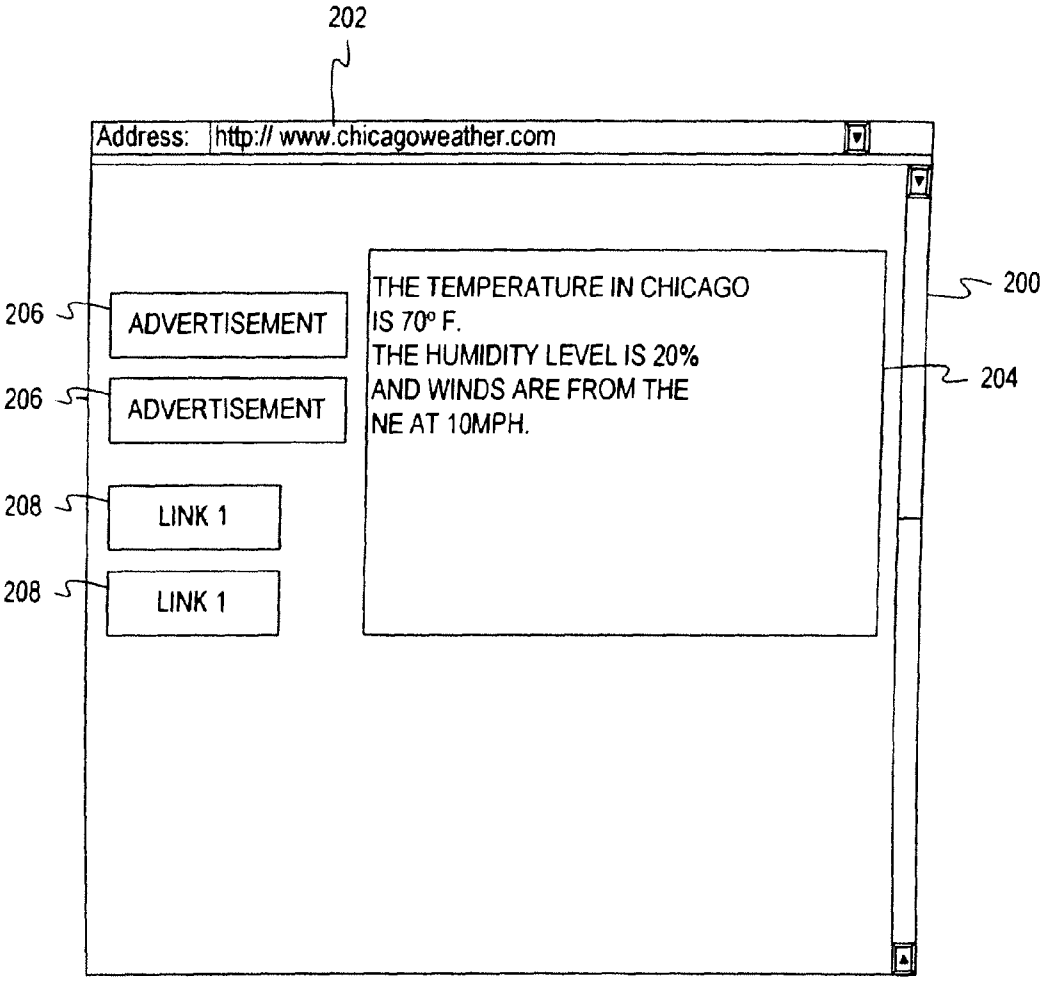
202
Address: http:// www.chicagoweather.com
206
ADVERTISEMENT
206
ADVERTISEMENT
208
LINK 1
208
LINK 1
THE TEMPERATURE IN CHICAGO
IS 70° F.
THE HUMIDITY LEVEL IS 20%
AND WINDS ARE FROM THE
NE AT 10MPH.
200
204

FIG. 2

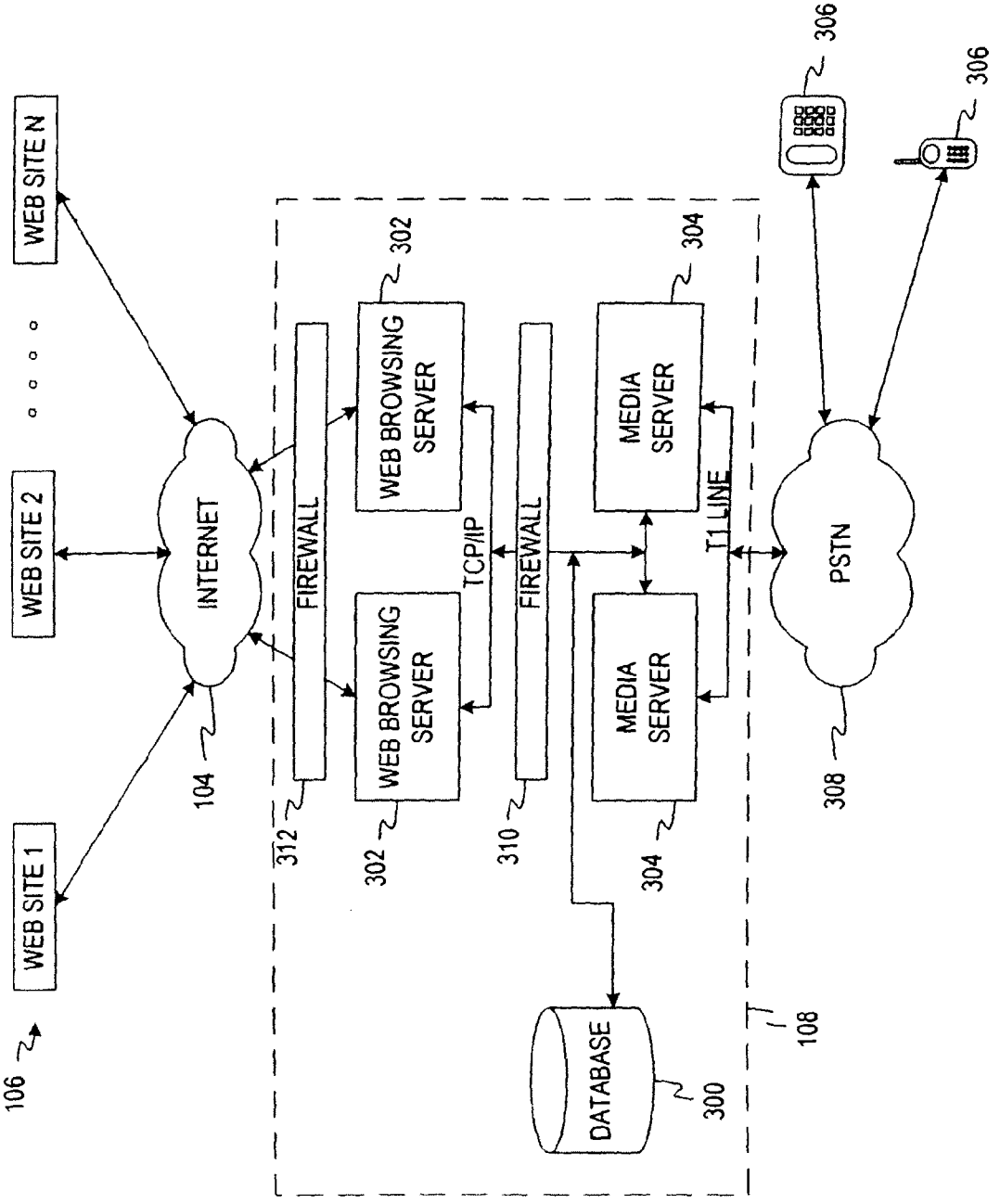
WEB SITE N
WEB SITE 2
WEB SITE 1
106
INTERNET
104
FIREWALL
312
WEB BROWSING SERVER
302
WEB BROWSING SERVER
302
TCP/IP
FIREWALL
310
MEDIA SERVER
304
MEDIA SERVER
304
T1 LINE
PSTN
306
306
308
DATABASE
300
108

FIG. 3

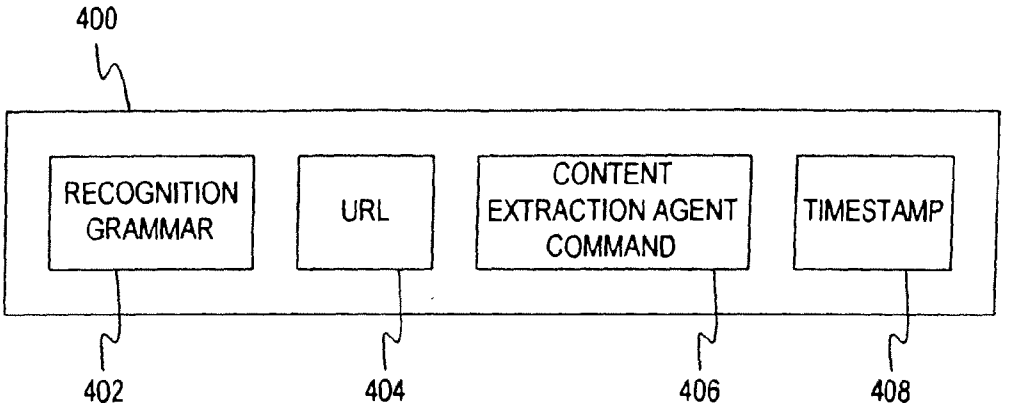
400
RECOGNITION GRAMMAR
URL
CONTENT EXTRACTION AGENT COMMAND
TIMESTAMP
402
404
406
408

FIG. 4

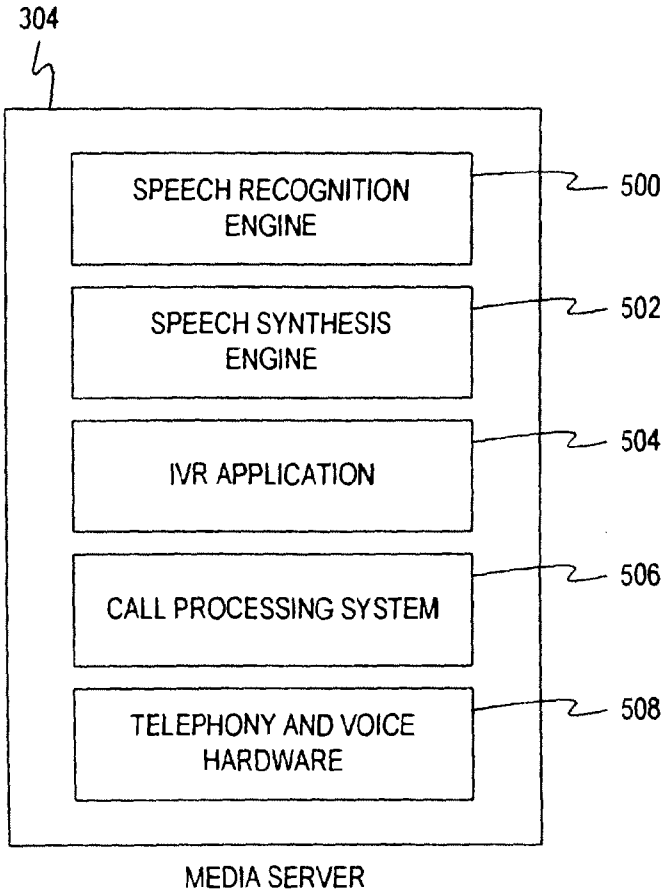
304
SPEECH RECOGNITION ENGINE
500
SPEECH SYNTHESIS ENGINE
502
IVR APPLICATION
504
CALL PROCESSING SYSTEM
506
TELEPHONY AND VOICE HARDWARE
508
MEDIA SERVER

FIG. 5

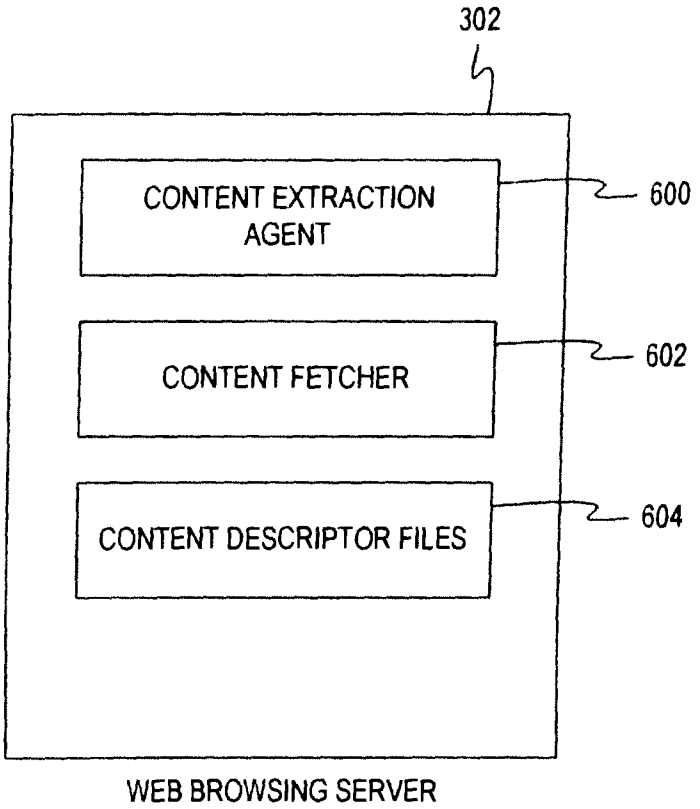
302
CONTENT EXTRACTION AGENT
600
CONTENT FETCHER
602
CONTENT DESCRIPTOR FILES
604
WEB BROWSING SERVER

FIG. 6

PERSONAL VOICE-BASED INFORMATION RETRIEVAL SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a continuation of U.S. Utility application Ser. No. 11/711,773, filed Jun. 29, 2007, which is a continuation of U.S. Utility application Ser. No. 09/777,406, dated Feb. 6, 2001, which claims priority to U.S. Provisional Patent Application No. 60/180,343, filed Feb. 4, 2000, which are incorporated by reference herein in their entirety.

FIELD OF THE INVENTION

The present invention relates generally to the field of providing information access. In particular, the invention relates to a personalized system for accessing information from the Internet or other information sources using speech commands.

BACKGROUND OF THE INVENTION

Popular methods of information access and retrieval using the Internet or other computer networks can be time-consuming and complicated. A user must frequently wade through vast amounts of information provided by an information source or web site in order obtain a small amount of relevant information. This can be time-consuming, frustrating, and, depending on the access method, costly. A user is required to continuously identify reliable sources of information and, if these information sources are used frequently, repeatedly access these sources.

Current methods of accessing information stored on computer networks, such as Wide Area Networks (WANs), Local Area Network (LANs) or the Internet, require a user to have access to a computer. While computers are becoming increasingly smaller and easier to transport, using a computer to access information is still more difficult than simply using a telephone. Since speech recognition systems allow a user to convert his voice into a computer-usable message, telephone access to digital information is becoming more and more feasible. Voice recognition technology is growing in its ability to allow users to use a wide vocabulary. Further, such technology is quite accurate when a single, known user only needs to use a small vocabulary.

Therefore, a need exists for an information access and retrieval system and method that allows users to access frequently needed information from information sources on networks by using a telephone and simple speech commands.

SUMMARY OF THE INVENTION

One object of the preferred embodiment of the present invention is to allow users to customize a voice browsing system.

A further object of the preferred embodiment is to allow users to customize the information retrieved from the Internet or other computer networks and accessed by speech commands over telephones.

Another object of the preferred embodiment is to provide a secure and reliable retrieval of information over the Internet or other computer networks using predefined verbal commands assigned by a user.

The present invention provides a solution to these and other problems by providing a new system for retrieving information from a network such as the Internet. A user creates a user-defined record in a database that identifies an information source, such as a web site, containing information of interest to the user. This record identifies the location of the information source and also contains a recognition grammar assigned by the user. Upon receiving a speech command from the user that is described in the assigned recognition grammar, a network interface system accesses the information source and retrieves the information requested by the user.

In accordance with the preferred embodiment of the present invention, a customized, voice-activated information access system is provided. A user creates a descriptor file defining specific information found on a web site the user would like to access in the future. The user then assigns a pronounceable name or identifier to the selected content and this pronounceable name is saved in a user-defined database record as a recognition grammar along with the URL of the selected web site.

In the preferred embodiment, when a user wishes to retrieve the previously defined web-based information, a telephone call is placed to a media server. The user provides speech commands to the media server that are described in the recognition grammar assigned to the desired search. Based upon the recognition grammar, the media server retrieves the user-defined record from a database and passes the information to a web browsing server which retrieves the information from associated web site. The retrieved information is then transmitted to the user using a speech synthesis software engine.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** displays a personal information selection system used with the preferred embodiment of the present invention;

FIG. **2** displays a web page displayed by the clipping client of the preferred embodiment;

FIG. **3** is a block diagram of a voice browsing system used with preferred embodiment of the present invention;

FIG. **4** is a block diagram of a user-defined database record created by preferred embodiment of the present invention;

FIG. **5** is a block diagram of a media server used by the preferred embodiment, and

FIG. **6** is a block diagram of a web browsing server used by the preferred embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention uses various forms of signal and data transmission to allow a user to retrieve customized information from a network using speech communication. In the preferred embodiment of the present invention, a user associates information of interest found on a specific information source, such as a web site, with a pronounceable name or identification word. This pronounceable name/identification word forms a recognition grammar in the preferred embodiment. When the user wishes to retrieve the selected information, he may use a telephone or other voice enabled device to access a voice browser system. The user then speaks a command described in the recognition grammar associated with the desired information. The voice browsing system then accesses the associated information source and returns to the user, using a voice synthesizer, the requested information.

Referring to FIG. **1**, a user **100** uses a computer **102** to access a network, such as a WAN, LAN, or the Internet, containing various information sources. In the preferred embodiment, the user **100** access the Internet **104** and begins searching for web sites **106**, which are information sources

that contain information of interest to the user When the user **100** identifies a web site **106** containing information the user would like to access using only a voice enabled device, such as a telephone, and the voice browsing system **108**, the user initiates a "clipping client" engine **110** on his computer **102**.

The clipping client **110** allows a user **100** to create a set of instructions for use by the voice browsing system **108** in order to report personalized information back to the user upon request. The instruction set is created by "clipping" information from the identified web site. A user **100** may be interested in weather for a specific city, such as Chicago. The user **100** identifies a web site from which he would like to obtain the latest Chicago weather information. The clipping client **110** is then activated by the user **100**

The clipping client **110** displays the selected web site in the same manner as a conventional web browser such as Microsoft's® Internet Explorer. FIG. **2** depicts a sample of a web page **200** displayed by the clipping client **110**. The user **100** begins creation of the instruction set for retrieving information from the identified web site by selecting the uniform resource locator (URL) address **202** for the web site (i.e., the web site address). In the preferred embodiment, this selection is done by highlighting and copying the URL address **202**. Next, the user selects the information from the displayed web page that he would like to have retrieved when a request is made. Referring to FIG. **2**, the user would select the information regarding the weather conditions in Chicago **204**. The web page **200** may also contain additional information such as advertisements **206** or links to other web sites **208** which are not of interest to the user. The clipping client **110** allows the user to select only that portion of the web page containing information of interest to the user. Therefore, unless the advertisements **206** and links **208** displayed on the web page are of interest to the user, he would not select this information. Based on the web page information **204** selected by the user, the clipping client **110** creates a content descriptor file containing a description of the content of the selected web page. This content descriptor file indicates where the information selected by the user is located on the web page. In the preferred embodiment, the content descriptor file is stored within the web browsing server **302** shown in FIG. **3**. The web browsing server **302** will be discussed below.

Table 1 below is an example of a content descriptor file created by the clipping client of the preferred embodiment. This content descriptor file relates to obtaining weather information from the web site www.cnn.com.

TABLE 1

```
table name : portalServices
column :
   service
content:
      weather
column:
   config
content:
   [cnn]
   Input=__zip
   URL=http://cgi.cnn.com/cgi-bin/weather/redirect?zip=__zip
   Pre-filter="\n" "
   Pre-filter="<[^<>]+>""
   Pre-filter=/\s+/ /
   Pre-filter="[\(\)\|]"!"
   Output=__location
   Output=first__day__name
   Output=first__day__weather
   Output=first__day__high__F
   Output=first__day__high__C
   Output=first__day__low__F
```


TABLE 1-continued

```
   Output=first__day__low__C
   Output=second__day__name
   Output=second__day__weather
   Output=second__day__high__F
   Output=second__day__high__C
   Output=second__day__low__F
   Output=second__day__low__C
   Output=third__day__name
   Output=third__day__weather
   Output=third__day__high__F
   Output=third__day__high__C
   Output=third__day__low__F
   Output=third__day__low__C
   Output=fourth__day__name
   Output=fourth__day__weather
   Output=fourth__day__high__F
   Output=fourth__day__high__C
   Output=fourth__day__low__F
   Output=fourth__day__low__C
   Output=undef
   Output=__current__time
   Output=__current__month
   Output=__current__day
   Output=__current__weather
   Output=__current__temperature__F
   Output=__current__temperature__C
   Output=__humidity
   Output=__wind
   Output=__pressure
   Output=__sunrise
   Output=__sunset
   Regular__expression=WEB SERVICES: (.+) Forecast FOUR-DAY
FORECAST (\S+)
(\S+) HIGH
(\S+) F (\S+) C LOW (\S+) F (\S+) C (\S+) (\S+) HIGH
(\S+) F (\S+) C LOW
(\S+
) F (\S+) C (\S+) (\S+) HIGH (\S+) F (\S+) C LOW (\S+) F
(\S+) C (\S+) (\S+)
HIGH
-(\S+) F (\S+) C LOW (\S+) F (\S+) C WEATHER MAPS RADAR
(.+) Forecast
CURRENT CONDITIONS
(.+) !local!, (\S+) (\S+) (.+) Temp: (\S+) F,
(\S+) C Rel.
Humidity: (
\S+) Wind: (.+) Pressure: (.+) Sunrise: (.+) Sunset: (.+)
```

Finally, the clipping client **110** prompts the user to enter an identification word or phrase that will be associated with the identified web site and information. For example, the user could associate the phrase "Chicago weather" with the selected URL **202** and related weather information **204**. The identification word or phrase is stored as a personal recognition grammar that can now be recognized by a speech recognition engine of the voice browsing system **108** which will be discussed below. The personal recognition grammar, URL address **202**, and a command for executing a content extraction agent are stored within a database used by the voice browser system **108** which will be discussed below.

The voice browsing system **108** used with the preferred embodiment will now be described in relation to FIG. **3**. A database **300** designed by Webley Systems Incorporated is connected to one or more web browsing servers **302** as well as to one or more media servers **304**. The database may store information on magnetic media, such as a hard disk drive, or it may store information via other widely acceptable methods for storing data, such as optical disks. The media servers **304** function as user interface systems that provide access to the voice browsing system **108** from a user's voice enabled device **306** (i.e. any type of wireline or wireless telephone, Internet Protocol (IP) phones, or other special wireless units). The database **300** contains a section that stores the personal recognition grammars and related web site information gen-

erated by the clipping client **110**. A separate record exists for each web site defined by the user. An example of a user—defined web site record is shown in FIG. **4**. Each user-defined web site record **400** contains the recognition grammar **402** assigned by the user, the associated Uniform Resource Locator (URL) **404**, and a command that enables the "content extraction agent" **406** and retrieves the appropriate content descriptor file required to generate proper requests to the web site and to properly format received data. The web-site record **400** also contains the timestamp **408** indicating the last time the web site was accessed. The content exaction agent is described in more detail below.

The database **300** may also contain a listing of pre-recorded audio files used to create concatenated phrases and sentences. Further, database **300** may contain customer profile information, system activity reports, and any other data or software servers necessary for the testing or administration of the voice browsing system **108**.

The operation of the media servers **304** will now be discussed in relation to FIG. **5**. The media servers **304** function as user interface systems since they allow a user to access the voice browsing system **108** via a voice enabled device **306**. In the preferred embodiment, the media servers **304** contain a speech recognition engine **500**, a speech synthesis engine **502**, an Interactive Voice Response (IVR) application **504**, a call processing system **506**, and telephony and voice hardware **508** that is required to enable the voice browsing system **108** to communicate with the Public Switched Telephone Network (PSTN) **308**. In the preferred embodiment, each media server is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

The speech recognition function is performed by a speech recognition engine **500** that converts voice commands received from the user's voice enabled device **10** (i.e., any type of wireline or wireless telephone, Internet Protocol (IP) phones, or other special wireless units) into data messages. In the preferred embodiment, voice commands and audio messages are transmitted using the PSTN **308** and data is transmitted using the TCP/IP communications protocol. However, one skilled in the art would recognize that other transmission protocols may be used. Other possible transmission protocols would include SIP/VoIP (Session Initiation Protocol/Voice over IP), Asynchronous Transfer Mode (ATM) and Frame Relay. A preferred speech recognition engine is developed by Nuance Communications of 1380 Willow Road, Menlo Park, Calif. 94025 (www.nuance.com). The Nuance engine capacity is measured in recognition units based on CPU type as defined in the vendor specification. The natural speech recognition grammars (i.e., what a user can say that will be recognized by the speech recognition engine) were developed by Webley Systems.

In the preferred embodiment, when a user access the voice browsing system **108**, he will be prompted if he would like to use his "user-defined searches." If the user answers affirmatively, the media servers **304** will retrieve from the database **300** the personal recognition grammars **402** defined by the user while using the clipping client **110**.

The media servers **304** also contain a speech synthesis engine **502** that converts the data retrieved by the web browsing servers **302** into audio messages that are transmitted to the user's voice enabled device **306**. A preferred speech synthesis engine is developed by Lernout and Hauspie Speech Products, 52 Third Avenue, Burlington, Mass. 01803 (www.lhsl.com).

A further description of the web browsing server **302** will be provided in relation to FIG. **6**. The web browsing servers **302** provide access to data stored on any computer network including the Internet **104**, WANs or LANs. The web browsing servers **302** receive responses from web sites **106** and extract the data requested by the user. This task is known as "content extraction." The web browsing server **302** is comprised of a content extraction agent **600**, a content fetcher **602**, and the content descriptor file **604**. Each of these are software applications and will be discussed below.

Upon receiving a user-defined web site record **400** from the database **300** in response to a user request, the web browsing server **302** invokes the "content extraction agent" command **406** contained in the record **400**. The content extraction agent **600** retrieves the content descriptor file **604** associated with the user-defined record **400**. As mentioned, the content descriptor file **604** directs the extraction agent where to extract data from the accessed web page and how to format a response to the user utilizing that data. For example, the content descriptor file **604** for a web page providing weather information would indicate where to insert the "city" name or ZIP code in order to retrieve Chicago weather information. Additionally, the content descriptor file **604** for each supported URL indicates the location on the web page where the response information is provided. The extraction agent **600** uses this information to properly extract from the web page the information requested by the user.

The content extraction agent **600** can also parse the content of a web page in which the user-desired information has changed location or format. This is accomplished based on the characteristic that most hypertext documents include named objects like tables, buttons, and forms that contain textual content of interest to a user When changes to a web page occur, a named object may be moved within a document, but it still exists. Therefore, the content extraction agent **600** simply searches for the relevant name of desired object. In this way, the information requested by the user may still be found and reported regardless of changes that have occurred.

Table 2 below contains source code for a content extraction agent **600** used by to the preferred embodiment.

TABLE 2

```
#!/usr/local/www/bin/sybperl5
#$Header:
/usr/local/cvsroot/webley/agents/service/web_dispatch.pl,v
1.6
# Dispatches all web requests
#http://wcorp.itn.net/cgi/flstat?carrier=ua&flight_no=155&mon
_abbr=jul&date=
6&stamp=ChLN~PdbuuE*itn/ord,itn/cb/sprint_hd
#http://cgi.cnnfn.com/flightview/rlm?airline=amt&number=300
require "config_tmp.pl";
# check parameters
die "Usage: $0 service [params]\n" if $#ARGV < 1;
#print STDERR @ARGV;
# get parameters
my ( $service, @param ) = @ARGV;
# check service
my %Services = (
                    weather_cnn => 'webget.pl weather_cnn',
                    weather_lycos => 'webget.pl
weather_lycos',
                    weather_weather => 'webget.pl
weather_weather',
                    weather_snap => 'webget.pl
weather_snap',
                    weather_infospace => 'webget.pl
weather_infospace',
                    stockQuote_yahoo => 'webget.pl stock',
                    flightStatus_itn => 'webget.pl
flight_delay',
                    yellowPages_yahoo => 'yp_data.pl',
                    yellowPages_yahoo => 'yp_data.pl',
                    newsHeaders_newsreal => 'news.pl',
```

TABLE 2-continued

```
                    newsArticle__newsreal => 'news.pl',
                    );
# test param
my $date = 'date';
chop( $date );
my ( $short__date ) = $date =~ /\s+(\w{3}\s+\d{1,2})\s+/;
my %Test = (
                    weather__cnn => '60053',
                    weather__lycos => '60053',
                    weather__weather => '60053',
 -                  weather__snap => '60053',
                    weather__infospace => '60053',
                    stockQuote__yahoo => 'msft',
                    flightStatus__itn => 'ua 155 ' .
$short__date,
                    yellowPages__yahoo => 'tires 60015',
                    newsHeaders__newsreal => '1',
                    newsArticle__newsreal => '1 1',
                    );
die "$date: $0: error: no such service: $service (check
this script)\n"
unless $Services{ $service };
# prepare absolute path to run other scripts
my ( $path, $script ) = $0 =~ m|^(.*/)([^/]*)|;
# store the service to compare against datatable
my $service__stored = $service;
# run service
while( !( $response = '$path$Services{ $service } @param' )
) {
        # response failed
        # check with test parameters
        $response = '$path$Services{ $service } $Test{
$service }';
#       print "test: $path$Services{ $service } $Test{
$service }";
        if ( $response ) {
$service = &switch__service( $service );
#               print "Wrong parameter values were supplied:
$service -
@param\n";
#               die "$date: $0: error: wrong parameters: $service
-
@param\n";
        }
        else {
                # change priority and notify
                $service = &increase__attempt( $service );
        }
}
# output the response
print $response;
sub increase__attempt {
        my ( $service ) = @__;
        my ( $service__name ) = split( /__/, $service );
        print STDERR "$date: $0: attn: changing priority for
service:
$service\n";
        # update priority
        &db__query( "update mcServiceRoute "
                . "set priority = ( select max( priority
) from
mcServiceRoute "
                . "where service = '$service__name' ) + 1,
"
                . "date = getdate( ), "
                . "attempt = attempt + 1 "
                . "where route = '$script $service'" );
#       print "---$route===\n";
        # find new route
        my $route = @{ &db__query( "select route from
mcServiceRoute "
                        . "where service =
'$service__name' "
                        . "and attempt < 5
"
                        . "order by
priority ")
                } -> [ 0 ]{ route };
        &db__query( "update mcServiceRoute "
                . "set attempt = 0 "
                . "where route = '$script $service'" )
        if ( $route eq "$script $service"
                or $route eq "$script $service__stored" );
        ( $service__name, $service ) = split( /\s+/, $route );
        die "$date: $0: error: no route for the service:
$service (add
more)\n"
                unless $service;
        return $service;
}
sub switch__service {
        my ( $service ) = @__;
        my ( $service__name ) = split( /__/, $service );
        print STDERR "$date: $0: attn: changing priority for
service:
$service\n";
        # update priority
        &db__query( "update mcServiceRoute "
                . "set priority = ( select max( priority
) from
mcServiceRoute "
                . "where service = '$service__name' ) + 1,
"
                . "date = getdate( ) "
                . "where route = '$script $service'" );
#       print "---$route===\n";
 -      # find new route
        my $route = @{ &db__query( "select route from
mcServiceRoute "
                        . "where service =
'$service__name' "
                        . "and attempt < 5
"
                        . "order by
priority ")
                } -> [ 0 ]{ route };
        die "$date: $0: error: there is the only service:
$route (add
more)\n"
        if ( $route eq "$script $service"
                or $route eq "$script $service__stored" );
        ( $service__name, $service ) = split( /\s+/, $route );
        die "$date: $0: error: no route for the service:
$service (add
more)\n"
                unless $service;
        return $service;
}
```

Table 3 below contains source code of the content fetcher **602** used with the content extraction agent **600** to retrieve information from a web site

TABLE 3

```
#!/usr/local/www/bin/sybper15
#-T
# -w
# $Header:
/usr/local/cvsroot/webley/agents/service/webget.pl,v 1.4
# Agent to get info from the web.
# Parameters: service__name [service__parameters], i.e. stock
msft or weather
60645
# Configuration stored in files service__name.ini
# if this file is absent the configuration is received from
mcServices table
# This script provides autoupdate to datatable if the .ini
file is newer.
$debug = 1;
use URI::URL;
use LWP::UserAgent;
use HTTP::Request::Common;
use Vail::VarList;
use Sybase::CTlib;
use HTTP::Cookies;
#print "Sybase::CTlib $DB__USR, $DB__PWD, $DB__SRV;";
open( STDERR, ">>$0.log" ) if $debug;
```

TABLE 3-continued

```
#open( STDERR, ">&STDOUT" );
$log = `date`;
#$response = `./url.pl
"http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605"`;
#$response = `pwd`;
#print STDERR "pwd = $response\n";
#$response = `ls`;
#print STDERR "ls = $response\n";
chop( $log );
$log .= "pwd=" . `pwd`;
chop( $log );
#$debug2 = 1;
my $service = shift;
$log .= " $service: ". join( ':', @ARGV ) . "\n";
print STDERR $log if $debug;
#$response = `./url.pl
"http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605"`;
my @ini = &read__ini( $service );
chop( @ini );
my $section = "";
do { $section = &process__section( $section ) } while
$section;
#$response = ./url.pl
"http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605"`;
exit;
############################################################
sub read__ini {
    my ( $service ) = @__;
    my @ini = ( );
    # first, try to read file
    $0 =~ m|^(.*/)[^/]*|;
    $service = $1 . $service;
    if ( open( INI, "$service.ini" ) ) {
        @ini = ( <INI> );
        return @ini unless ( $DB__SRV ) ;
        # update datatable
        my $file__time = time - int( ( -M "$service.ini" )
* 24 *
3600 );
#       print "time $file__time\n";
        my $dbh = new Sybase::CTlib $DB__USR, $DB__PWD,
$DB__SRV;
        unless ( $dbh ) {
-           print STDERR "webget.pl: Cannot connect to
dataserver $DB__SRV:$DB__USR:$DB__PWD\n";
            return @ini;
        }
        my @row__refs = $dbh->ct__sql( "select lastUpdate
from
mcServices where service = `$service`", undef, 1 );
        if ( $dbh->{ RC } == CS__FAIL ) {
            print STDERR "webget.pl: DB select from
mcServices
failed\n";
            return @ini;
        }
        unless ( defined @row__refs ) {
            # have to insert
            my ( @ini__escaped ) = map {
                ( my $x = $__ ) =~ s/\'/\'\'/g;
                $x;
            } @ini;
            $dbh->ct__sql( "insert mcServices values(
`$service`,
`@ini__escaped', $file__time )" );
            if ( $dbh->{ RC } == CS__FAIL ) {
                print STDERR "webget.pl: DB insert to
mcServices failed\n";
            }
            return @ini;
        }
#       print "time $file__time:".$row__refs[ 0 ]->{
`lastUpdate`
}."\n";
        if ( $file__time > $row__refs[ 0 ]->{ `lastUpdate`
} ) {
            # have to update
            my ( @ini__escaped ) = map {
                ( my $x = $__ ) =~ s/\'/\'\'/g;
                $x;
            } @ini;
            $dbh->ct__sql( "update mcServices set config
=
`@ini__escaped', lastUpdate = $file__time where service =
`$service`" );
            if ( $dbh->{ RC } == CS__FAIL ) {
                print STDERR "webget.pl: DB update to
mcServices failed\n";
            }
        }
        return @ini;
    }
    else {
        print STDERR "$0: WARNING: $service.ini n/a in "
. `pwd`
            ."Try to read DB\n";
    }
    # then try to read datatable
    die "webget.pl: Unable to find service $service\n"
unless ( $DB__SRV
);
    my $dbh = new Sybase::CTlib $DB__USR, $DB__PWD, $DB__SRV;
    die "webget.pl: Cannot connect to dataserver
$DB__SRV:$DB__USR:$DB__PWD\n" unless ( $dbh );
    my @row__refs = $dbh->ct__sql( "select config from
mcServices where
service = `$service`", undef, 1 );
    die "webget.pl: DB select from mcServices failed\n" if
$dbh->{ RC }
== CS__FAIL;
    die "webget.pl: Unable to find service $service\n"
unless ( defined
@row__refs );
    $row__refs[ 0 ]->{ `config` } =~ s/\n /\n\r/g;
    @ini = split( /\r/, $row__refs[ 0 ]->{ `config` } );
    return @ini;
}
############################################################
sub process__section {
    my ( $prev__section ) = @__;
    my ( $section, $output, $content );
    my %Param;
    my %Content;
#   print"#####################################\n";
    foreach ( @ini ) {
#       print;
#       chop;
        s/\s+$//;
        s/^\s+//;
        # get section name
        if ( /^\[(.*)\]/ ) {
#           print "$__: $section:$prev__section\n";
            last if $section;
            next if $1 eq "print";
#           next if $prev__section ne "" and
$prev__section ne $1;
            if ( $prev__section eq $1 ) {
                $prev__section = "";
                next;
            }
            $section = $1;
        }
        # get parameters
        push( @{ $Param{ $1 } }, $2 ) if $section and
/([^=]+)=(.*)/;
-   }
#   print"++++++++++++++++++++++++++++++++++++\n";
    return 0 unless $section;
#   print "section $section\n";
    # substitute parameters with values
    map { $Param{ URL }->[ 0 ] =~ s/$Param{ Input }->[ $__
]/$ARGV[ $__
]/g
    } 0 .. $#{ $Param{ Input } };
    # get page content
    ( $Content{ `TIME` }, -$content ) = &get__url__content(
${ $Param{ URL
} }[ 0 ] );
    # filter it
    map {
```

TABLE 3-continued

```
        if ( /\"([^\"]+)\"([^\"]*)\"/ or
/\/([^\/]+)\/([^\/]*)\// )
{
            my $out = $2; $content =~ s/$1/$out/g;
        }
    } @{ $Param{ "Pre-filter" } };
#print STDERR $content;
    # do main regular expression
    unless( @values = $content =~ /${ $Param{
Regular_expression } }[ 0
]/ ) {
        die_hard( ${ $Param{ Regular_expression } }[ 0
], $content
);
        return $section;
    }
    %Content = map { ( $Param{ Output }->[ $_ ], $values[
$_ ] )
    } 0 .. $#{ $Param{ Output } };
    # filter it
    map {
        if ( /([^\"]+)\"([^\"]+)\"([^\"]*)\"/
            or /([^\/]+)\/([^\/]+)\/([^\/]*)\// ) {
            my $out = $3;
            $Content{ $1 } =~ s/$2/$out/g;
        }
    } @{ $Param{ "Post-filter" } };
    # calculate it
    map {
        if ( /([^=]+)=(.*)/ ) {
            my $eval = $2;
            map { $eval =~ s/$_/$Content{ $_ }/g
            } keys %Content;
            $Content{ $1 } = eval ( $eval );
        }
    } @{ $Param{ Calculate } };
    # read section [print]
    foreach $i ( 0 .. $#ini ) {
        next unless $ini[ $i ] =~ /^\[print\]/;
        foreach ( $i + 1 .. $#ini ) {
            last if $ini[ $_ ]=~ /^\[.+\]/;
            $output .= $ini[ $_ ] . "\n";
        }
        last;
    }
    # prepare output
    map { $output =~ s/$_/$Content{ $_ }/g
    } keys %Content;
    print $output;
    return 0;
}
############################################################
sub get_url_content {
    my ( $url ) = @_;
    print STDERR $url if $debug;
#   $response = `./url.pl '$url'`;
    $response = `./url.pl '$url'`;
    return( $time - time, $response );
    my $ua = LWP::UserAgent->new;
    $ua->agent( 'Mozilla/4.0 [en] (X11; I; FreeBSD 2.2.8-
STABLE i386)'
);
#   $ua->proxy( ['http', 'https'],
'http://proxy.webley:3128/' );
#   $ua->no_proxy( 'webley', 'vail' );
    my $cookie = HTTP::Cookies->new;
    $ua->cookie_jar( $cookie );
    $url = url $url;
    print "$url\n" if $debug2;
    my $time = time;
    my $res = $ua->request( GET $url );
    print "Response: " . ( time - $time ) . "sec\n" if
$debug2;
    return( $time - time, $res->content );
}
############################################################
sub die_hard {
    my( $re, $content ) = @_;
    my ( $re_end, $pattern );
    while( $content !~ /$re/ ) {
        if ( $re =~ s/(\([^\(\)]+\)[^\(\)]*$)// ) {
            $re_end = $1 . $re_end;
        }
        else {
            $re_end = $re;
            last;
        }
    }
    $content =~ /$re/;
    print STDERR "The regular expression did not match:\n
$re\n
Possible misuse:
$re_end:\n
Matched:
$&\n
Mismatched:
$'\n
" if $debug;
        if ( $debug ) {
            print STDERR "Content:\n $content\n" unless
$';
        }
}
############################################################
```

Once the web browsing server **302** accesses the web site specified in the CRL **404** and retrieves the requested information, it is forwarded to the media server **304**. The media server uses the speech synthesis engine **502** to create an audio message that is then transmitted to the user's voice enabled device **306**. In the preferred embodiment, each web browsing server is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

Referring to FIG. **3**, the operation of the personal voice-based information retrieval system will be described. A user establishes a connection between his voice enabled device **306** and a media server **304** of the voice browsing system **108**. This may be done using the Public Switched Telephone Network (PSTN) **308** by calling a telephone number associated with the voice browsing system **108**. Once the connection is established, the media server **304** initiates an interactive voice response (IVR) application. The IVR application plays audio message to the user presenting a list of options, which includes "perform a user-defined search." The user selects the option to perform a user-defined search by speaking the name of the option into the voice enabled device **306**.

The media server **304** then accesses the database **300** and retrieves the personal recognition grammars **402**. Using the speech synthesis engine **502**, the media server **304** then asks the user, "Which of the following user-defined searches would you like to perform" and reads to the user the identification name, provided by the recognition grammar **402**, of each user-defined search. The user selects the desired search by speaking the appropriate speech command or pronounceable name described within the recognition grammar **402**. These speech recognition grammars **402** define the speech commands or pronounceable names spoken by a user in order to perform a user-defined search. If the user has a multitude of user-defined searches, he may speak the command or pronounceable name described in the recognition grammar **402** associated with the desired search at anytime without waiting for the media server **304** to list all available user-defined searches. This feature is commonly referred to as a "barge-in" feature.

The media server **304** uses the speech recognition engine **500** to interpret the speech commands received from the user. Based upon these commands, the media server **304** retrieves the appropriate user-defined web site record **400** from the database **300**. This record is then transmitted to a web brows-

ing server **302**. A firewall **310** may be provided that separates the web browsing server **302** from the database **300** and media server **304**. The firewall provides protection to the media server and database by preventing unauthorized access in the event the firewall **312** for the web browsing server fails or is compromised. Any type of firewall protection technique commonly known to one skilled in the art could be used, including packet filter, proxy server, application gateway, or circuit-level gateway techniques.

The web browsing server **302** accesses the web site **106** specified by the URL **404** in the user-defined web site record **400** and retrieves the user-defined information from that site using the content extraction agent and specified content descriptor file specified in the content extraction agent command **406**. Since the web browsing server **302** uses the URL and retrieves new information from the Internet each time a request is made, the requested information is always updated.

The content information received from the responding web site **106** is then processed by the web browsing server **302** according to the associated content descriptor file. This processed response is then transmitted to the media server **304** for conversion to into audio messages using either the speech synthesis engine **502** or selecting among a database of prerecorded voice responses contained within the database **300**.

It should be noted that the web sites accessible by the personal information retrieval system and voice browser of the preferred embodiment may use any type of mark-up language, including Extensible Markup Language (XML), Wireless Markup Language (WML), Handheld Device Markup Language (HDML), Hyper Text Markup Language (HTML), or any variation of these languages.

The descriptions of the preferred embodiments described above are set forth for illustrative purposes and are not intended to limit the present invention in any manner Equivalent approaches are intended to be included within the scope of the present invention. While the present invention has been described with reference to the particular embodiments illustrated, those skilled in the art will recognize that many changes and variations may be made thereto without departing from the spirit and scope of the present invention. These embodiments and obvious variations thereof are contemplated as falling within the scope and spirit of the claimed invention.

I claim:

1. A method for retrieving information from an information source using speech commands by a user provided via an electronic communication device, said method comprising steps of:

receiving a speech command from the user via the electronic communication device at a speech recognition engine coupled to a media server, the media server configured to identify and access the information source via a network, wherein the speech recognition engine selects recognition grammar established to correspond to the speech command and wherein the information source is periodically updated with information;

selecting, by the media server, at least one appropriate information source retrieval instruction corresponding to the recognition grammar established for the speech command, wherein the at least one appropriate information source retrieval instruction is stored in a database associated with the server;

accessing, by a web browsing server, a portion of the information source including only a portion of information previously identified by the user of interest to the user by using a clipping client to separate the portion of the information from other information, wherein the clipping client generates a content descriptor file containing a description of content of the portion of information and wherein the content descriptor file indicates where the portion of the information selected is located within the information source and retrieving only the portion of the information according to the at least one appropriate information source retrieval instruction;

converting the information retrieved from said information source into an audio message by a speech synthesis engine, the speech synthesis engine coupled to the media server; and

transmitting said audio message to the electronic communication device for the user.

2. The method of claim **1** further comprising:

displaying the information that is of interest to the user on a graphical display operatively connected to the server; and

selecting the information source which contains the information to be retrieved.

3. The method of claim **1** wherein the information source retrieval instruction is associated with information selected from a group comprising of: "weather", "forecast", "high", "low", "radar", "temp", "temperature", "humidity", "wind", "pressure", "sunrise", "sunset", "time", "month", "day", "stock quote", "news", "news real", and "flight".

4. The method of claim **1**, further comprising: displaying the information source that is a web site on a graphical display operatively connected to the media server; and selecting the web site which contains the portion of the information to be retrieved.

5. The method of claim **1**, further comprising a step of said media server searching the information source including a web site to locate requested information.

6. The method of claim **1**, wherein the electronic communication device is a landline telephone.

7. The method of claim **1**, wherein the electronic communication device is a wireless telephone.

8. The method of claim **1**, wherein the electronic communication device is an internet protocol telephone.

9. The method of claim **1**, wherein the server is operatively connected to a local area network.

10. The method of claim **1**, wherein the server is operatively connected to a wide area network.

11. The method of claim **1**, wherein the server is operatively connected to the Internet.

12. A system for retrieving information from an information source with speech commands by a user using an electronic communication device, said system comprising:

a speech recognition engine configured to receive a speech command from the user via the electronic communication device, and to select an appropriate information source retrieval instruction corresponding to the speech command based on recognition grammar established for the speech command;

a media server operatively connected to the internet, the electronic communication device, and the speech recognition engine, said media server configured to access by a web browsing server an information source that is periodically updated and retrieve information from the information source stored in a database, as defined by the appropriate information source retrieval instruction, wherein the information includes an item of information that is previously identified by the user as of interest to the user, by selecting the item to separate the item from other information by using a clipping client, wherein upon selecting by the user, the media server further generates a content descriptor file containing a descrip-

tion of content of the item and wherein the content descriptor file indicates where the item selected is located within the information source;

a speech synthesis engine operatively connected to said media server, said speech synthesis engine configured to convert the item of information retrieved from the information source into an audio message and transmit said audio message to the electronic communication device.

* * * * *

EXHIBIT C

US010320981B2

(12) **United States Patent**
Kurganov

(10) **Patent No.: US 10,320,981 B2**
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(54) **PERSONAL VOICE-BASED INFORMATION RETRIEVAL SYSTEM**

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(56) **References Cited**

U.S. PATENT DOCUMENTS

X174465 3/1876 Bell
3,728,486 A 4/1973 Kraus
(Continued)

FOREIGN PATENT DOCUMENTS

CA 1329852 5/1994
EP 0572544 9/1996
(Continued)

OTHER PUBLICATIONS

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(Continued)

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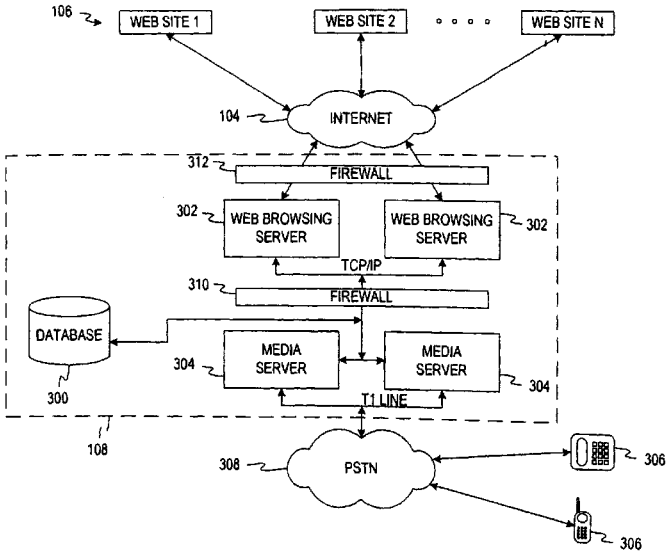
(57) **ABSTRACT**

The present invention relates to a system for retrieving information from a network such as the Internet. A user creates a user-defined record in a database that identifies an information source, such as a web site, containing information of interest to the user. This record identifies the location of the information source and also contains a recognition grammar based upon a speech command assigned by the user. Upon receiving the speech command from the user that is described within the recognition grammar, a network interface system accesses the information source and retrieves the information requested by the user.

28 Claims, 5 Drawing Sheets



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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,058,838	A	11/1977	Crager et al.
4,100,377	A	7/1978	Flanagan
4,131,024	A	12/1978	Mezrich et al.
4,158,750	A	6/1979	Sakoe et al.
4,313,035	A	1/1982	Jordan et al.
4,327,251	A	4/1982	Fomenko et al.
4,340,783	A	7/1982	Sugiyama et al.
4,340,797	A	7/1982	Takano et al.
4,340,800	A	7/1982	Ueda et al.
4,371,752	A	2/1983	Matthews et al.
4,481,574	A	11/1984	DeFino et al.
4,489,438	A	12/1984	Hughes
4,500,751	A	2/1985	Darland et al.
4,513,390	A	4/1985	Walter et al.
4,523,055	A	6/1985	Hohl et al.
4,549,047	A	10/1985	Brian et al.
4,584,434	A	4/1986	Hashimoto
4,585,906	A	4/1986	Matthews et al.
4,596,900	A	6/1986	Jackson
4,602,129	A	7/1986	Matthews et al.
4,635,253	A	1/1987	Urui et al.
4,652,700	A	3/1987	Matthews et al.
4,696,028	A	9/1987	Morganstein et al.
4,713,837	A	12/1987	Gordon
4,747,127	A	5/1988	Hansen et al.
4,748,656	A	5/1988	Gibbs et al.
4,755,932	A	7/1988	Diedrich
4,757,525	A	7/1988	Matthews et al.
4,761,807	A	8/1988	Matthews et al.
4,763,317	A	8/1988	Lehman et al.
4,769,719	A	9/1988	Endo
4,771,425	A	9/1988	Baran et al.
4,776,016	A	10/1988	Hansen
4,782,517	A	11/1988	Bernardis et al.
4,792,968	A	12/1988	Katz
4,799,144	A	1/1989	Parruck et al.
4,809,321	A	2/1989	Morganstein et al.
4,811,381	A	3/1989	Woo et al.
4,837,798	A	6/1989	Cohen et al.
4,847,891	A	7/1989	Kotani
4,850,012	A	7/1989	Mehta et al.
4,852,149	A	7/1989	Zwick et al.
4,852,170	A	7/1989	Bordeaux
4,866,758	A	9/1989	Heinzelmann
4,873,719	A	10/1989	Reese
4,879,743	A	11/1989	Burke et al.
4,893,333	A	1/1990	Baran et al.
4,893,335	A	1/1990	Fuller et al.
4,903,289	A	2/1990	Hashimoto
4,903,291	A	2/1990	Tsurufuji et al.
4,905,273	A	2/1990	Gordon et al.
4,907,079	A	3/1990	Turner et al.
4,918,722	A	4/1990	Duehren et al.
4,922,518	A	5/1990	Gordon et al.
4,922,520	A	5/1990	Bernard et al.
4,922,526	A	5/1990	Morganstein et al.
4,926,462	A	5/1990	Ladd et al.
4,930,150	A	5/1990	Katz
4,933,966	A	6/1990	Hird et al.
4,935,955	A	6/1990	Neudorfer
4,935,958	A	6/1990	Morganstein et al.
4,941,170	A	7/1990	Herbst
4,942,598	A	7/1990	Davis
4,953,204	A	8/1990	Cuschleg, Jr. et al.
4,955,047	A	9/1990	Morganstein et al.
4,956,835	A	9/1990	Grover
4,959,854	A	9/1990	Cave et al.
4,967,288	A	10/1990	Mizutori et al.
4,969,184	A	11/1990	Gordon et al.
4,972,462	A	11/1990	Shibata
4,974,254	A	11/1990	Perine et al.
4,975,941	A	12/1990	Morganstein et al.
4,985,913	A	1/1991	Shalom et al.
4,994,926	A	2/1991	Gordon et al.
4,996,704	A	2/1991	Brunson
5,003,575	A	3/1991	Chamberlin et al.
5,003,577	A	3/1991	Ertz et al.
5,008,926	A	4/1991	Misholi
5,020,095	A	5/1991	Morganstein et al.
5,027,384	A	6/1991	Morganstein
5,029,196	A	7/1991	Morganstein
5,036,533	A	7/1991	Carter et al.
5,054,054	A	10/1991	Pessia et al.
5,065,254	A	11/1991	Hishida
5,086,835	A	2/1992	Launey et al.
5,095,445	A	3/1992	Sekiguchi
5,099,509	A	3/1992	Morganstein et al.
5,109,405	A	4/1992	Morganstein
5,128,984	A	7/1992	Katz
5,133,004	A	7/1992	Heileman, Jr. et al.
5,146,452	A	9/1992	Pekarske
5,166,974	A	11/1992	Morganstein et al.
5,179,585	A	1/1993	MacMillan, Jr. et al.
5,193,110	A	3/1993	Jones et al.
5,195,086	A	3/1993	Baumgartner et al.
5,233,600	A	8/1993	Pekarske
5,243,643	A	9/1993	Sattar et al.
5,243,645	A	9/1993	Bissell et al.
5,249,219	A	9/1993	Morganstein et al.
5,255,305	A	10/1993	Sattar
5,263,084	A	11/1993	Chaput et al.
5,276,729	A	1/1994	Higuchi et al.
5,287,199	A	2/1994	Zoccolillo

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,291,302 A 3/1994 Gordon et al.
5,291,479 A 3/1994 Vaziri et al.
5,303,298 A 4/1994 Morganstein et al.
5,307,399 A 4/1994 Dai et al.
5,309,504 A 5/1994 Morganstein
5,325,421 A 6/1994 Hou et al.
5,327,486 A 7/1994 Wolff et al.
5,327,529 A 7/1994 Fults et al.
5,329,578 A 7/1994 Brennan et al.
5,333,266 A 7/1994 Boaz et al.
5,347,574 A 9/1994 Morganstein
5,355,403 A 10/1994 Richardson, Jr. et al.
5,359,598 A 10/1994 Steagall et al.
5,365,524 A 11/1994 Hiller et al.
5,365,574 A 11/1994 Hunt et al.
5,375,161 A 12/1994 Fuller et al.
5,384,771 A 1/1995 Isidoro et al.
5,404,231 A 4/1995 Bloomfield
5,408,526 A 4/1995 McFarland et al.
5,414,754 A 5/1995 Pugh et al.
5,416,834 A 5/1995 Bales et al.
5,426,421 A 6/1995 Gray
5,432,845 A 7/1995 Burd et al.
5,436,963 A 7/1995 Fitzpatrick et al.
5,459,584 A 10/1995 Gordon et al.
5,463,684 A 10/1995 Morduch et al.
5,475,791 A 12/1995 Schalk et al.
5,479,487 A 12/1995 Hammond
5,495,484 A 2/1996 Self et al.
5,497,373 A 3/1996 Hulen et al.
5,499,288 A 3/1996 Hunt et al.
5,515,427 A 5/1996 Carlsen et al.
5,517,558 A 5/1996 Schalk
5,526,353 A 6/1996 Henley et al.
5,533,115 A 7/1996 Hollenbach et al.
5,537,461 A 7/1996 Bridges et al.
5,555,100 A 9/1996 Bloomfield et al.
5,559,611 A 9/1996 Bloomfield et al.
5,559,859 A 9/1996 Dai et al.
5,566,236 A 10/1996 MeLampy et al.
5,603,031 A 2/1997 White et al.
5,608,786 A 3/1997 Gordon
5,610,910 A 3/1997 Focsaneanu et al.
5,610,970 A 3/1997 Fuller et al.
5,611,031 A 3/1997 Hertzfeld et al.
5,630,079 A 5/1997 McLaughlin
5,652,789 A 7/1997 Miner et al.
5,657,376 A 8/1997 Espeut et al.
5,659,597 A 8/1997 Bareis et al.
5,666,401 A 9/1997 Morganstein et al.
5,675,507 A 10/1997 Bobo, II
5,675,811 A 10/1997 Broedner et al.
5,689,669 A 11/1997 Lynch et al.
5,692,187 A 11/1997 Goldman et al.
5,699,486 A 12/1997 Tullis et al.
5,712,903 A 1/1998 Bartholomew et al.
5,719,921 A 2/1998 Vysotsky et al.
5,721,908 A 2/1998 Lagarde et al.
5,724,408 A 3/1998 Morganstein
5,737,395 A 4/1998 Irribarren
5,742,596 A 4/1998 Baratz et al.
5,742,905 A 4/1998 Pepe et al.
5,752,191 A 5/1998 Fuller et al.
5,758,322 A 5/1998 Rongley
5,761,294 A 6/1998 Shaffer et al.
5,764,639 A 6/1998 Staples et al.
5,764,736 A 6/1998 Shachar et al.
5,764,910 A 6/1998 Shachar
5,774,860 A 6/1998 Bayya et al.
5,787,298 A 7/1998 Broedner et al.
5,793,993 A 8/1998 Broedner et al.
5,794,205 A 8/1998 Walters et al.
5,796,791 A 8/1998 Polcyn
5,799,063 A 8/1998 Krane
5,799,065 A 8/1998 Junqua et al.
5,809,282 A 9/1998 Cooper et al.
5,809,481 A 9/1998 Baron et al.
5,812,796 A 9/1998 Broedner et al.
5,819,220 A 10/1998 Sarukkai et al.
5,819,306 A 10/1998 Goldman et al.
5,822,727 A 10/1998 Garberg et al.
5,823,879 A 10/1998 Goldberg et al.
5,832,063 A 11/1998 Vysotsky et al.
5,832,440 A 11/1998 Woodbridge et al.
5,835,570 A 11/1998 Wattenbarger
5,838,682 A 11/1998 Dekelbaum et al.
5,867,494 A 2/1999 Krishnaswamy et al.
5,867,495 A 2/1999 Elliott et al.
5,870,550 A 2/1999 Wesinger, Jr. et al.
5,873,080 A 2/1999 Coden et al.
5,881,134 A 3/1999 Foster et al.
5,881,135 A 3/1999 Watts et al.
5,884,032 A 3/1999 Bateman et al.
5,884,262 A 3/1999 Wise et al.
5,884,266 A 3/1999 Dvorak
5,890,123 A 3/1999 Brown et al.
5,905,476 A 5/1999 McLaughlin et al.
5,914,951 A 6/1999 Bentley et al.
5,915,001 A 6/1999 Uppaluru
5,917,817 A 6/1999 Dunn et al.
5,926,789 A 7/1999 Barbara et al.
5,940,598 A 8/1999 Strauss et al.
5,943,399 A 8/1999 Bannister et al.
5,946,389 A 8/1999 Dold
5,953,392 A 9/1999 Rhie et al.
5,974,124 A 10/1999 Schlueter, Jr. et al.
5,974,413 A 10/1999 Beauregard et al.
5,991,292 A 11/1999 Focsaneanu et al.
5,995,615 A 11/1999 Miloslavsky
5,999,525 A 12/1999 Krishnaswamy et al.
5,999,611 A 12/1999 Tatchell et al.
5,999,965 A 12/1999 Kelly
6,012,088 A 1/2000 Li et al.
6,014,437 A 1/2000 Acker et al.
6,014,626 A 1/2000 Cohen
6,018,710 A 1/2000 Wynblatt et al.
6,021,181 A 2/2000 Miner et al.
6,021,190 A 2/2000 Fuller et al.
6,031,904 A 2/2000 An et al.
6,038,305 A 3/2000 McAllister et al.
6,044,107 A 3/2000 Gatherer et al.
6,047,053 A 4/2000 Miner et al.
6,052,372 A 4/2000 Gittins et al.
6,067,516 A 5/2000 Levay et al.
6,078,580 A 6/2000 Mandalia et al.
6,081,518 A 6/2000 Bowman-Amuah
6,081,782 A 6/2000 Rabin
6,091,808 A 7/2000 Wood et al.
6,101,472 A 8/2000 Giangarra et al.
6,104,803 A 8/2000 Weser et al.
6,115,737 A 9/2000 Ely et al.
6,115,742 A 9/2000 Franklin et al.
6,130,933 A 10/2000 Miloslavsky
6,131,095 A 10/2000 Low et al.
6,137,863 A 10/2000 Brown et al.
6,144,991 A 11/2000 England
6,157,705 A 12/2000 Perrone
6,161,128 A 12/2000 Smyk
6,178,399 B1 1/2001 Takebayashi et al.
6,185,535 B1 2/2001 Hedin et al.
6,188,683 B1 2/2001 Lang et al.
6,195,357 B1 2/2001 Polcyn
6,199,076 B1 3/2001 Logan et al.
6,201,814 B1 3/2001 Greenspan
6,201,863 B1 3/2001 Miloslavsky
6,208,638 B1 3/2001 Rieley et al.
6,215,858 B1 4/2001 Bartholomew et al.
6,230,132 B1 5/2001 Class et al.
6,233,318 B1 5/2001 Picard et al.
6,243,373 B1 6/2001 Turock
6,252,944 B1 6/2001 Hansen, II et al.
6,269,336 B1 7/2001 Ladd et al.
6,285,745 B1 9/2001 Bartholomew et al.
6,327,572 B1 12/2001 Morton et al.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,330,538 B1 12/2001 Breen
6,343,529 B1 2/2002 Pool
6,349,132 B1 2/2002 Wesemann et al.
6,353,661 B1 3/2002 Bailey, III
6,366,575 B1 4/2002 Barkan et al.
6,366,578 B1 4/2002 Johnson
6,424,945 B1 7/2002 Sorsa
6,430,282 B1 8/2002 Bannister et al.
6,434,529 B1 8/2002 Walker et al.
6,445,694 B1 9/2002 Swartz
6,446,076 B1 9/2002 Burkey et al.
6,456,699 B1 9/2002 Burg et al.
6,459,910 B1 10/2002 Houston
6,477,240 B1 11/2002 Lim et al.
6,477,420 B1 11/2002 Struble et al.
6,490,627 B1 12/2002 Kalra et al.
6,501,966 B1 12/2002 Bareis et al.
6,505,163 B1 1/2003 Zhang et al.
6,529,948 B1 3/2003 Bowman-Amuah
6,532,444 B1 3/2003 Weber
6,539,359 B1 3/2003 Ladd et al.
6,546,393 B1 4/2003 Khan
6,560,604 B1 5/2003 Fascenda
6,584,439 B1 6/2003 Geilhufe et al.
6,587,822 B2 7/2003 Brown et al.
6,593,944 B1 7/2003 Nicolas et al.
6,594,348 B1 7/2003 Bjurstrom et al.
6,594,692 B1 7/2003 Reisman
6,604,075 B1 8/2003 Brown et al.
6,606,611 B1 8/2003 Khan
6,618,039 B1 9/2003 Grant et al.
6,618,726 B1 9/2003 Colbath et al.
6,618,763 B1 9/2003 Steinberg
6,636,831 B1 10/2003 Profit, Jr. et al.
6,654,814 B1 11/2003 Britton et al.
6,658,662 B1 12/2003 Nielsen
6,665,640 B1 12/2003 Bennett et al.
6,687,341 B1 2/2004 Koch et al.
6,704,024 B2 3/2004 Robotham et al.
6,718,015 B1 4/2004 Berstis
6,721,705 B2 4/2004 Kurganov et al.
6,724,868 B2 4/2004 Pradhan et al.
6,732,142 B1 5/2004 Bates et al.
6,763,388 B1 7/2004 Tsimelzon
6,771,732 B2 8/2004 Xiao et al.
6,771,743 B1 8/2004 Butler et al.
6,775,264 B1 8/2004 Kurganov
6,785,266 B2 8/2004 Swartz
6,807,257 B1 10/2004 Kurganov
6,812,939 B1 11/2004 Flores et al.
6,823,370 B1 11/2004 Kredo et al.
6,888,929 B1 5/2005 Saylor et al.
6,922,733 B1 7/2005 Kuiken et al.
6,941,273 B1 9/2005 Loghmani et al.
6,964,012 B1 11/2005 Zirngibl et al.
6,964,023 B2 11/2005 Maes et al.
6,965,864 B1 11/2005 Thrift et al.
6,996,609 B2 2/2006 Hickman et al.
6,999,804 B2 2/2006 Engstrom et al.
7,003,463 B1 2/2006 Maes et al.
7,024,464 B1 4/2006 Lusher et al.
7,050,977 B1 5/2006 Bennett
7,075,555 B1 7/2006 Flores et al.
7,076,431 B2 7/2006 Kurganov et al.
7,089,307 B2 8/2006 Zintel et al.
7,145,898 B1 12/2006 Elliott
7,146,323 B2 12/2006 Guenther et al.
7,327,723 B2 2/2008 Kurganov
7,386,455 B2 6/2008 Kurganov et al.
7,506,022 B2 3/2009 Wang et al.
7,516,190 B2 4/2009 Kurganov
7,729,913 B1 * 6/2010 Lee G06F 17/30654 704/251
7,881,941 B2 2/2011 Kurganov et al.
7,974,875 B1 7/2011 Quilici et al.
8,098,600 B2 1/2012 Kurganov
8,131,267 B2 3/2012 Lichorowic et al.
8,131,555 B1 3/2012 Carriere et al.
8,185,402 B2 5/2012 Kurganov et al.
8,380,505 B2 2/2013 Konig et al.
8,775,176 B2 7/2014 Gilbert et al.
8,838,074 B2 9/2014 Kurganov
8,843,120 B2 9/2014 Kurganov
8,843,141 B2 9/2014 Kurganov
8,874,446 B2 10/2014 Carriere et al.
9,451,084 B2 9/2016 Kurganov et al.
9,690,854 B2 6/2017 Stent et al.
2001/0011302 A1 8/2001 Son
2001/0032234 A1 10/2001 Summers et al.
2001/0040885 A1 11/2001 Jonas et al.
2001/0048676 A1 12/2001 Jimenez et al.
2002/0006126 A1 1/2002 Johnson et al.
2002/0059402 A1 5/2002 Belanger
2002/0064149 A1 5/2002 Elliott et al.
2002/0087327 A1 7/2002 Lee et al.
2002/0090114 A1 7/2002 Rhoads et al.
2002/0104025 A1 8/2002 Wrench, Jr.
2002/0142786 A1 10/2002 Pradhan et al.
2003/0002635 A1 1/2003 Koch et al.
2004/0160913 A1 8/2004 Kubler et al.
2004/0247094 A1 12/2004 Crockett et al.
2005/0025133 A1 2/2005 Swartz
2005/0030179 A1 2/2005 Script et al.
2005/0074104 A1 4/2005 Swartz
2005/0102147 A1 5/2005 Ulrich et al.
2005/0278179 A1 12/2005 Overend et al.
2006/0069926 A1 3/2006 Ginter et al.
2007/0061149 A1 * 3/2007 Chang H04N 21/2543 704/275
2007/0136072 A1 6/2007 Sampath
2007/0206737 A1 9/2007 Hickman
2007/0249406 A1 10/2007 Andreasson
2007/0263601 A1 11/2007 Kurganov
2007/0286360 A1 12/2007 Chu et al.
2008/0103780 A1 * 5/2008 Dacosta G06F 17/30787 704/275
2008/0228494 A1 9/2008 Cross
2009/0276441 A1 * 11/2009 Malik G06F 16/245
2009/0286514 A1 11/2009 Lichoriwic et al.
2010/0042413 A1 2/2010 Simpson et al.
2010/0094635 A1 4/2010 Bermudez Perez
2011/0035220 A1 2/2011 Opaluch
2011/0054898 A1 3/2011 Phillips et al.
2011/0082696 A1 4/2011 Johnston et al.
2011/0091023 A1 4/2011 Kurganov et al.
2011/0093271 A1 * 4/2011 Bernard G06F 17/2785 704/257
2011/0153324 A1 6/2011 Ballinger et al.
2012/0179464 A1 7/2012 Newman et al.
2012/0253800 A1 10/2012 Goller et al.
2013/0006638 A1 1/2013 Lindahl
2013/0041666 A1 2/2013 Bak
2013/0054238 A1 * 2/2013 Bodell G10L 15/22 704/235
2013/0191122 A1 7/2013 Mason
2013/0275164 A1 * 10/2013 Gruber G10L 17/22 705/5
2013/0317823 A1 11/2013 Mengibar
2014/0032652 A1 * 1/2014 Hu H04L 67/42 709/203
2014/0039898 A1 2/2014 Reich et al.
2014/0046660 A1 2/2014 Kamdar
2014/0111415 A1 4/2014 Gargi et al.
2014/0122073 A1 * 5/2014 Goldstein H04M 1/05 704/235
2014/0123010 A1 5/2014 Goldstein
2015/0134340 A1 5/2015 Blaisch
2015/0185985 A1 7/2015 Kang et al.
2015/0234636 A1 8/2015 Barnes, Jr.
2015/0277846 A1 10/2015 Yen et al.
2015/0334080 A1 11/2015 Tamayo
2015/0339745 A1 11/2015 Peter et al.
2016/0057383 A1 2/2016 Pattan et al.
2016/0080811 A1 3/2016 Fukushima et al.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2016/0125881	A1	5/2016	Vogel et al.	
2016/0179752	A1	6/2016	Clark et al.	
2016/0225369	A1	8/2016	Agrawal et al.	
2016/0239497	A1	8/2016	O'Donnell	
2016/0321266	A1	11/2016	Philippov et al.	
2016/0328206	A1	11/2016	Nakaoka et al.	
2017/0116986	A1	4/2017	Weng et al.	
2017/0178626	A1	6/2017	Gruber et al.	
2017/0293600	A1	10/2017	Stent et al.	
2017/0359334	A1	12/2017	Maddox et al.	
2018/0130464	A1	5/2018	Haviv et al.	
2018/0204563	A1*	7/2018	Liang	G06F 3/16

FOREIGN PATENT DOCUMENTS

EP	0794650	9/1997
GB	2211698	7/1989
GB	2240693	8/1991
GB	2317782	4/1998
JP	1-258526	10/1989
WO	91/07838	5/1991
WO	91/18466	11/1991
WO	96/09710	3/1996
WO	97/34401	9/1997
WO	97/37481	10/1997
WO	98/23058	5/1998

OTHER PUBLICATIONS

Wikipedia Definition of "Internet", retrieved from http://en.wikipedia.org/wiki/Internet on Feb. 10, 2016, 13 pgs.

Yang, "INETPhone—Telephone Services and Servers on the Internet," Apr. 1995, University of North Texas, pp. 1-6.

"Faxpak Store and Forward Facsimile Transmission Service," Electrical Communication, vol. 54(3), 1979, pp. 251-255.

"Introducing PIC SuperFax, First PC/Fax System to Run Under Windows," Pacific Image Communications, Pasadena, CA, Date Unknown (received at COMDEX show, Nov. 3, 1987), 4 pgs.

"PureSpeech Announces Juggler PC System for First Quarter of 1997," HighBeam Research, Sep. 19, 1996, pp. 1-3, available at http://www.highbeam.com/doc/1G1-186909545.html (accessed on Dec. 8, 2006).

"The VMX Systems Product Reference Manual: Product Description Volume," May 1994, vol. 1, release 7.1, VMS, Inc. (Octel Communications Corp.), San Jose, CA, USA, 577 pgs.

"VMXworks Product Reference Manual: vol. 3 Programmer's Guide," Jul. 1994, vols. 3 & 4, Release 3.1, Octel Communications Corp., Milpitas, CA, USA, 488 pgs.

Amended Complaint, *Parus Holdings, Inc.* v. *Web Telephony LLC & Robert Swartz*, Case No. 06-cv-01146 (N.D. III.), Jul. 10, 2006, 14 pgs.

Defendant's Answer to the Amended Complaint and Demand for Jury Trial, *Parus Holdings, Inc.* v. *Web Telephone LLC & Robert Swartz*, Case No. 06-cv-00146 (N.D. III.), Aug. 10, 2006, 14 pgs.

McGraw-Hill Dictionary of Scientific & Technical Terms 1101, 6th ed. 2003, (referenced in Amendment and Reply Under 37 CFR 1.111 filed for U.S. Appl. No. 10/877,366, filed Apr. 24, 2009).

Oye, "Juggler," p. 1, available at http://www.philoye.com/work/juggler/index.shtml (accessed on Dec. 8, 2006).

Oye, "Juggler," p. 1, available at http://www.philoye.com/work/juggler_2.shtml (accessed on Dec. 8, 2006).

Oye, "Juggler," p. 1, available at http://www.philoye.com/work/juggler_3.shtml (accessed on Dec. 8, 2006).

Plaintiff Parus Holdings, Inc.'s Supplemental Responses to Defendant Web Telephone LLC's First Set of Interrogatories (Nos. 1-12), *Parus Holdings, Inc.* v. *Web Telephony LLC & Robert Swartz*, Case No. 06-cv-01146 (n.D. III.), Oct. 31, 2006, 32 pgs.

Plaintiff Parus Holdings, Inc.'s Supplemental Responses to Defendant Web Telephone LLC's Second Set of Interrogatories (Nos. 13-17), *Parus Holdings, Inc.* v. *Web Telephony LLC & Robert Swartz*, Case No. 06-cv-01146 (n.D. III.), Oct. 31, 2006, 31 pgs.

Purespeech, "Meet the Voice of Juggler!" Nov. 18, 1996, pp. 1-3.

Ross, "Retrieve E-mail from a Telephone," Oct. 7, 1996, pp. 1-2, available at http://resna.org/ProfessOrg?Sigs?SIGSites/sig11/archive/juggler.htm (accessed on Dec. 8, 2006).

"A PABX that Listens and Talks," Speech Technology, Jan./Feb. 1984, pp. 74-79.

"Business Phone Systems for Advanced Offices," NTT Review, vol. 2 (6), Nov. 1990, pp. 52-54.

"Data Communications Networks: Message Handling Systems," Fascicle, VII1.7, Recommendations X.400-X.430, Oct. 3-19, 1984, 42 pgs.

"Globecom '85 IEEE Global Telecommunications Conference," New Orleans, LA, Dec. 2-5, 1985, pp. 1295-1300.

"Juggler by PureSpeech," available at http://members.aol.com/compqanda1/juggler.html (accessed on Dec. 8, 2006), p. 1.

"Proceedings of the IFIP 10th World Computer Congress," Dublin, Ireland, Sep. 1-5, 1986, 16 pgs.

"PureSpeech's Juggler," Teleconnect, Dec. 1996, p. 36.

"Secretarial Branch Exchange," IBM Technical Disclosure Bulletin, vol. 26(5), Oct. 1983, pp. 2645-2647.

"Wildfire Communication, Inc.," Harvard Business School, Mar. 21, 1996, Publ. No. 9-396-305, pp. 1-22.

"WordPerfect: New Telephony Features Boost Office," WordPerfect Office TechBrief, 1994, Info-World Publishing, Co., vol. 10, Issue 2, pp. 2-3.

AT&T Press Release, "AT&T Customers Can Teach Systems to Listen and Respond to Voice," Jan. 17, 1995, pp. 1-2, Basking Ridge, NJ, retrieved from www.lucent.com/press/0195/950117.gbb.html on Mar. 15, 2005.

Bellcore Technology Licensing, "The Electronic Receptionist—A Knowledge-Based Approach to Personal Communications," 1994, pp. 1-8.

Brachman et al., "Fragmentation in Store-and-Forward Message Transfer," IEEE Communications Magazine, vol. 26(7), Jul. 1998, pp. 18-27.

Brief of Appellees, submitted on Jun. 20, 2016, to the United States Court of Appeals for the Federal Circuit, 53 pgs.

Cole et al., "An Architecture for a Mobile OSI Mail Access System," IEEE Journal on Selected Areas in communications, vol. 7(2), Feb. 1989, pp. 249-256.

DAX Systems, Inc., Press Release, "Speech Recognition Sucecss in DAX's Grasp," Nov. 22, 1995, pp. 1-2, Pine Brook, NJ.

Examples: Abstract Ideas, 2014, CBM2015-00112 Exhibit 2004, 20 pgs.

Garcia et al., "Issues in Multimedia Computer-Based Message Systems Design and Standardization," NATO ASI Series, vol. 1-6, 1984, 18 pgs.

Hemphill et al., "Speech-Aware Multimedia," IEEE MultiMedia, Spring 1996, vol. 3, No. 1, pp. 74-78.

Hemphill et al., ""Surfing the Web by Voice,"" ACM Multimedia 95—Electronic Proceedings, Nov. 5-9, 1995, San Francisco, CA, 8 pgs.

Hunt et al., "Long Distance Remote Control to the Rescue," Chicago Tribune, Jun. 15, 2002, Section 4, p. 15.

IBM AIX DirectTalk/6000 Version 1 Release 6 Improves Your Voice Processing Services to Callers and Customers, Announcement No. 295-489, Nov. 28, 1995, 27 pages.

IBM Announcement Letter No. A95-893, retrieved on Mar. 9, 2015, 10 pgs.

IBM, AIX DirectTalk/6000 Release 6: Speech Recognition with the BBN Hark Recognizer, SC33-1734-00, Feb. 1996, 250 pgs.

IBM, AIX DirectTalk/6000: General Information and Planning, Release 6, GC33-1720-00, Dec. 1995, 162 pgs.

IBM, DirectTalkMail: Administration, Release 6, SC33-1733-00, Feb. 1996, 274 pgs.

Joint Appendix, submitted on Sep. 16, 2016, to the United States Court of Appeal for the Federal Circuit, 406 pgs.

Judgment without Opinion for *Parus Holdings Inc.*, v. *Sallie Mae Bank, Navient Solutions Inc.*, PNC Bank, N.A., Suntrust Bank, Suntrust Mortgage Inc., 2016-1179, 2016-1180, 2016-1181, entered Feb. 27, 2017, 2 pgs.

(56) **References Cited**

OTHER PUBLICATIONS

Kubala et al., "BYBLOS Speech Recognition Benchmark Results," Workshop on Speech & Natural Language, Feb. 19-22, 1991. pp. 77-82.

Ly, "Chatter A: A Conversational Telephone Agent," submitted to Program in Media Arts and Sciences, Massachusetts Institute of Technology, 1993, pp. 1-130.

Maeda et al., "An Intelligent Customer-Controlled Switching System," IEEE Global Telecommunications Conference, Hollywood, Florida, Nov. 28-Dec. 1, 1988, pp. 1499-1503.

Markowitz, "The Ultimate Computer Input Device May Be Right Under Your Nose," Byte, Dec. 1995, pp. 1-13, available at www.byte.com/art/9512/sec8/art1.htm (accessed Mar. 15, 2005).

Marx et al., "Mail Call: Message Presentation and Navigation in a Nonvisual Environment," SIGCHI Conference on Human Factos in Computing Systems, Vacouver, B.C., Canada, Apr. 13-18, 1996, 8 pgs.

Marx, "Toward Effective Conversational Messaging" thesis presented to the Departmental Committee on Graduate Students, Program in Media Arts and Sciences, School of Architecture and Planning, Massachusetts Institute of Technology, May 12, 1995, 123 pgs.

Memorandum Opinion and Order, U.S. District Court for the District of Delaware, Civil No. 14-1427-SLR, Oct. 8, 2015, 27 pgs.

Newton, Harry, Newtons Telecom Dictionary—The Official Glossary of Telecommunications and Voice Processing Terms, Dec. 1992, 6 pages.

Opening Brief of Appellant Parus Holdings, Inc., submitted on Mar. 8, 2016, to the United States Court of Appeal for the Federal Circuit, Appeal Nos. 2016-1179, -1180, and -1181, 236 pgs.

Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00109 and CBM2015-00149, Nov. 9, 2015, 19 pgs.

Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00110 and CBM2015-00150, Nov. 9, 2015, 20 pgs.

Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00111 and CBM2015-00151, Nov. 9, 2015, 19 pgs.

Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00112 and CBM2015-00152, Nov. 9, 2015, 18 pgs.

Perdue et al., "Conversant® 1 Voice System: Architecture and Applications," Jul. 17, 1986, AT&T Technical Journal, pp. 1-14.

Print outs of Internet web site, "Wildfire Communications, Inc.," Nov. 5, 1997, including print outs of the following web pages: http://www.wildfire.com; http://www.wildfire.com/consumerhome.html; http://wwwwildfire.com/106.html; http://www.wildfire.com/carrierhome.html; http://www.wildfire.com/sfandb.html; http://www.wildfire.com/about.html; http://www.wildfire.com/abtmgmt.html; http://www.wildfire.com/scoop.html; http://www.wildfire.com/intel.html/; and http://www.wildfire.com/msft.html. 17 pgs.

Putz, Steve, "Interactive Information Services Using World-Wide Web Hypertext," First Int'l Conference on World-WideWeb (May 25-27, 1994), 10 pgs.

Reply Brief of Appellant Parus Holdings, Inc., submitted on Sep. 6, 2016, to the United States Court of Appeal for the Federal Circuit, Appeal Nos. 2016-1179, -1180, and -1181, 40 pgs.

Sartori, "Speech Recognition," Apr. 1995, Mercury Communications, available at www.gar.co.uk/technology_watch/speech.htm (accessed Mar. 15, 2005), pp. 1-9.

Schmandt et al., "A Conversational Telephone Messaging Systems," IEEE Transactions on Consumer Electronics, 1984, vol. CE-30, No. 3, pp. xxi-xxiv.

Schmandt et al., "Phone Shell: The Telephone as Computer Terminal," ACM Multimedia, 1993, 11 pgs.

Schmandt et al., "Phone Slave: A Graphical Telecommunications Interface," Proceedings of the SID, 1985, vol. 26/1, pp. 79-82.

Shimamura et al., "Review of the Electrical Communication Laboratories," vol. 418(33), No. 1, Tokyo, Japan, 1985, pp. 31-39.

* cited by examiner

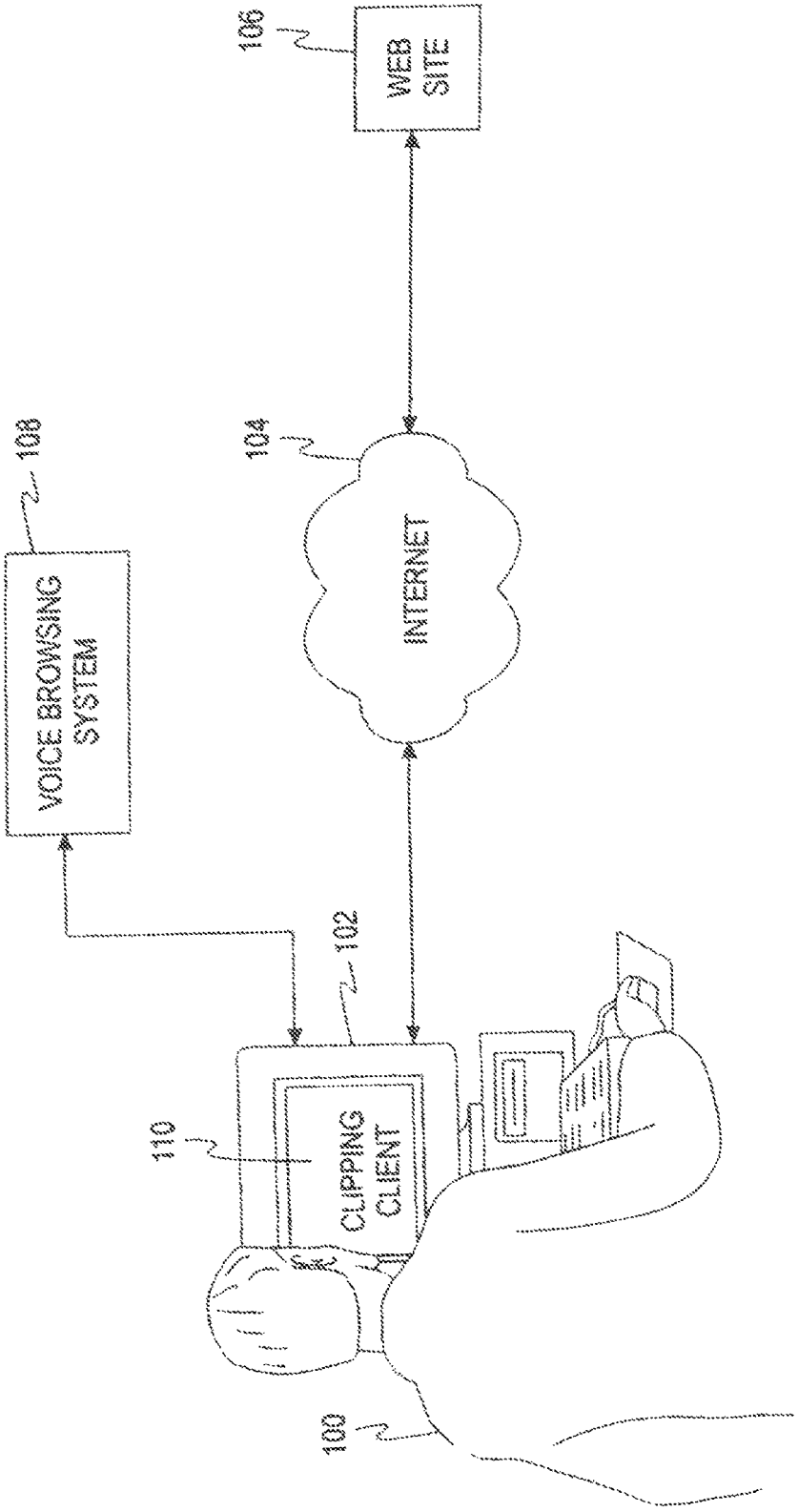
106
WEB SITE
104
INTERNET
108
VOICE BROWSING SYSTEM
102
110
CLIPPING CLIENT
100

FIG. 1

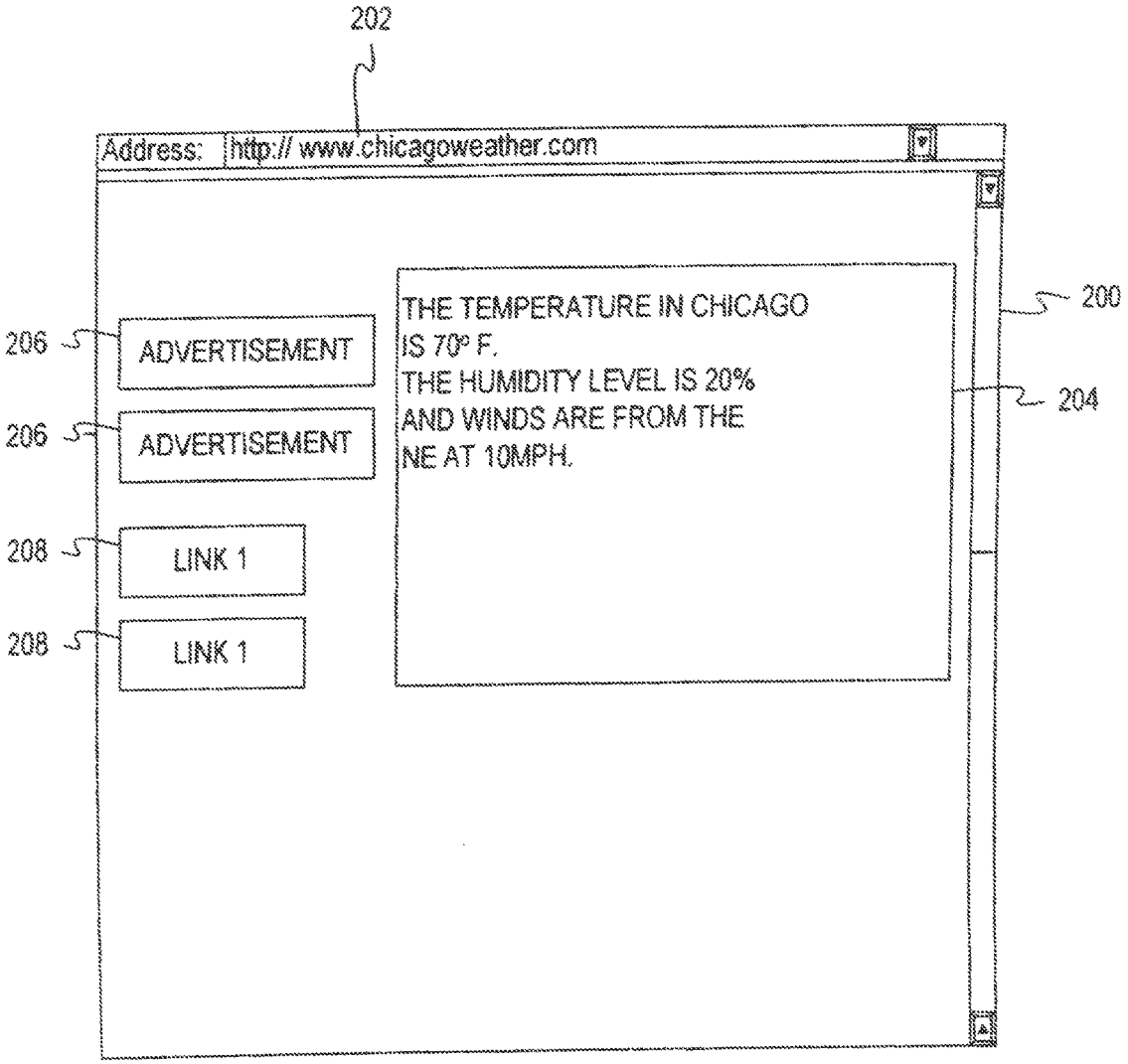
202
Address: http:// www.chicagoweather.com
200
204
206
ADVERTISEMENT
206
ADVERTISEMENT
208
LINK 1
208
LINK 1
THE TEMPERATURE IN CHICAGO
IS 70° F.
THE HUMIDITY LEVEL IS 20%
AND WINDS ARE FROM THE
NE AT 10MPH.

FIG. 2

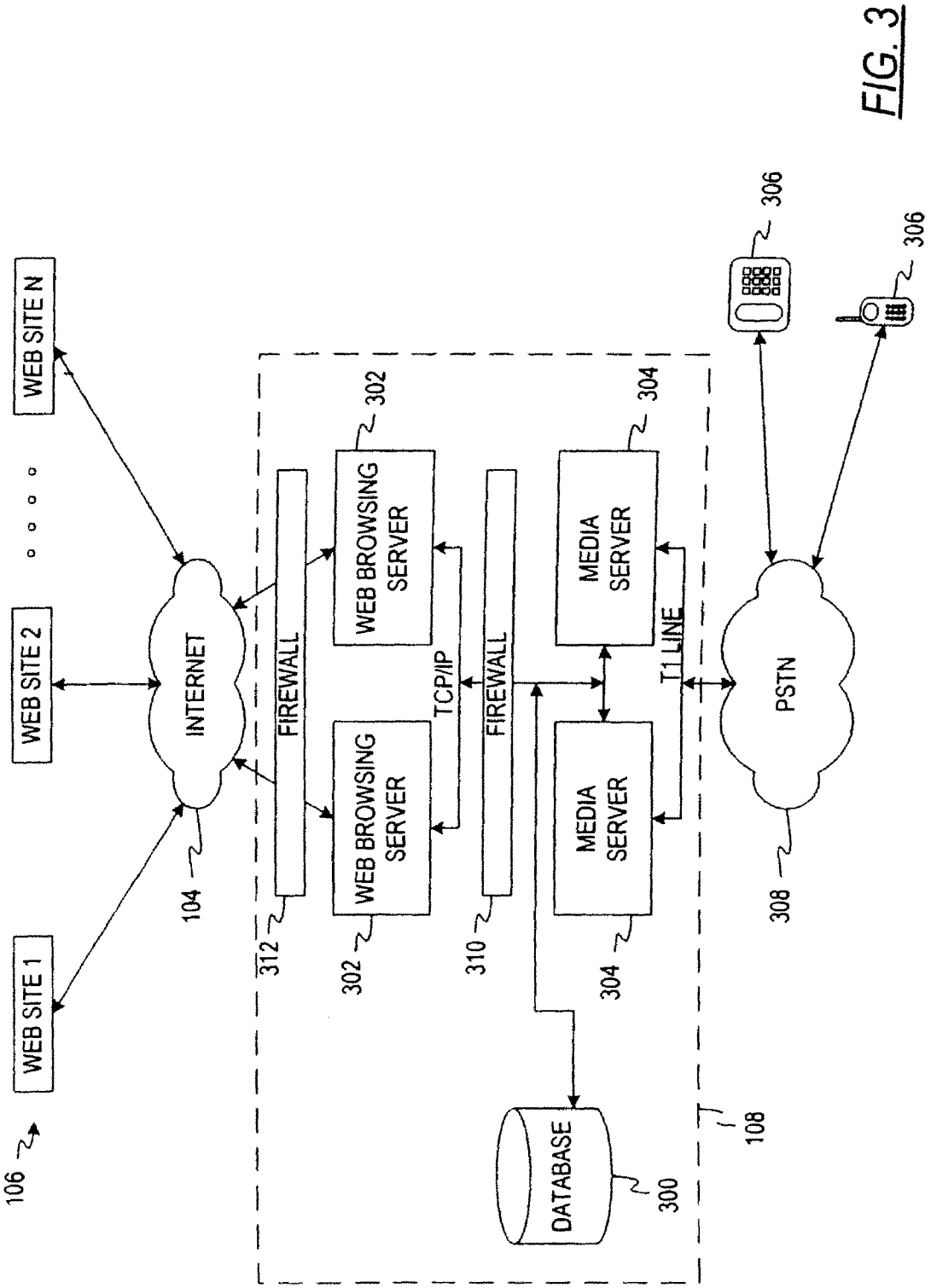
WEB SITE N
WEB SITE 2
WEB SITE 1
106
INTERNET
104
FIREWALL
312
WEB BROWSING SERVER
302
WEB BROWSING SERVER
302
TCP/IP
FIREWALL
310
MEDIA SERVER
304
MEDIA SERVER
304
T1 LINE
PSTN
308
306
306
DATABASE
300
108

FIG. 3

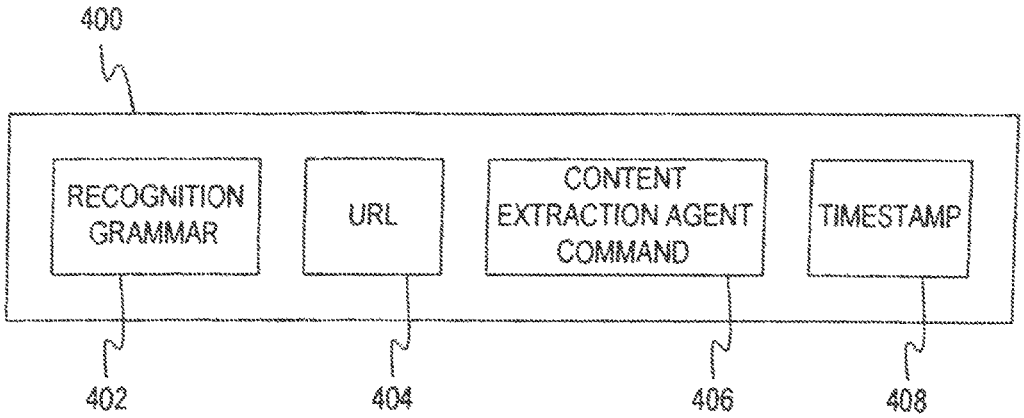
400
RECOGNITION GRAMMAR
URL
CONTENT EXTRACTION AGENT COMMAND
TIMESTAMP
402
404
406
408

FIG. 4

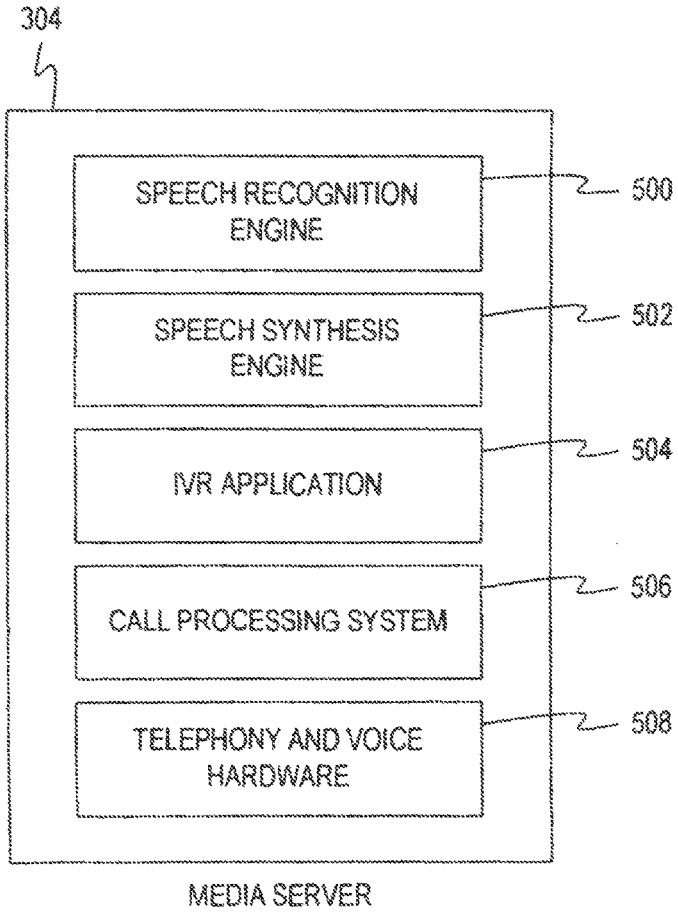
304
SPEECH RECOGNITION ENGINE
500
SPEECH SYNTHESIS ENGINE
502
IVR APPLICATION
504
CALL PROCESSING SYSTEM
506
TELEPHONY AND VOICE HARDWARE
508
MEDIA SERVER

FIG. 5

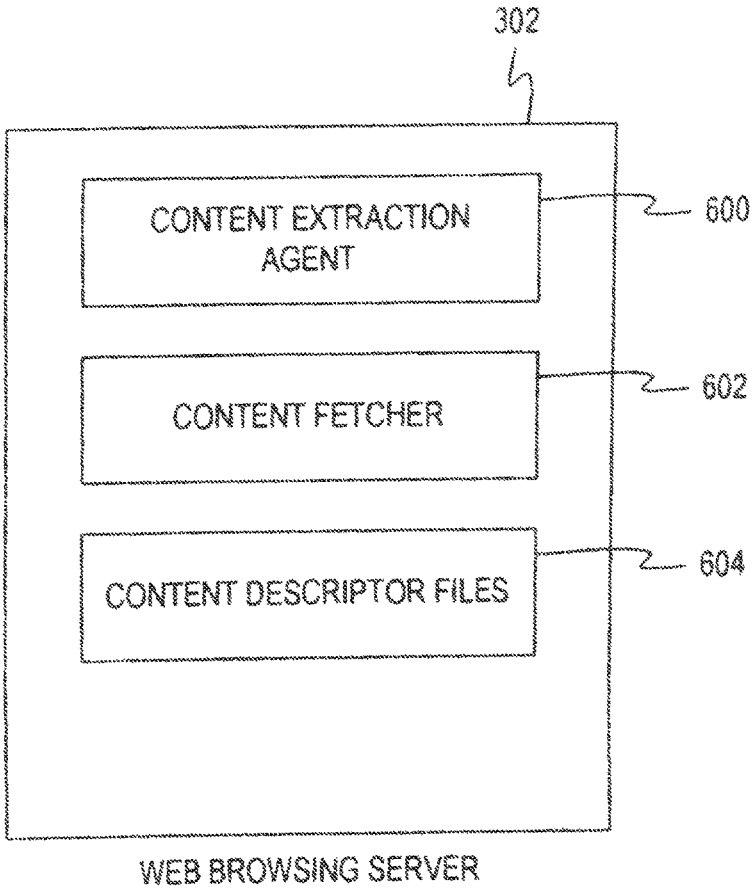
302
CONTENT EXTRACTION AGENT
600
CONTENT FETCHER
602
CONTENT DESCRIPTOR FILES
604
WEB BROWSING SERVER

FIG. 6

PERSONAL VOICE-BASED INFORMATION RETRIEVAL SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a continuation of U.S. Utility application Ser. No. 15/193,517, entitled "Personal Voice-Based Information Retrieval System," filed Jun. 27, 2016, which is a continuation of U.S. Utility application Ser. No. 12/787,801, entitled "Personal Voice-Based Information Retrieval System," filed May 26, 2010, now U.S. Pat. No. 9,377,992, which is a continuation of U.S. Utility application Ser. No. 11/711,773, "Personal Voice-Based Information Retrieval System," filed Jun. 29, 2007, now abandoned, which is a continuation of U.S. Utility application Ser. No. 09/777,406, entitled "Personal Voice-Based Information Retrieval System," filed Feb. 6, 2001, now U.S. Pat. No. 7,516,190, which claims priority to U.S. Provisional Patent Application No. 60/180,343, entitled "Personal Voice-Based Information Retrieval System," filed Feb. 4, 2000, which are incorporated by reference herein in their entirety.

FIELD OF THE INVENTION

The present invention relates generally to the field of providing information IO access. In particular, the invention relates to a personalized system for accessing information from the Internet or other information sources using speech commands.

BACKGROUND OF THE INVENTION

Popular methods of information access and retrieval using the Internet or other computer networks can be time-consuming and complicated. A user must frequently wade through vast amounts of information provided by an information source or web site in order obtain a small amount of relevant information. This can be time-consuming, frustrating, and, depending on the access method, costly. A user is required to continuously identify reliable sources of information and, if these information sources are used frequently, repeatedly access these sources.

Current methods of accessing information stored on computer networks, such as Wide Area Networks (WANs), Local Area Network (LANs) or the Internet, require a user to have access to a computer While computers are becoming increasingly smaller and easier to transport, using a computer to access information is still more difficult than simply using a telephone. Since speech recognition systems allow a user to convert his voice into a computer-usable message, telephone access to digital information is becoming more and more feasible Voice recognition technology is growing in its ability to allow users to use a wide vocabulary.

Therefore, a need exists for an information access and retrieval system and method that allows users to access frequently needed information from information sources on networks by using a telephone and simple speech commands.

SUMMARY OF THE INVENTION

One object of the preferred embodiment of the present invention is to allow users to customize a voice browsing system.

A further object of the preferred embodiment is to allow users to customize the information retrieved from the Internet or other computer networks and accessed by speech commands over telephones.

Another object of the preferred embodiment is to provide a secure and reliable retrieval of information over the Internet or other computer networks using predefined verbal commands assigned by a user.

The present invention provides a solution to these and other problems by providing a new system for retrieving information from a network such as the Internet. A user creates a user-defined record in a database that identifies an information source, such as a web site, containing information of interest to the user. This record identifies the location of the information source and also contains a recognition grammar assigned by the user. Upon receiving a speech command from the user that is described in the assigned recognition grammar, a network interface system accesses the information source and retrieves the information requested by the user.

In accordance with the preferred embodiment of the present invention, a customized, voice-activated information access system is provided. A user creates a descriptor file defining specific information found on a web site the user would like to access in the future. The user then assigns a pronounceable name or identifier to the selected content and this pronounceable name is saved in a user-defined database record as a recognition grammar along with the URL of the selected web site.

In the preferred embodiment, when a user wishes to retrieve the previously defined web-based information, a telephone call is placed to a media server. The user provides speech commands to the media server that are described in the recognition grammar assigned to the desired search. Based upon the recognition grammar, the media server retrieves the user-defined record from a database and passes the information to a web browsing server which retrieves the information from associated web site. The retrieved information is then transmitted to the user using a speech synthesis software engine.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** displays a personal information selection system used with the preferred embodiment of the present invention;

FIG. **2** displays a web page displayed by the clipping client of the preferred embodiment;

FIG. **3** is a block diagram of a voice browsing system used with preferred embodiment of the present invention;

FIG. **4** is a block diagram of a user-defined database record created by preferred embodiment of the present invention;

FIG. **5** is a block diagram of a media server used by the preferred embodiment; and

FIG. **6** is a block diagram of a web browsing server used by the preferred embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention uses various forms of signal and data transmission to allow a user to retrieve customized information from a network using speech communication. In the preferred embodiment of the present invention, a user associates information of interest found on a specific information source, such as a web site, with a pronounceable

name or identification word. This pronounceable name/identification word forms a recognition grammar in the preferred embodiment. When the user wishes to retrieve the selected information, he may use a telephone or other voice enabled device to access a voice browser system. The user then speaks a command described in the recognition grammar associated with the desired information. The voice browsing system then accesses the associated information source and returns to the user, using a voice synthesizer, the requested information.

Referring to FIG. **1**, a user **100** uses a computer **102** to access a network, such as a WAN, LAN, or the Internet, containing various information sources [n the preferred embodiment, the user **100** access the Internet **104** and begins searching for web sites **106**, which are information sources that contain information of interest to the user. When the user **100** identifies a web site **106** containing information the user would like to access using only a voice enabled device, such as a telephone, and the voice browsing system **108**, the user initiates a "clipping client" engine **110** on his computer **102**.

The clipping client **110** allows a user **100** to create a set of instructions for use by the voice browsing system **108** in order to report personalized information back to the user upon request. The instruction set is created by "clipping" information from the identified web site. A user **100** may be interested in weather for a specific city, such as Chicago. The user **100** identifies a web site from which he would like to obtain the latest Chicago weather information. The clipping client **110** is then activated by the user **100**.

The clipping client **110** displays the selected web site in the same manner as a conventional web browser such as Microsoft's® Internet Explorer. FIG. **2** depicts a sample of a web page **200** displayed by the clipping client **110**. The user **100** begins creation of the instruction set for retrieving information from the identified web site by selecting the uniform resource locator (URL) address **202** for the web site (i.e., the website address). In the preferred embodiment, this selection is done by highlighting and copying the URL address **202**. Next, the user selects the information from the displayed web page that he would like to have retrieved when a request is made. Referring to FIG. **2**, the user would select the information regarding the weather conditions in Chicago **204**. The web page **200** may also contain additional information such as advertisements **206** or links to other web sites **208** which are not of interest to the user. The clipping client **110** allows the user to select only that portion of the web page containing information of interest to the user. Therefore, unless the advertisements **206** and links **208** displayed on the web page are of interest to the user, he would not select this information. Based on the web page information **204** selected by the user, the clipping client **110** creates a content descriptor file containing a description of the content of the selected web page. This content descriptor file indicates where the information selected by the user is located on the web page. In the preferred embodiment, the content descriptor file is stored within the web browsing server **302** shown in FIG. **3**. The web browsing server **302** will be discussed below.

Table 1 below is an example of a content descriptor file created by the clipping client of the preferred embodiment. This content descriptor file relates to obtaining weather information from the web site www.cnn.com.

TABLE 1

```
table name : portalServices
column :
   service
content:
   weather
column:
   config
content:
   [cnn]
   Input=_zip
URL=http://cgi.cnn.com/cgi-bin/weather/redirect?zip=zip
Pre-filter="\n" "
Pre-filter= " < [ " <: > ] + >" "
Pre-filter=/\s+/ I
Pre-filter=" [ \ ( \) \ I ] " ! "
Output=_location
Output=first_day_name
Output=first_day_weather
Output=first_day_high_F
Output=first_day_high_C
Output=first_day_low_F
Output=first_day_low_c
Output=second_day_name
Output=second_day_weather
Output=second_day_high_F
Output=second_day_high_C
Output=second_day_low_F
Output=second_day_low_C
Output=third_day_name
Output=third_day_weather
Output=third_day_high_F
Output=third_day_high_C
Output=third_day_low_F
Output=third_day_low_C
Output=fourth_day_name
Output=fourth_day_weather
Output=fourth_day_high_F
Output=fourth_day_high_C
Output=fourth_day_low_F
Output=fourth_day_low_C
Output=undef
Output=_current_time
Output=fourth_day_low_C
Output=undef
Output=_current_time
Output=_current_month
Output=_current_day
Output=_current_weather
Output=_current_temperature_F
Output=_current_temperature_C
Output=_humidity
Output=_wind
Output=_pressure
Output=_sunrise
Output=_sunset
   Regular_expression=WEB SERVICES: (.+) Forecast FOUR-DAY
   FORECAST (\S+)
(\S+) HI
GH (\S+) F (\S+) C LOW (\S+) F (\S+) C (\S+) (\S+) HIGH (\S+) F (\S+)
C LOW
(\S+
) F (\S+) C (\S+) (\S+) HIGH (\S+) F (\S+) C LOW (\S+) F
(\S+) C (\S+) (\S+)
HIG
H -(\S+) C LOW (\S+) F (\S+) C WEATHER MAPS RADAR ( .+)
Forecast
CURRENT C
ONDITIONS (.+) !local!, (\S+) (\S+) (.+) Temp: (\S+) F,
(\S+) C Rel.
Humidity: (
\S+) Wind: (.+) Pressure: ( .+) Sunrise: ( .+) Sunset: ( .+)
```

Finally, the clipping client **110** prompts the user to enter an identification word or phrase that will be associated with the identified web site and information. For example, the user could associate the phrase "Chicago weather" with the selected URL **202** and related weather information **204**. The identification word or phrase is stored as a personal recognition grammar that can now be recognized by a speech

recognition engine of the voice browsing system **108** which will be discussed below. The personal recognition grammar, URL address **202**, and a command for executing a content extraction agent are stored within a database used by the voice browser system **108** which will be discussed below.

The voice browsing system **108** used with the preferred embodiment will now be described in relation to FIG. **3**. A database **300** designed by Webley Systems Incorporated is connected to one or more web browsing servers **302** as well as to one or more media servers **304**. The database may store information on magnetic media, such as a hard disk drive, or it may store information via other widely acceptable methods for storing data, such as optical disks. The media servers **304** function as user interface systems that provide access to the voice browsing system **108** from a user's voice enabled device **306** (i.e., any type of wireline or wireless telephone, Internet Protocol (IP) phones, or other special wireless units). The database **300** contains a section that stores the personal recognition grammars and related web site information generated by the clipping client **110**. A separate record exists for each web site defined by the user. An example of a user-defined web site record is shown in FIG. **4**. Each user-defined web site record **400** contains the recognition grammar **402** assigned by the user, the associated Uniform Resource Locator (URL) **404**, and a command that enables the "content extraction agent" **406** and retrieves the appropriate content descriptor file required to generate proper requests to the web site and to properly format received data. The web-site record **400** also contains the timestamp **408** indicating the last time the web site was accessed. The content exaction agent is described in more detail below.

The database **300** may also contain a listing of pre-recorded audio files used to create concatenated phrases and sentences. Further, database **300** may contain customer profile information, system activity reports, and any other data or software servers necessary for the testing or administration of the voice browsing system **108**.

The operation of the media servers **304** will now be discussed in relation to FIG. **5**. The media servers **304** function as user interface systems since they allow a user to access the voice browsing system **108** via a voice enabled device **306**. In the preferred embodiment, the media servers **304** contain a speech recognition engine **500**, a speech synthesis engine **502**, an Interactive Voice Response (IVR) application **504**, a call processing system **506**, and telephony and voice hardware **508** that is required to enable the voice browsing system **108** to communicate with the Public Switched Telephone Network (PSTN) **308**. In the preferred embodiment, each media server is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

The speech recognition function is performed by a speech recognition engine **500** that converts voice commands received from the user's voice enabled device **10** (i.e., any type of wire line or wireless telephone, Internet Protocol (IP) phones, or other special wireless units) into data messages. In the preferred embodiment voice commands and audio messages are transmitted using the PSTN **308** and data is transmitted using the TCP/IP communications protocol. However, one skilled in the art would recognize that other transmission protocols may be used. Other possible transmission protocols would include SIP/VoIP (Session Initiation Protocol/Voice over IP), Asynchronous Transfer Mode (ATM) and Frame Relay. A preferred speech recognition engine is developed by Nuance Communications of 1380 Willow Road, Menlo Park, Calif. 94025 (www nuance.com) The Nuance engine capacity is measured in recognition units based on CPU type as defined in the vendor specification The natural speech recognition grammars (i.e., what a user can say that will be recognized by the speech recognition engine) were developed by Webley Systems.

In the preferred embodiment, when a user access the voice browsing system **108**, he will be prompted if he would like to use his "user-defined searches." If the user answers affirmatively, the media servers **304** will retrieve from the database **300** the personal recognition grammars **402** defined by the user while using the clipping client **10**.

The media servers **304** also contain a speech synthesis engine **502** that converts the data retrieved by the web browsing servers **302** into audio messages that are transmitted to the user's voice enabled device **306**. A preferred speech synthesis engine is developed by Lernout and Hauspie Speech Products, 52 Third Avenue, Burlington, Mass. 01803 (www.lhslcom).

A further description of the web browsing server **302** will be provided in relation to FIG. **6**. The web browsing servers **302** provide access to data stored on any computer network including the Internet **104**, WANs or LANs. The web browsing servers **302** receive responses from web sites **106** and extract the data requested by the user. This task is known as "content extraction." The web browsing server **302** is comprised of a content extraction agent **600**, a content fetcher **602**, and the content descriptor file **604**. Each of these are software applications and will be discussed below.

Upon receiving a user-defined web site record **400** from the database **300** in response to a user request, the web browsing server **302** invokes the "content extraction agent" command **406** contained in the record **400**. The content extraction agent **600** retrieves the content descriptor file **604** associated with the user-defined record **400**. As mentioned, the content descriptor file **604** directs the extraction agent where to extract data from the accessed web page and how to format a response to the user utilizing that data. For example, the content descriptor file **604** for a web page providing weather information would indicate where to insert the "city" name or ZIP code in order to retrieve Chicago weather information. Additionally, the content descriptor file **604** for each supported URL indicates the location on the web page where the response information is provided. The extraction agent **600** uses this information to properly extract from the web page the information requested by the user.

The content extraction agent **600** can also parse the content of a web page in which the user-desired information has changed location or format. This is accomplished based on the characteristic that most hypertext documents include named objects like tables, buttons, and forms that contain textual content of interest to a user. When changes to a web page occur, a named object may be moved within a document, but it still exists. Therefore, the content extraction agent **600** simply searches for the relevant name of desired object. In this way, the information requested by the user may still be found and reported regardless of changes that have occurred.

Table 2 below contains source code for a content extraction agent **600** used by the preferred embodiment.

TABLE 2

```
# ! /usr/ local/www/bin/sybper15
#$Header:
/usr/local/cvsroot/webley/agents/service/web_dispatch.pl,v
1.6
```

TABLE 2-continued

```
# Dispatches all web requests
#http://wcorp.itn.net/cgi/flstat?carrier=ua&flight_no=155&m
cn_abbr=jul&date=
6&stamp=ChLN~PdbuuE*itn/ord,itn/cb/sprint_hd
#http://cig.cnnfn.com/flightview/rlm?airline=amt&number=300
require "config_tmp.pl";
# check parameters
die "Usage: $0 service [params]\n" if $#ARGV < 1;
#print STDERR @ARGV;
# get parameters
my ( $service, @param ) = @ARGV;
# check service
My ($services = (
                        weather_cnn => 'webget.pl weather_cnn',
                        weather_lycos => 'webget.pl
'weather_lycos',
                        weather_weather => 'webget.pl
weather_weather',
                        weather_snap => 'webget.pl
weather_snap',
                        weather_infospace => 'webget.pl
weather_infospace',
                        stockQuote_yahoo => 'webget.pl stock',
                        flightStatus_itn => 'webget.pl
flight_delay',
                        yellowPages_yahoo => 'yp_data.pl',
                        yellowPages_yahoo => 'yp_data.pl',
                        newsHeaders_newsreal => 'news.pl',
                        newsArticle_newsreal => 'news.pl',
                        ) ;
# test param
my $date= 'date';
chop ( $date );
my ( $short_date ) = $date = ~ / \s+(\{w3}\s+\d{1, 2}) \s+/;
my % Test = (
                        weather_cnn => '60053',
                        weather_lycos => '60053',
                        weather_weather => '60053',
                        weather_snap => '60053',
                        weather_infospace => '60053',
                        stockQuote_yahoo => 'msft',
                        flightStatus_itn => 'ua 155 ' .
$short_date,
                        yellowPages_yahoo => 'tires 60015',
                        newsHeaders_newsreal => ' 1 ',
                        newsArticle_newsreal => '1 1' ,
                        ) ;
die "$date: $0: error: no such service: $service (check
this script) \n"
unless $Services{ $service };
# prepare absolute path to run other scripts
my ( $path, $script ) = $0 =~ ml^ (.*/) ([ ^ / ] * ) | ;
# store the service to compare against datatable
my $service_stored = $service;
# run service
While ( ! ( $response = '$path$Services { $service } @param' )
) (
            # response failed
            # check with test parameters
            $ response = '$path$Services { $service } $Test{
$service }";
            If ( response ) {
                $service = &switch_service ( $service ) ;
#               print "wrong paramnet values were supplied:;
$service -
@param\n";
#               die "$date: $0: error: wrong parameters: $service
-
@param\n";
    }
    else {
              # change priority and notify
             $service = &increase_attempt ( $service ) ;
    }
}
# output the response
print $response;
```

TABLE 2-continued

```
sub increase_attempt {
            my ( $service ) = @_;
            my ( $service_name ) = split( /_/, $service ) ;
            print STDERR "$date: $0: attn: changing priority for
service:
$service\n";
            # update priority
            &db_query ( "update mcServiceRoute "
                        ."set priority = ( select max ( priority
) from
mcServiceRoute "
                        . "where service = '$service name' ) + 1,
                        . "date = getdate ( ), "
                        . "attempt = attempt + 1 "
                        . "where route = '$script $service' " ) ;
#           print "---$route===\n";
            # find new route
            my $route @{ &db_query( "select route from
mcServiceRoute "
                                    ."where service =
'$service_name' "
                                    ."and attempt < 5
"
                                    . "order by
priority ")
                        } -> [ 0 ] { route };
            &db_query( "update mcServiceRoute "
                    . "set attempt = 0 "
                    . "where route = '$script $service' " ) ;
                if ( $route eq "$script $service_stored" ) ;
            ( $service_name, $service ) =split ( /\s+/, $route ) ;
            die "$date: $0: error: no route for the service:
$service (add
More) \n""
                unless $service;
            return $service;
}
sub switch service {
            my ( $service ) = @_;
            my ( $service_name) = split (/_/, $service );
            print STDERR "$date: $0: attn: changing priority for
service:
$service\n";
            # update priority
            &db_query ( "update mcServiceRoute "
                    . "set priority = ( select max ( priority for
) from
mcServiceRoute "
                    . "where service = '$service_name' ) + 1,
                    . "date ~ getdate ( ) "
                    . "where route = '$script $service' " ) ;
#           print "---$route===\n";
    -       # find new route
            my $route = @( &db_query ( "select route from
mcServiceRoute "
                                    ."where service =
'$service_name' "
                                    . "and attempt < 5
"
                                    . "order by
priority ")
                        } -> [ 0 ] { route };
            die " $ date : $ 0 : error : there is the only service:
$route (add
more) \n"
            if ( $route eq "$script $service"
                    or $route eq "$script $service_stored" ) ;
            (service_name, $service ) = split ( / \s+/, $route ) ;
            die "$date: $0: error: no route for the service:
$service (add
more)\n"
                    unless $service;
            return $service;
}
```

Table 3 below contains source code of the content fetcher **602** used with the content extraction agent **600** to retrieve information from a web site

TABLE 3

```
#!/usr/local/www/bin/sybper15
# -T
# -w
# $Header:
/usr/local/cvsroot/webley/agents/service/webget. pl, v 1.4
# Agent to get info from the web.
# Parameters: service_name [service_parameters], i.e. stock
msft or weather
60645
# Configuration stored in files service_name.ini
# if this file is absent the configuration is received from
mcServices table
# This script provides autoupdate to datatable if the .ini
file is newer.
$debug = 1;
use URI : : URL;
use LWP : : UserAgent;
use HTTP : :Request: : Common;
use Vail : :VarList;
use Sybase : : CT lib;
use HTTP: :Cookies;
#print "Sybase: :CT lib $DB_USR, $DB_PWD, $DB SRV;";
Open ( STDERR, ">>$0.log" ) if $debug;
#open ( STDERR, ">&STDOUT" ) ;
$log = 'date';
#$response = '.url.pl
http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605";
#$response= 'pwd';
#print STDERR "pwd = $response\n";
#$response = 'ls' ;
#print STDERR "ls = $response\n";
chop ( $log ) ;
$log . = "pwd="    . 'pwd' ;
chop ( $log ) ;
#$debug2 = 1;
my $service = shift;
$log .= " $service: ". join( ' : ', @ARGV ) . "\n";
print STDERR $log if $debug;
#$response = • . /url .pl
"http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605";
my @ini = &read_ini ( $service ) ;
chop ( @ ini ) ;
my $section= " ";
do ($section = &process_section( $section ) } while
$section;
#$response = ' ./url.pl
http://cgi.cnn.com/cgi-bin.weather/redirect?zip=60605" ' ;
exit;
############################################################
sub read_ini {
        my ( $service ) = @_;
        my @ini = ( );
        # first, try to read file
        $0 =~ m|^ ( .*/) [^/];
        $service = $1 . $service;
        if ( open( INI, "$service.ini" ) ) {
                @ini = ( < INI > ) ;
                return @ini unless ( $DB_SRV ) ;
                # update datatable
                my $file_time = time - int ( ( -M "$service. ini" )
* 24 *
3600 ) ;
#               print "time $file_time\n";
                my $dbh = new Sybase: :CTlib $DB_USR,    $DB_PWD,
$DB_SRV;
                unless ( $dbh) {
                        print STDERR "webget.pl: Cannot connect to
dataserver $DB_SRV:$DB_USR:$DB_PWD\n";
                        return @ini;
                }
                my @row_refs = $dbh->ct_sql ( "select lastUpdate
from
mcServices where service = '$service' ", undef, 1 );
                if ($dbh -> { RC } == CS_FAIL ) {
                        print STDERR "webget.pl: DB select from
mcServices
failed\n";
                        return @ini;
                }
```

TABLE 3-continued

```
                    unless ( defined @row_refs ) {
                    # have to insert
                    my ( @ini_escaped ) = map {
                            ( my $x = $_) =~ s/ \ ' / \ ' / g;
                            $x;
                    }@ini;
                    $dbh –> ct_sql ( "insert mcServices values (
'$service',
'@ini_escaped', $file time; ) ");
                    if ( $dbh –> { RC } == CS_FAIL )
                            print STDERR "webget.pl: DB insert to
mcServic:es failed\n";
                    }
                    return @ ini;
#                   print "time $file_time:"$row_refs [ 0 ] –> {
'lastUpdate'
}."\n";
                    If ( $file_time –> ref_refs [0 ] –> { 'last update'
} ) {
                    # have to update
            my ( @ini_escaped = map {
                    ( my $x = $_ ) =~ s/ \ ' / \ ' \ ' /g;
                    $x;
            } @ini;
            $dbh –> ct_sql ( "update mcServices set config
=
'@ini_escaped', lastUpdate = $file_time where service =
'$service' " );
                    if ( $dbh –> { RC } – CS_FAIL ) {
                            print STDERR "webget.pl: DB update to
mcServices failed\n";
                            }
                    }
                    return @ini;
            }
            else {
            print STDERR "$0: WARNING: $service.ini n/a in "
. - 'pwd'
                    . "Try to read DB\n";
            }
            # then try to read datatable
            die "webget.pl: Unable to find service $service\n"
unless ( $DB_SRV
) ;
            my $dbh = new Sybase: : CTlib $DB_USR, $DB_PWD, $DB_SRV;
            die "webget.pl: Cannot connect to dataserver
$DB SRV: $08 USR: $08 PWD\n" unless ( $dbh ) ;
my @row_refs = $dbh–>ct sql ( "";;elect con.fiJ from
mcServices where
service = '$service' " , undef, 1 );
            die "webget.pl: DB select from mcServices failed\n" if
$dbh –> { RC }
= = CS FAIL;
            die "webget.pl: Unable to find service $service\n"
unless ( defined
@row_refs ) ;
            $row_refs [ 0 ] –> { 'config' } =~ s/\n /\n\r/g;
            @ini = split ( /\r/, $row_refs [ 0 ] –>{ 'config' } ) ;
            return @ini;
#########################################################################
sub process_section {
            my ($prev_section ) = @_;
            my ($section, $output, $content );
            my %PAram;
            my %Content;
#           print" ##################################\n";
            foreach (@ini ) {
#                   print;
#                   chop;
                    s/\s+$//;
                    s/^\[(.*) \ ] ) {
                    # get section name
                    if ( /^\ [(.*) \ ] ) {
#                   print "$_: $section:$prev_section\n";
                            last if $section;
                            next if $1 eq "print";
#                   next if $prev_section ne " " and
$prev_section ne $1;
```

TABLE 3-continued

```
                    if ($prev_section eq $1 )
                        $prev_section = " ";
                        next;
                    }
                    $section = $1;
            }
            # get parameters
            Push ( @{ $Param{ $1 } }, $2 ) if $section and
/ ( [ ^ = ] +) = (.*) /;
-           }
#           print"++++++++++++++++++++++++++++++++++++\n";
            return 0 unless $section;
#           print "section $section\n";
            # substitute parameters with values
            map { $Param{ URL }->[ 0 ] =~ s/$Param{ Input }->[ $_
] /$ARGV [ $_
] /g
            }0 . . S# { $Param{ Input } };
            # get page content
            ( $Content{={ 'TIME' }, $content ) = get_url_content (
$ { $ Param { URL
} } [ 0 ] ) ;
            # filter it
            map {
                    if (/\"([\"]+)\"([\"]*)\"/or
/\/([\"\/]+)\/([\"\/]*)\//)
(
                            my $out = $2; $content =~ s/$1/$out/g;
                    }
            } @ ($Param{ "Pre-filter"}};
#print STDERR $content;
            # do main regular expression
            unless ( @values = $content =~ / $! Param {
Regular expression } } [ 0
] / ) (
            &die_hard ( $ { $Param(Regular_expression } } [ 0
], $content
) ;
                    return $section;
            }
            %Content = map { ( $Param{ Output }->[ $_] , $values [
$_ ] )
            } 0 . . $ # ( $Param { Output } ) ;
            # filter it
            map {
            if ( / ( [ ^\"]+)\"] +) \" ( ["\"]+) \" ( ["\"]*) \"/
                    or / ( [ ^\/]+) \/ ( [ ^\/] +) \/ ([ ^\/]*) \/ / ) (
                    my $out = $3;
                    $Content{ $1 } =~ s/$2/$out/g;
            }
}           @{ $Param { "Post-filter" } };
#calculate it
map
# calculate it
map {
                    if ( /(["'=]+)=(.*)/
                    my $eval = $2;
                    map { $eval =~ s/$_/$Content( $_ }/g
                    } keys %Content;
            $Content{ $1 } = eval( $eval ) ;
    }
} @{ ( $ Param{ Calculate } } ;
# read section [print]
foreach $i ( 0 .. $#ini ) {
            next unless $ini [ $i] /^\ [print\]/;
            foreach ( $i + 1 . . $#ini ) {
                    last if $ini [ $_ ] =~ /^\ [.+\]/;
                    $output .= $ini [$_1] . "\n";
            }
            last;
}
# prepare output
map { $output =~ s/$_/$Content{ $_ }/g
} keys %Content;
print $output;
return 0;
}
```

TABLE 3-continued

```
##########################################################################
sub get_url_content [
        my ( $url ) = @_;
        print STDERR $url if $debug;
        $response = ‘ ./url.pl '$url' ;
        $response = ‘ ./url.pl '$url' ;
        Return ( $time – time, $response );
        my $ua = LWP: :UserAgent –> new;
        $ua –> agent ( 'Mozilla/4.0 [en] (X11; I; FreeBSD 2.2.8-
STABLE i386)'
) ;
#       $ua –> proxy( ['http', 'https'],
'http://proxy.webley:3128/' ) ;
#       $ua –> no_proxy ('webley', 'vail' ) ;
        my $cookie = HTTP: :Cookies –>new;
        $ua –> cookie_jar ( $cookie ) ;
        $url = url $url;
        print "$url\n" if $debug2;
        my $time = time;
        my $res= $ua –> request ( GET $url ) ;
        print "Response: " . ( time – $time ) . "sec\n" if
$debug2;
        Return ( $time – time, $res –> content ) ;
}
##########################################################################
sub die hard {
my ( $re, $content ) = @_;
-       my ( $re_end, $pattern );
while ( $content ! ~ /$re/ ) {
                if ($re =~ s/ (\({^\(\) ]+\) [^\(\)]*$) / / ) {
                        $re_end = $1 . $re_end;
                }
                else }
                        $re_end = $re;
                        last;
                }
        }
        $content=~ /$re/;
$re\n
Possible misuse:
$re_end: \n
Matched:
$&\n
Mismatched:
$'\n
" if $debug;
        if ( $debug ) {
             print STDERR "Content:\n $content\n" unless
$';
        }
}
##########################################################################
```

Once the web browsing server **302** accesses the web site specified in the CRL **404** and retrieves the requested information, it is forwarded to the media server **304**. The media server uses the speech synthesis engine **502** to create an audio message that is then transmitted to the user's voice enabled device **306**. In the preferred embodiment, each web browsing server is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

Referring to FIG. **3**, the operation of the personal voice-based information retrieval system will be described. A user establishes a connection between his voice enabled device **306** and a media server **304** of the voice browsing system **108**. This may be done using the Public Switched Telephone Network (PSTN) **308** by calling a telephone number associated with the voice browsing system **108**. Once the connection is established, the media server **304** initiates an interactive voice response (IVR) application. The IVR application plays audio message to the user presenting a list of IO options, which includes "perform a user-defined search." The user selects the option to perform a user-defined search by speaking the name of the option into the voice enabled device **306**.

The media server **304** then accesses the database **300** and retrieves the personal recognition grammars **402**. Using the speech synthesis engine **502**, the media server **304** then asks the user, "Which of the following user-defined searches would you like to perform" and reads to the user the identification name, provided by the recognition grammar **402**, of each user-defined search. The user selects the desired search by speaking the appropriate speech command or pronounceable name described within the recognition grammar **402**. These speech recognition grammars **402** define the speech commands or pronounceable names spoken by a user in order to perform a user-defined search. If the user has a multitude of user-defined searches, he may speak the command or pronounceable name described in the recognition grammar **402** associated with the desired search at anytime without waiting for the media server **304** to list all available user-defined searches. This feature is commonly referred to as a "barge-in" feature. The media server **304** uses the speech recognition engine **500** to interpret the speech commands received from the user. Based upon these commands, the media server **304** retrieves the appropriate user-defined

web site record **400** from the database **300**. This record is then transmitted to a web browsing server **302**. A firewall **310** may be provided that separates the web browsing server **302** from the database **300** and media server **304**. The firewall provides protection to the media server and database by preventing unauthorized access in the event the firewall **312** for the web browsing server fails or is compromised. Any type of firewall protection technique commonly known to one skilled in the art could be used, including packet filter, proxy server, application gateway, or circuit-level gateway techniques.

The web browsing server **302** accesses the web site **106** specified by the URL **404** in the user-defined web site record **400** and retrieves the user-defined information from that site using the content extraction agent and specified content descriptor file specified in the content extraction agent command **406**. Since the web browsing server **302** uses the URL and retrieves new information from the Internet each time a request is made, the requested information is always updated.

The content information received from the responding web site **106** is then processed by the web browsing server **302** according to the associated content descriptor file This processed response is then transmitted to the media server **304** for conversion into audio messages using either the speech synthesis engine **502** or selecting among a database of prerecorded voice responses contained within the database **300**.

It should be noted that the web sites accessible by the personal information retrieval system and voice browser of the preferred embodiment may use any type of mark-up language, including Extensible Markup Language (XML), Wireless Markup Language (WML), Handheld Device Markup Language (HDML), Hyper Text Markup Language (HTML), or any variation of these languages.

The descriptions of the preferred embodiments described above are set forth for illustrative purposes and are not intended to limit the present invention in any manner. Equivalent approaches are intended to be included within the scope of the present invention. While the present invention has been described with reference to the particular embodiments illustrated, those skilled in the art will recognize that many changes and variations may be made thereto without departing from the spirit and scope of the present invention. These embodiments and obvious variations thereof are contemplated as falling within the scope and spirit of the claimed invention.

The invention claimed is:

1. A method, comprising:

(a) receiving a speech command from a voice-enabled device of a particular user, over a network, by a speech-recognition engine coupled to a media server by an interactive voice response application including a user-defined search, the speech-recognition engine adapted to convert the speech command into a data message, the media server adapted to identify and access at least one or more websites containing information of interest to the particular user, the speech-recognition engine adapted to select particular speech-recognition grammar describing the speech command received and assigned to fetching content relating to the data message converted from the speech command and assigned to the user-defined search including a web request, along with a uniform resource locator of an identified web site from the one or more websites containing information of interest to the particular user and responsive to the web request;

(b) selecting, by the media server, at least one information-source-retrieval instruction stored for the particular speech-recognition grammar in a database coupled to the media server and adapted to retrieve information from the at least one or more websites;

(c) accessing, by a web-browsing server, a portion of an information source to retrieve information relating to the speech command, by using a processor of the web-browsing server, which processor (i) performs an instruction that requests information from an identified web site, (ii) utilizes a command to execute a content extractor within the web-browsing server to separate a portion of information that is relevant from other information on the web page using a name of a named object including the information, the information derived from only a portion of the web page containing information pertinent to the speech command, the content extractor adapted to use a content-descriptor file containing a description of the portion of information and the content-descriptor file adapted to indicate a location of the portion of the information within the information source;

(d) selecting, by the web-browsing server, the information relating to the speech command from the information source and retrieving only the portion of the information requested by the speech command according to the at least one information-source-retrieval instruction;

(e) converting the information retrieved from the information source into an audio message by a speech-synthesis engine, the speech-synthesis engine coupled to the media server; and

(f) transmitting the audio message by the voice-enabled device to the particular user.

2. The method of claim **1**, wherein the speech command is received by at least one of a landline telephone, a wireless telephone, and an Internet Protocol telephone and the media server is operatively connected to at least one of a local-area network, a wide-area network, and the Internet.

3. The method of claim **2**, wherein the media server functions as a user-interface system adapted to provide access to a voice-browsing system.

4. The method of claim **2**, further comprising:

a clipping engine adapted to initially generate the content-descriptor file that indicates the location of the portion of the information within the identified web site.

5. A voice-browsing system for retrieving information from an information source that is periodically updated with current information, by speech commands received from a particular user provided via a voice-enabled device after establishing a connection between the voice-enabled device and a media server of the voice-browsing system, said voice-browsing system comprising:

(a) a speech-recognition engine including a processor and coupled to the media server, the media server initiating a voice-response application once the connection between the voice-enabled device and the voice-browsing system is established, the speech-recognition engine adapted to receive a speech command from a particular user via the voice-enabled device, the media server configured to identify and access the information source via a network, the speech-recognition engine adapted to convert the speech command into a data message by selecting speech-recognition grammar established to correspond to the speech command received from the particular user and assigned to perform searches;

(b) the media server further configured to select at least one information-source-retrieval instruction corresponding to the speech-recognition grammar established for the speech command, the at least one information-source-retrieval instruction stored in a database associated with the media server and adapted to retrieve information;

(c) a web-browsing server coupled to the media server and adapted to access at least a portion of the information source to retrieve information indicated by the speech command, by using a processor of the web-browsing server, which processor (i) performs an instruction that requests information from an identified web page within the information source, and (ii) utilizes a command to execute a content extractor within the web-browsing server to separate a portion of the information from other information, the information derived from only a portion of a web page containing information relevant to the speech command, wherein the content extractor uses a content-descriptor file containing a description of the portion of information and wherein the content-descriptor file indicates a location of a portion of the information within the information source, and selecting, by the web-browsing server, an information type relevant from the information source and retrieving only a portion of the information that is relevant according to the at least one information-source-retrieval instruction; and

(d) a speech-synthesis engine including a processor and coupled to the media server, the speech-synthesis engine adapted to convert the information retrieved from the information source into audio and convey the audio by the voice-enabled device.

6. The voice-browsing system claim **5**, further comprising:

an interface to an associated website by the network to locate requested information.

7. The voice-browsing system of claim **5**, wherein the voice-enabled device accesses the voice-browsing system by at least one of a landline telephone, a wireless telephone, and an Internet Protocol telephonic connection and wherein the media server operatively connects to the network, by at least one of a local-area network, a wide-area network, and the Internet.

8. The voice-browsing system of claim **5**, wherein the media server functions as a user-interface system adapted to provide access to a voice-browsing system.

9. The voice-browsing system of claim **5**, further comprising:

a clipping engine adapted to generate the content-descriptor file, by which, an instruction is used by the web-browsing server to request information from the identified web site and the information is displayed on the voice-enabled device, wherein the information is only the portion of the web page containing information relevant to the speech command.

10. A method of selectively retrieving information in response to spoken commands received by a voice-browsing system, the method comprising:

(a) identifying, one of a plurality of speech commands of a speech-recognition lexicon, based on audio data indicative of words spoken into a microphone of an electronic-communication device of a user;

(b) using the identified speech command to access a corresponding descriptor file from a plurality of descriptor files stored in a database associated with the voice-browsing system, and using the corresponding descriptor file to identify (i) a web-accessible information source, and (ii) request information;

(c) using the request information to fetch, from the information source identified by an accessed descriptor file, response data including a named object including content;

(d) using the named object to extract the content from the response data;

(e) generating audio response data containing indicia of a message for the user, which message is responsive to the identified speech command, and which message is based on the extracted content; and

(f) directing a command to play the audio response data using the electronic-communication device of the user.

11. The method of claim **10**, wherein the content is located in the response data using the named object regardless of the location of the named object within the response data.

12. The method of claim **11**, wherein the fetching occurs on a web browsing server, and wherein the web browsing server receives the identified speech command from a different server.

13. The method of claim **12**, further comprising: using Internet Protocol to communicate with the electronic-communication device of the user.

14. The method of claim **12**, further comprising: using a telecommunication network to communicate with the electronic-communication device of the user.

15. The method of claim **12**, wherein the electronic-communication device of the user is a voice-enabled wireless unit that is not a telephone.

16. The method of claim **12**, wherein the corresponding descriptor file identifies the web-accessible information source and information used to generate proper requests to the information source with a specific URL format including search parameters.

17. The method of claim **12**, wherein using the request information to fetch comprises fetching the response data from a database stored on a Local Area Network (LAN) or a Wide Area Network (WAN).

18. The method of claim **12**, further comprising: using the named object to determine a beginning and an end of the content within the response data.

19. An apparatus with a capability of selectively retrieving information in response to spoken commands, the apparatus comprising:

(a) a transceiver coupled to a network and capable of sending to and receiving information via the network from an electronic-communication device of a user, which device has a microphone;

(b) a database containing a plurality of descriptor files, each of the descriptor files identifying (i) a web-accessible information source, and (ii) request information for fetching from the web-accessible source;

(c) a speech-recognition engine, coupled to the transceiver and having access to the database, programmed to automatically identify, one of a plurality of speech commands of a speech-recognition lexicon, based on audio data indicative of words spoken into the microphone of the electronic-communication device of a user;

(d) a media server, coupled to the speech-recognition engine and having access to the database, programmed to access a descriptor file from the plurality of descriptor files in the database based on the identified speech command expressing the request information;

(e) a web browsing server, coupled to the media server and programmed:

(i) to retrieve, from the web-accessible information source identified by the accessed descriptor file, responsive data specified by the request information identified by the accessed descriptor file, wherein the responsive data includes a named object including content; and

(ii) to use a name of the named object to identify content relating to the name and to extract the content from the response data; and

(f) a synthesizer coupled to the web browsing server and programmed to generate and transmit audio response data containing indicia of a message about the request information for the user, which message is responsive to the identified speech command, and which message is based on the extracted content;

(g) the apparatus is programmed to direct a command to play an audio response data using the electronic-communication device of the user.

20. The apparatus of claim **19**, wherein the web browsing server is further programmed to use the accessed descriptor file to format a request for a content fetcher.

21. The apparatus of claim **20**, wherein the content fetcher is executed in response to a command included in the accessed descriptor file that is executed on the web browsing server.

22. The apparatus of claim **19**, wherein the speech-recognition engine is within the media server.

23. The apparatus of claim **19**, wherein the web browsing server is further programmed to use the named object to determine a beginning and an end of the content within the responsive data.

24. An apparatus having a capability of selectively retrieving information in response to spoken commands, comprising:

(a) a microphone; and

(b) a speaker coupled to the microphone; and

(c) wherein the electronic-communication device is in communication with a remote computer system via a network to initiate user-defined searches; and

(d) wherein the remote computer system comprises:

(i) a speech-recognition engine, coupled to a transceiver and having access to a database, programmed to identify, one of a plurality of speech commands of a speech-recognition lexicon, based on audio data indicative of words spoken into the microphone of the electronic-communication device of a user;

(ii) a media server, coupled to the speech-recognition engine and having access to a database containing a plurality of descriptor files, programmed to use the identified speech command to access a corresponding descriptor file from the plurality of descriptor files, wherein the corresponding descriptor file is used to identify (i) a web-accessible information source, and (ii) request information to fetch from the web-accessible information source;

(iii) a web browsing server programmed:

(A) to use the request information to fetch, from the web-accessible information source identified by the accessed descriptor file, response data including a named object including particular content; and

(B) to use a name associated with the named object to identify content relating to the name and to extract the content from the response data;

(iv) a speech-synthesizer coupled to the web browsing server and programmed to generate and transmit audio response data containing indicia of a message for the user about the request information, which message is responsive to the identified speech command, and which message is based on the extracted content; and

(v) wherein the remote computer system is programmed to direct a command to play the audio response data on the speaker.

25. The apparatus of claim **24**, wherein the network is the Internet.

26. The apparatus of claim **24**, wherein the network is a telecommunication network.

27. The apparatus of claim **24**, wherein the electronic-communication device is a voice-enabled wireless unit that is not a telephone.

28. The apparatus of claim **24**, wherein the web browsing server is further programmed to use the named object to determine a beginning and an end of the content within the responsive data.

* * * * *

Complaints

1:99-mc-09999 Plaintiff(s) v. Defendant(s)

U.S. District Court

District of Delaware

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Case Number: 1:99-mc-09999
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COMPLAINT - Parus Holdings Inc. v. Amazon.com, Inc.. Filing fee $ 402, receipt number ADEDC-4070209. (Attachments: # (1) Exhibit A, # (2) Exhibit B, # (3) Exhibit C, # (4) Civil Cover Sheet, # (5) Patent/Trademark Report, # (6) Summons Forms - Unsigned, # (7) 7.1 Statement)(Farnan, Brian)

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