

Invalidity Contentions for U.S. Patent No. 6,842,796
Based on U.S. Patent No. 6,278,996 to Keith D. Richardson et al. (“Richardson”)

Based upon Plaintiff’s Complaint, Infringement Contentions, and apparent claim constructions and application of the claims to Defendants’ accused products, as best as they can be deciphered, the reference charted below anticipates or at least renders obvious the asserted claims. These invalidity contentions are not an admission by Defendants that the accused products are covered by or infringe the asserted claims, particularly when these claims are properly construed and applied. These invalidity contentions are not an admission that Defendants concede or acquiesce to any claim construction implied or suggested by Plaintiff’s Complaint or Infringement Contentions. Nor are Defendants asserting any claim construction positions through these charts, including whether the preamble is a limitation. The portions of the prior art reference cited below are not exhaustive but are exemplary in nature.

U.S. Patent No. 6,278,996 to Keith D. Richardson et al. (“Richardson”) was filed on March 30, 1998 and issued on August 21, 2001. Accordingly, Richardson is prior art under at least 35 U.S.C. § 102(e), and 103(a). As described in the following claim chart, the asserted claims of U.S. Patent No. 6,842,796 (the “’796 Patent”), are invalid as anticipated by Richardson.

Additionally, Defendants hereby incorporate by reference Ground 2 presented in *Palo Alto Networks, Inc. v. Taasera Licensing LLC*, IPR2023-00443 (PTAB).

To the extent that Richardson is found not to anticipate one or more of the asserted claims of the ’796 Patent, these claims are invalid as obvious in view of Richardson, alone or in combination with other prior art references disclosed in Defendants’ Invalidity Contentions and accompanying charts, including without limitation as set forth below.

Defendants reserve the right to amend or supplement this claim chart at a later date as more fully set forth in the Cover Pleading.

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[1P] A method of automatically processing an input sequence of data symbols, the method comprising the steps of:	To the extent the preamble of claim 1 is found to be limiting, <u>Richardson</u> it explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. <i>See, e.g.</i> , Abstract:

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	A message understanding and response system recognizes and answers messages based on the message writer's intent in unconstrained natural language text messages. The system has a set of knowledge bases with linked domain specific words, phrases, and regular expressions relating to the domain of the writer and the domain of the respondent. The writer's domain is represented by special purpose lexicons linked to representations of typical intents. The typical intents are linked to a domain knowledge base of typical and appropriate respondent actions. The system is initialized by manually classifying a training text corpus according to the respondent's policies. A lexical analysis tool with prototypical intents and phrases indicating intents is applied to the training text corpus, which includes the domain specific characteristics of both the writer and the respondent. The output results are an operable knowledge base which is a conjunction of keywords used to communicate between the two domains of the writer and the respondent. During automatic operation, the input text is pre-processed to remove irregularities in a manner similar to how the data in the training text corpus was regularized. Sets of extracted keywords and concepts are matched against the sets of stored, pre-classified keywords and concepts, producing a list of intents. The intents and other extracted features are then mapped to appropriate actions as defined by the system operator. The actions use the common linked domain knowledge terms to formulate a textual reply which is tailored to and answering the intent of writer of the input message. 1:20-26: FIELD OF INVENTION The present invention is directed to a method and apparatus for automatically recognizing and responding to intent in message text, particularly as used in a large-scale automatic message response system to examine input text and respond appropriately with output text relevant to the writer's intent. 2:51-3:34: SUMMARY OF THE INVENTION

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	An improved message text understanding and response system is provided by virtue of the present invention. In one embodiment of an understanding and response system, the system isolates the writer's critical words which relate to prototypical statements stored in the system. These in turn are mapped to models which represent understanding of the writer's possible intents. The writer's intents are then mapped to prototypical response actions as defined by the system operators. Thus the system models typical message writer requests and answers by selecting among typical responses. To accomplish this, a tokenizing identifier accepts input message text and analyzes the text against a lexicon specific to the system operator's domain, in order to generate a structured data representation of input message text. The structured data and message text is fed to an intent identifier, which uses the structured text and a knowledge base to infer the intent of the writer of the input message. Intent determination can be supplemented by verifying and augmenting input message data against databases outside the system. The identified intents, and possibly the structured data and the message text itself, are passed to a response formulator, which assembles a set of actions according to a set of business rules to formulate a response. The assembled potential actions are evaluated and executed. Examples of potential actions include responding to the writer, giving recommendations for the next step in processing, possibly outside the system, routing the message to a third party for automatic or manual response, or invoking an external system. The response message text, as well as the input message text, can be transported between the system and the writer of the message using conventional message transport techniques. The input message text can be electronic mail and may include text and other computer formats such as documents, graphic representations, formatted fields, and computer control characters. If the input message contains special formats of structured data, those are flagged for special processing which uses the additional information provided by the structure. The response actions can include: responding to the writer, creating a message summary for later review by system operators, forwarding the message for manual review, output the message to printers and facsimile machines, adding items to workflow systems, etc.

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	A further understanding of the nature and advantages of the inventions herein may be realized by reference to the remaining portions of the specification and the attached drawings. 3:54-4:33: One embodiment of the present invention provides a framework for recognizing, storing, and matching domain knowledge about input message text and the domain of the possible response actions. The input system interfaces with message text systems such as electronic mail, and the output interface encompasses a variety of appropriate response actions including message text responses, message forwarding, summaries of message text for later review, interfaces to printers and facsimile machines, and addition of items to workflow systems. A preferred embodiment of a message text understanding and response system according to the present invention is shown in the figures. Using this system, the intent of a writer of an input text message is determined from the text of the message, and the system responds to that intent in a way that is appropriate to the system operator's domain. In a simple case, a company's customer service department might use the system to automatically act on messages received from customers. The system determines the customer's intent, to the extent that it relates to the company's customer needs, and takes an action appropriate for that intent. If the intent of the customer (as evidenced by the text of the message) is a request for information on a particular product, the system might respond by sending a message back to the customer with the requested information. However, in more complex or ambivalent cases, various answers are possible. Also, the system might take an action which is not what the customer intended, but what the company intends for that situation. The system recognizes phrase types and intents from input text and maps these to domain knowledge pertaining to common kinds of intents. The intents are in turn mapped to actions. Phrase types, intents and actions have an association where each is dependent on the others for overall meaning and utility. It is the conjunction of phrase types, intents and actions which form single associations which constitute a reasonable response to an input text message. The input message arrives at the system

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via electronic mail, network transport, or any number of well-known communication methods. The source of the input message is referred to as the writer. The writer is usually a person, but might also be another computer system. The action of the system in response to the input message can take a variety of forms, such as sending a response message to the writer, forwarding the message to another person or computer system for further handling, summarizing the message for later handling, outputting to printers or facsimile machines, or adding items to workflow systems.

FIG. 1, 4:34-59:

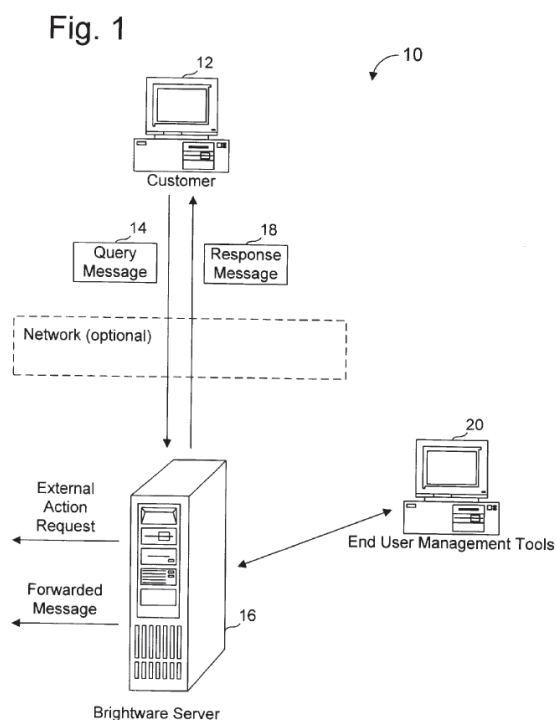


FIG. 1 illustrates a network 10 in which an embodiment of the present invention is implemented. In network 10, a customer system 12 is coupled to a server 16 either

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	directly or over a network to send input message 14. Use of customer system 12 is not limited to internal customer messaging, but can be used by anyone who wishes to communicate with the customer's company. Customer system 12 sends input message 14 to server 16 for processing. If a network is interposed between customer system 12 and server 16, it could be a local area network, the Internet, an intranet, an extranet, or the like. Server 16 is adapted to take an action based on an internal knowledge base and the text of query message 14. If the action is a response message 18, that response message 18 is sent to customer system 12. If the action is an external action or a forwarded message, those are sent to other systems (not shown). Network 10 is also shown including a management system 20 including end-user management tools for modifying the knowledge base (not shown; see FIG. 12) in server 16 according to the response policies and business practices of the operator of server 16. In the preferred embodiment, server 16 is the Brightware™ BrightResponse™ automated message understanding and response system developed by Brightware, Inc. of Novato, Calif. and preferably customized to the particular business needs of the operator of the server (the "system operator"). FIG. 2, 4:60-5:29:

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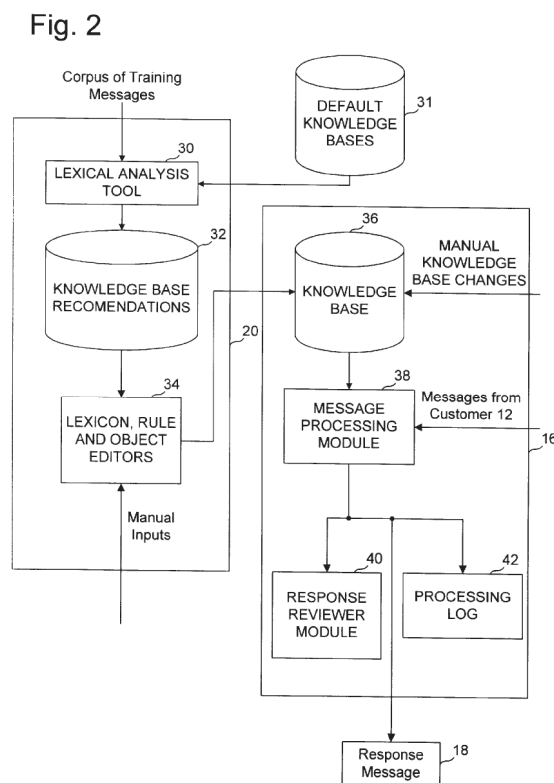
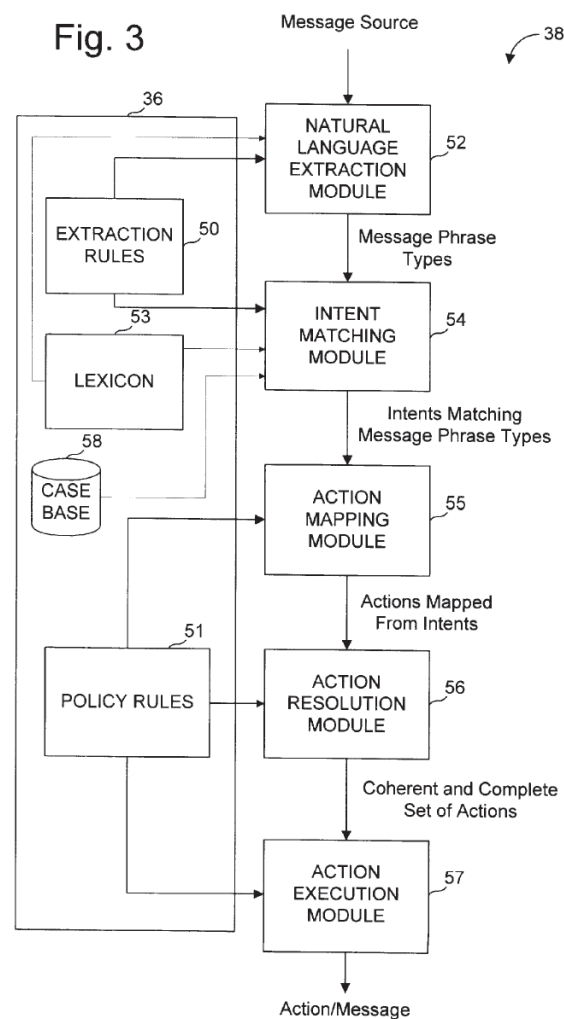
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FIG. 2 shows server 16 and management system 20 in greater detail. Management system 20 is shown comprising a lexical analysis tool 30, a default knowledge base 31, storage for knowledge base recommendations 32 and editors 34 for editing the lexicon, rules and objects. Before the regular automatic response operation, the lexical analysis tool 30 is fed a corpus of training messages and provided with default knowledge base 31 to arrive at recommendations for the contents of the knowledge base to be used in processing messages. Those recommendations can be edited by the end user (the operator of server 16) before they are included in the knowledge base. The knowledge base (36) is shown as part of server 16, along with a message processing module 38 and a response viewer module 40. Message processing

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	module 38 uses knowledge base 36 and the input message to determine what actions to take, be it sending back message 18, sending a request to response viewer module 40 and/or adding to a processing log 42. Generally, customer system 12, server 16 and management system 20 are general purpose computer systems programmed according to their use and comprising one or more central processing unit, memory (ROM and RAM), and associated peripheral equipment, such as disk drives, compact discs, printers, facsimile machines and video display terminals. The programs used to implement the programming might reside in memory, in one of the storage devices, or a combination of the two. Knowledge base 36 is maintained on a disk drive and/or memory within server 16, but might also include portions resident on remote storage systems. FIG. 3, 5:23-28:

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Referring now to FIG. 3, details of message processing module 38 and its connections to knowledge base 36 are shown therein. The details of a component of knowledge base 36, an extraction rule set 50 and an initial module of message

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processing module **38**, a natural language extraction (NLE) module **52**, are shown in FIG. 4.

FIG. 4, 3:29-34:

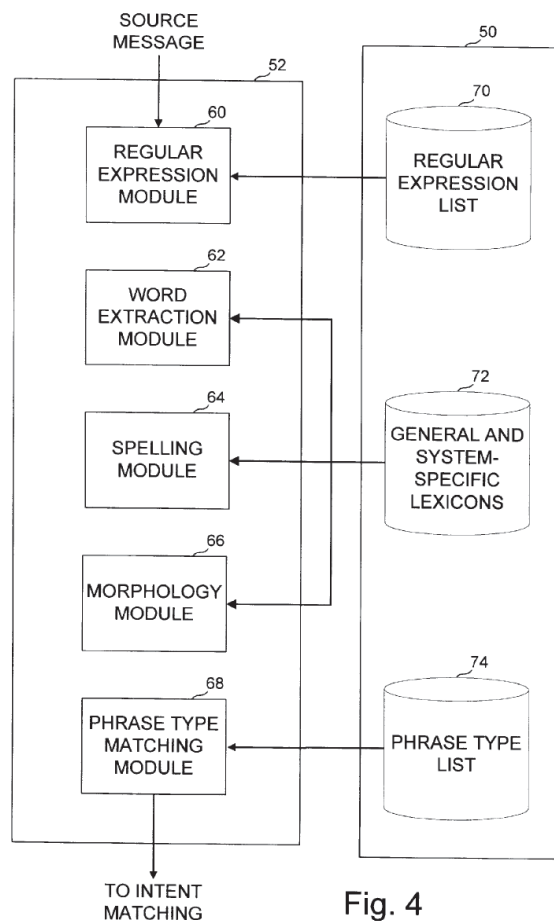


Fig. 4

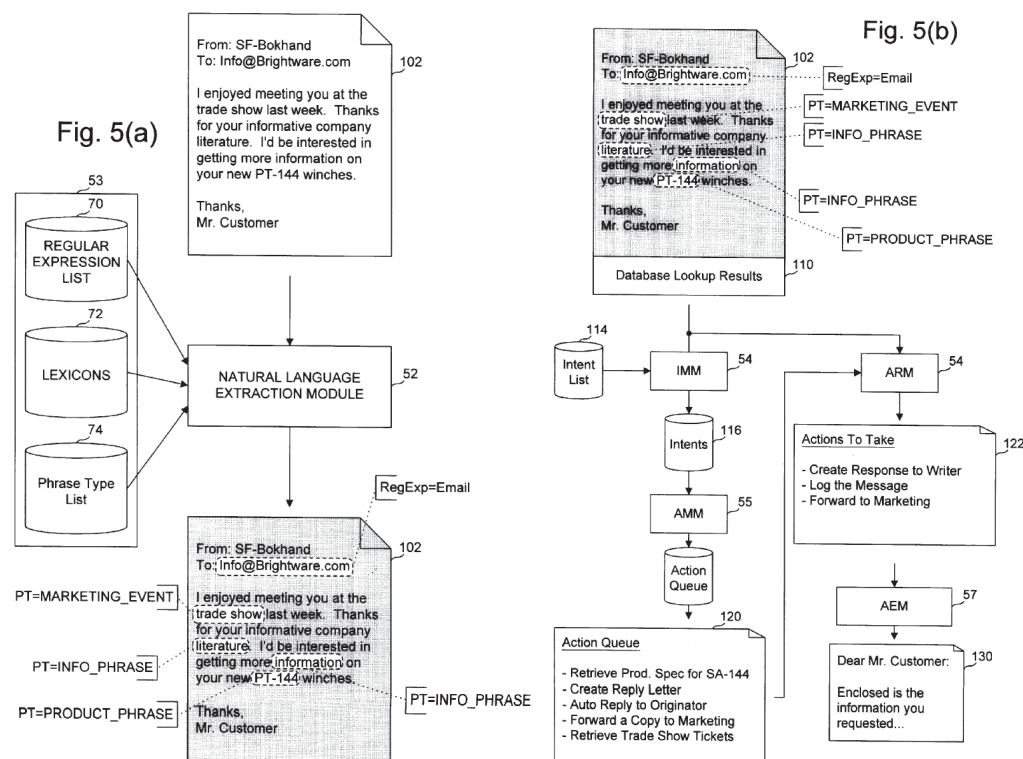
FIG. 4 shows NLE module **52** comprising a regular expression module **60**, a word extraction module **62**, spelling module **64**, a morphology module **66**, and a phrase-

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type matching of module 68. Extraction rule set 50 is shown comprising a regular expression lexicon 70 and overall lexicon 72 and a phrase type lexicon 74.

FIGS. 5(a)-(b), 8:49-57, 10:24-26:



FIGS. 5(a)-(b) show an example of an input message 102 being processed by the system described above. The input message is processed by NLE module 52 to generate tags associated with portions of the input message. As described above, the tagged elements are the elements used to process the input message; the remaining text of the message (shown by shading in FIGS. 5(a)-(b)) need not be used.

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	... In any case, once the regular expressions and phrase types are identified, the analysis process continues, as shown in FIG. 5(b). 11:24-33: The above description discloses how to make and use embodiments of an automated text understanding and response system. As explained herein, the task of interpreting message text is greatly simplified by not processing text with which no action is to be taken. In such a system, a system operator familiar with their business, but not necessarily with the details of how to construct an electronic dictionary, could compile rules mapping intents to actions and phrase types mapping to intents, as well as specifying the conditions for system operator intents. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[1A] identifying at least one regularly identifiable expression in the input sequence of data symbols, wherein the at least one regularly identifiable expression represents a pattern that is matchable in accordance with a programming language that supports such a regularly identifiable expression;	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. <i>See, e.g.,</i> 1:56-64: A typical message understanding system identifies words and other patterns in text, combining algorithmic and empirical methods to draw comparisons to known situations. Once the message is understood, a text generation system might be used to generate the response message text so that the entire communication response

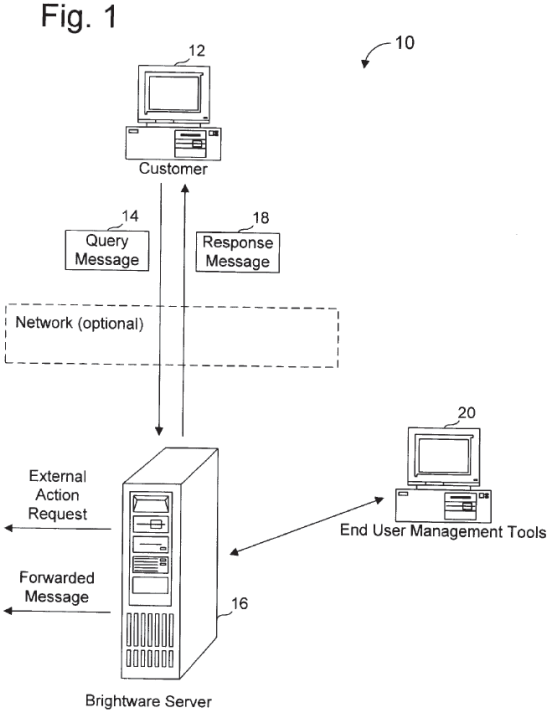
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	process is automated. The message understanding system might also include a classifier which understands the content of a message and routes or categorizes the message based on its content. FIG. 1, 4:34-59: Fig. 1  FIG. 1 illustrates a network 10 in which an embodiment of the present invention is implemented. In network 10, a customer system 12 is coupled to a server 16 either directly or over a network to send input message 14. Use of customer system 12 is not limited to internal customer messaging, but can be used by anyone who wishes to communicate with the customer's company. Customer system 12 sends input message 14 to server 16 for processing. If a network is interposed between customer

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	system 12 and server 16, it could be a local area network, the Internet, an intranet, an extranet, or the like. Server 16 is adapted to take an action based on an internal knowledge base and the text of query message 14. If the action is a response message 18, that response message 18 is sent to customer system 12. If the action is an external action or a forwarded message, those are sent to other systems (not shown). Network 10 is also shown including a management system 20 including end-user management tools for modifying the knowledge base (not shown; see FIG. 12) in server 16 according to the response policies and business practices of the operator of server 16. In the preferred embodiment, server 16 is the Brightware™ BrightResponse™ automated message understanding and response system developed by Brightware, Inc. of Novato, Calif. and preferably customized to the particular business needs of the operator of the server (the “system operator”). FIG. 2, 4:60-5:29:

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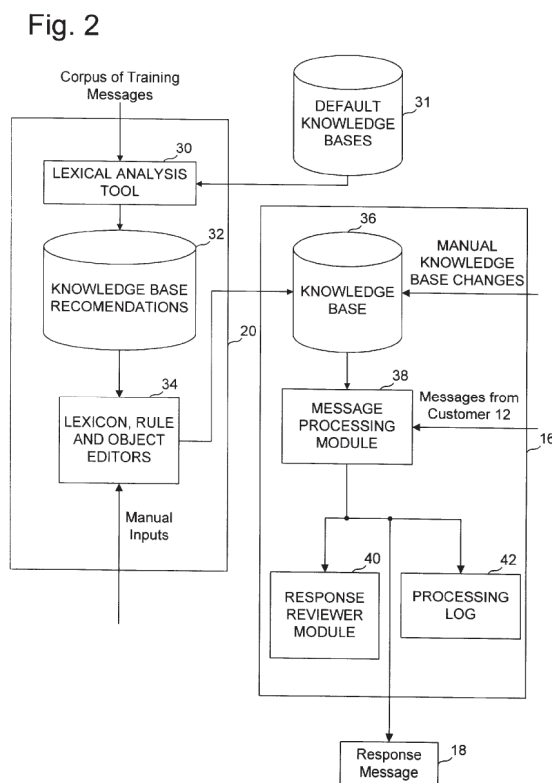
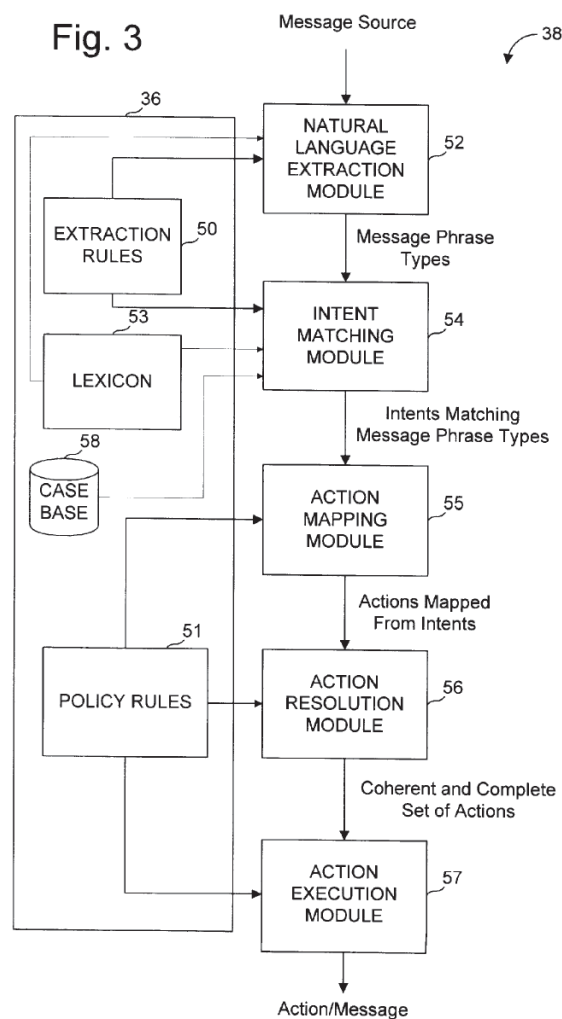
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FIG. 2 shows server 16 and management system 20 in greater detail. Management system 20 is shown comprising a lexical analysis tool 30, a default knowledge base 31, storage for knowledge base recommendations 32 and editors 34 for editing the lexicon, rules and objects. Before the regular automatic response operation, the lexical analysis tool 30 is fed a corpus of training messages and provided with default knowledge base 31 to arrive at recommendations for the contents of the knowledge base to be used in processing messages. Those recommendations can be edited by the end user (the operator of server 16) before they are included in the knowledge base. The knowledge base (36) is shown as part of server 16, along with a message processing module 38 and a response viewer module 40. Message processing

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	module 38 uses knowledge base 36 and the input message to determine what actions to take, be it sending back message 18, sending a request to response viewer module 40 and/or adding to a processing log 42. Generally, customer system 12, server 16 and management system 20 are general purpose computer systems programmed according to their use and comprising one or more central processing unit, memory (ROM and RAM), and associated peripheral equipment, such as disk drives, compact discs, printers, facsimile machines and video display terminals. The programs used to implement the programming might reside in memory, in one of the storage devices, or a combination of the two. Knowledge base 36 is maintained on a disk drive and/or memory within server 16, but might also include portions resident on remote storage systems. FIG. 3, 5:23-28:

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Referring now to FIG. 3, details of message processing module 38 and its connections to knowledge base 36 are shown therein. The details of a component of knowledge base 36, an extraction rule set 50 and an initial module of message

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processing module 38, a natural language extraction (NLE) module 52, are shown in FIG. 4.

FIG. 4, 5:29-63:

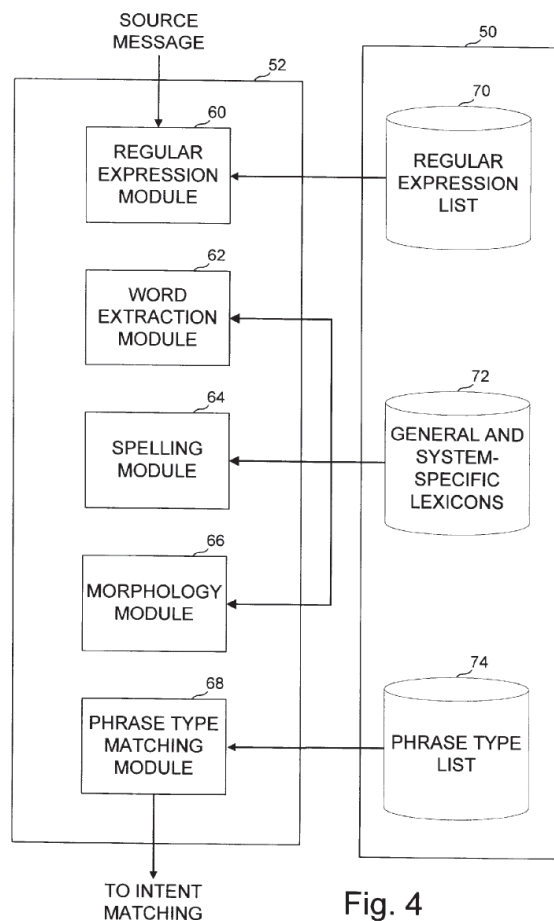


Fig. 4

FIG. 4 shows NLE module 52 comprising a regular expression module 60, a word extraction module 62, spelling module 64, a morphology module 66, and a phrase-

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	type matching of module 68. Extraction rule set 50 is shown comprising a regular expression lexicon 70 and overall lexicon 72 and a phrase type lexicon 74. The process of understanding and responding to text messages begins with accepting the input text message, which is first processed by NLE module 52. One possible ordering of modules within the NLE module shown in FIG. 4 is that the regular expression module 60 receives the input text message and reads from regular expression lexicon 70. Because the input text may include, in addition to natural language free-form text, other data constructs such as documents, graphic objects, field formatted text, and control characters, the input text is scanned for these data constructs which are not free-form text. All formatted data constructs are tagged for later use. As each module operates on the input message, it adds tags to the message. These tags are used in later stages to determine the intents present in the message and message classification. Depending on implementation, these tags may be inserted directly into the text of the message, or may be separated into an adjoining data structure. Regular expression module 60 looks for regular expressions which are known to regular expression lexicon 70. For example, regular expression lexicon may have rules for identifying regular expressions such as telephone numbers, e-mail addresses, customer account numbers, and part numbers. Regular expression module 60 identifies instances of the regular expressions represented in regular expression lexicon 70, it inserts tags into the message to indicate those regular expressions. Once a regular expressions is identified, it is excluded from further analysis in the free-form text. Modules 62, 64 and 66 then continue to operate on the free-form text. FIG. 5(a), 8:49-9:27, 9:37-61:

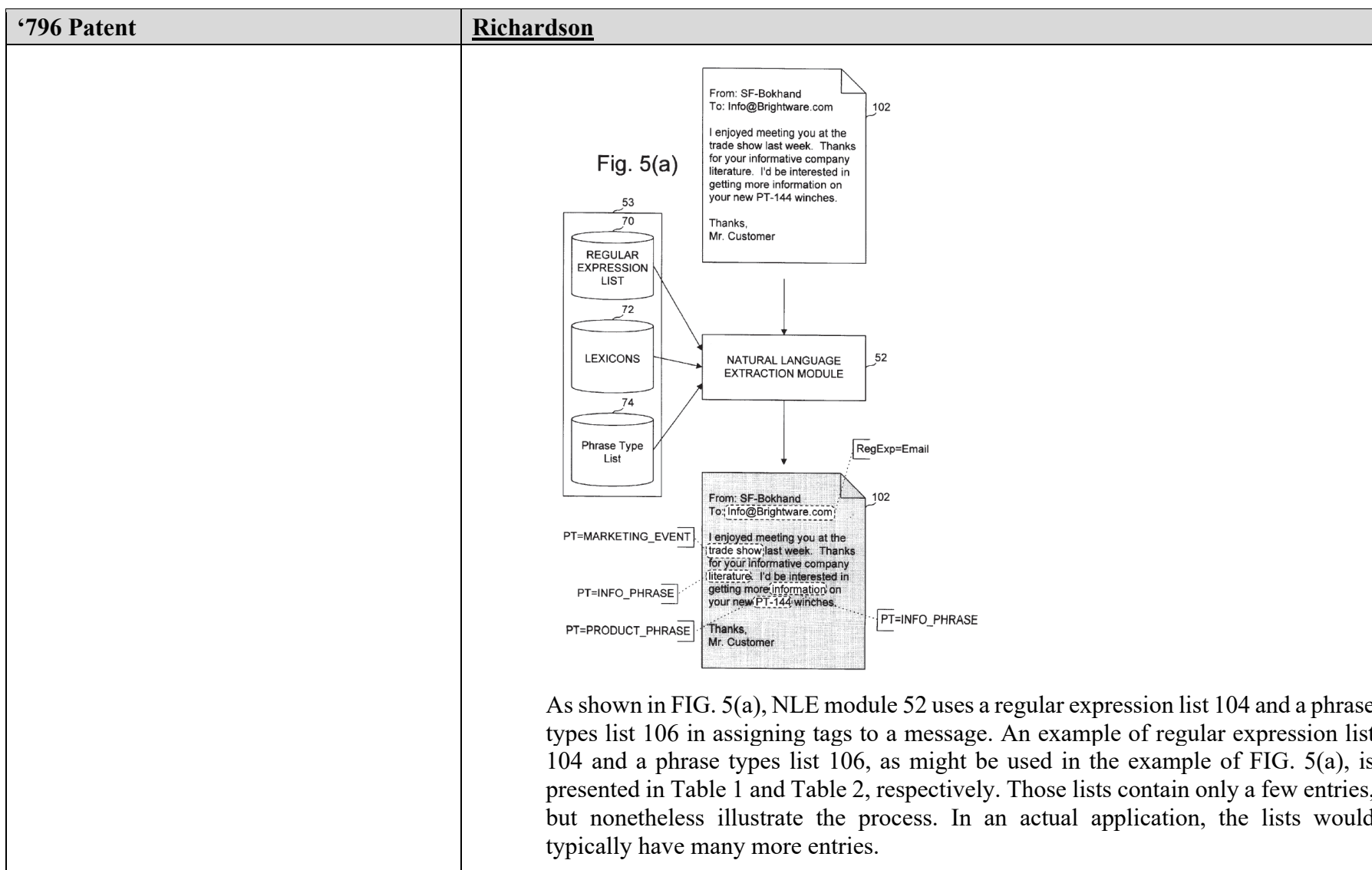


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	TABLE 1 <table> <tr> <th colspan="2">Regular Expression List</th></tr> <tr> <th>Expression</th><th>Type</th></tr> <tr> <td>http://*{ /* }></td><td>URL</td></tr> <tr> <td>### ### #####</td><td>Phone</td></tr> <tr> <td>[a-zA-Z]{@*.*</td><td>Email</td></tr> <tr> <td>...</td><td>...</td></tr> </table> TABLE 2 <table> <tr> <th colspan="2">Phrase Type List</th></tr> <tr> <th>Phrase</th><th>Type</th></tr> <tr> <td>information</td><td>INFO_PHRASE</td></tr> <tr> <td>"product literature"</td><td>INFO_PHRASE</td></tr> <tr> <td>...</td><td>...</td></tr> <tr> <td>PT-140</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>PT-141A</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>PT-143</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>PT-144</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>"trade show"</td><td>MARKETING_EVENT</td></tr> <tr> <td>...</td><td>...</td></tr> <tr> <td>#\$%%\$^!!*</td><td>PROFANITY_PHRASE</td></tr> <tr> <td>...</td><td>...</td></tr> </table> Regular expression list 104 is used to isolate and identify character strings in the message which match the expressions in the list. If a regular expression from list 104 is matched in the message, the matching text is tagged with a "RegExp" tag. In the example shown, an e-mail address is matched and tagged with a "RegExp=Email" tag. Of course, in an actual application, more complex regular expressions could be listed, such as a regular expression that identifies not only that it is an e-mail address, but that it is the "To:" address. Other regular expressions will locate telephone numbers, or even the signature lines of an e-mail message. <u>Richardson</u> further discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. <i>See, e.g.,</i> FIG. 3, 6:34-7:16:	Regular Expression List		Expression	Type	http://*{ /* }>	URL	### ### #####	Phone	[a-zA-Z]{@*.*	Email	...	...	Phrase Type List		Phrase	Type	information	INFO_PHRASE	"product literature"	INFO_PHRASE	...	...	PT-140	PRODUCT_PHRASE	PT-141A	PRODUCT_PHRASE	PT-143	PRODUCT_PHRASE	PT-144	PRODUCT_PHRASE	"trade show"	MARKETING_EVENT	...	...	#\$%%\$^!!*	PROFANITY_PHRASE	...	...
Regular Expression List																																							
Expression	Type																																						
http://*{ /* }>	URL																																						
### ### #####	Phone																																						
[a-zA-Z]{@*.*	Email																																						
...	...																																						
Phrase Type List																																							
Phrase	Type																																						
information	INFO_PHRASE																																						
"product literature"	INFO_PHRASE																																						
...	...																																						
PT-140	PRODUCT_PHRASE																																						
PT-141A	PRODUCT_PHRASE																																						
PT-143	PRODUCT_PHRASE																																						
PT-144	PRODUCT_PHRASE																																						
"trade show"	MARKETING_EVENT																																						
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	Referring back to FIG. 3, the input message with all the phrase types identified is passed to an intent matching module ("IMM") 54. In the preferred embodiment, the elements of the input message which are not associated with any identified phrase type are ignored and need not be passed on to IMM 54. IMM 54 identifies, for the phrase type(s) present in the input message, which intents are composed of the most similar phrase types. Generally, the intents are a set of typical cases for which appropriate response actions can be established. The system evaluates the match for each of the phrase types and for other data extracted from the input message text to determine which of the intents in knowledge base 36 is closest to the intents expressed in the input message text. An input message text may have several intents. These are identified and stored on an intents list associated with the input message text. In addition to identifying the intent or intents of the writer, IMM 54 also will try to identify message characteristics of interest to the system operator. These characteristics may or may not be part of the writer's intent, or even be things the writer is aware of. For example, message processing module 38 might use phrase types and other deductions to determine whether the message is in a foreign language, is a continuation of an earlier message, or is a message with legal ramifications. This characteristic classification is appended to the accumulated information about the input message. The confidence in the system's intent determination is represented by a variety of mechanisms, such as threshold scoring, which vary according to domain. In some situations only approximate information is needed, while in others information must be exact and conclusive. Important factors in confidence of the interpretation of an input message text include: the exactness of matches to a set of phrase types indicating intent, whether the information about the input text message supports ambiguous interpretations, and the sensitivity of the subject matter (for example issues of toxicology raises the sensitivity of a message). Information is stored in the system's knowledge base to understand and interpret incoming messages, but the system is also able access information in external

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	knowledge bases, which can be located at any location available on a network or internet. A typical example would be the checking account status of the writer of the incoming e-mail. This information can be used to determine response actions. Searches and reasoning processes in the system as a whole are embodied in business and linguistic rules and functions specified by the system operator, using a combination of object editors, rule editors, browsers, and other tools which manipulate the knowledge base using the system operator's terminology, rather than computer languages. FIG. 4, 5:64-6:32: Word extraction module 62 identifies the bounds of words. Most of the bounds are words can be identified by looking for one or more consecutive characters separated by a space character, but word extraction module 62 also identifies word boundaries in more unusual situations, such as where punctuation and typing errors might interfere with normal parsing. Spelling module 64 identifies incorrectly spelled words and adds tags to those words identifying the correct spelling. Characters and words not found in any phrase type or regular expression are ignored. An overall lexicon 72 contains words from a general dictionary as well as words specific to the system operator's business. Morphology module 66 uses overall lexicon 72 to transform the words into their regularized form. For example, morphology module 66 might convert the word "said" to "say" in an effort to simplify the message. As should be apparent, modules 60, 62, 64, and 66 can operate on the input message non-sequentially. For example, after the spelling module removes a typographical error, the result may match a regular expression which was not earlier matched, in which case regular expression module 60 would add additional regular expression tags when the message is revisited. Once the regular expressions are tagged, the word boundaries are identified, spelling is corrected, and text is regularized, the text is compared to a regularized list of phrase types from phrase type lexicon 74. As each phrase type is identified in the input

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	message, phrase type tags are added to the message. Depending on the lexicon used and the input message, any given word may be tagged as part of one phrase type, multiple phrase types, or no phrase type. In the preferred embodiment, none of the operations performed by the various modules of NLE module 52 delete the original text, that is, characteristics other than phrase type and regular expression can be tagged to words in addition to phrase type and regular expression. FIG. 5(a), 9:37-10:63: After the regular expressions are tagged, the remaining text is scanned for phrase matches. In the preferred embodiment, spelling is corrected to the extent possible and words are reduced to their base morphological forms so that phrase matching is simplified. The matched phrases are tagged with phrase type ("PT") tags which identify the type of phrase. When deciding on intents and actions, the system uses the phrase type and the phrase value. The corresponding phrase values are shown in FIG. 5(a) surrounded by a dotted line. Several phrase types from list 106 are shown in Table 2. The phrase type "INFO_PHRASE" is used to identify words and phrases relating to information. "PRODUCT_PHRASE" is used to identify words and phrases associated with a particular product. In this example, the product part number is spelled out ("PT-144") making detection of it simple. However, some product phrases might be more complex, such as the phrase "your new four-door passenger van" which would be identified as a phrase of type "PRODUCT_PHRASE" even though no part number was mentioned. However, if the system was set up to address customer service for a non-automotive company or the application was such that it had no actions to take in which it mattered that the message writer is interested in a car, that phrase would not match any phrase type and would thus be ignored. The other phrase type found in message 102 is "trade show" which is a "MARKETING_EVENT" phrase type. In this hypothetical, the system operator has added that phrase type to catch any messages expressing interest in the trade show so that tickets could be sent to the writer. Of course, as the message makes clear at least to a human reader, since the trade show was in the past, the system should not go so far as to actually send tickets, since it is too late to do so.

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	Also shown in Table 2 is a “PROFANITY_PHRASE” phrase type. This phrase type does not appear in message 102, but for messages which do have the profanity in them, the system can identify them. In such a case, the action taken might not relate to the intent of the message. For example, the message might contain a request for a refund and profanity. While the main intent of the writer is to get a refund, the classification of the system operator with respect to this message may well override the writer's intent. For example, the message might be classified not necessarily as a request for refund, but as a complaint. In this case, the existence of that phrase type might trigger an intent to discourage the writer or an intent to identify and respond to any complaints the customer might have. Those intents would, in turn, trigger an action of sending a polite response to the writer saying their message was classified as a complaint. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[1B] identifying at least a portion of information associated with the at least one regularly identifiable expression; and	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. <i>See, e.g.,</i> FIG. 1, 4:34-59:

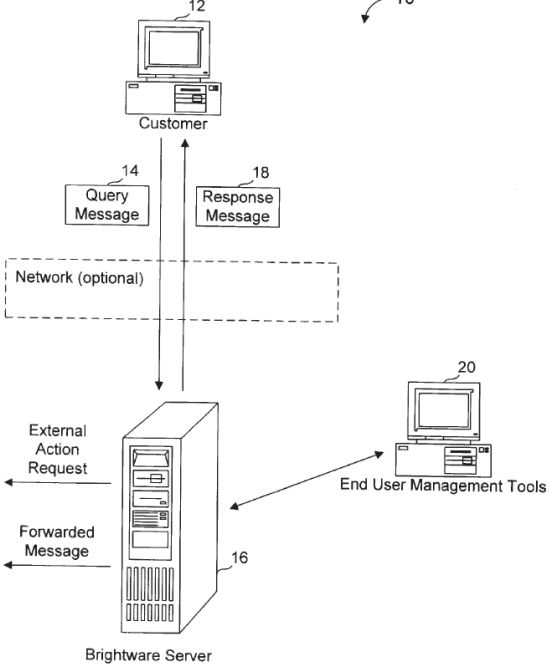
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	Fig. 1  FIG. 1 illustrates a network 10 in which an embodiment of the present invention is implemented. In network 10, a customer system 12 is coupled to a server 16 either directly or over a network to send input message 14. Use of customer system 12 is not limited to internal customer messaging, but can be used by anyone who wishes to communicate with the customer's company. Customer system 12 sends input message 14 to server 16 for processing. If a network is interposed between customer system 12 and server 16, it could be a local area network, the Internet, an intranet, an extranet, or the like. Server 16 is adapted to take an action based on an internal knowledge base and the text of query message 14. If the action is a response message

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	18, that response message 18 is sent to customer system 12. If the action is an external action or a forwarded message, those are sent to other systems (not shown). Network 10 is also shown including a management system 20 including end-user management tools for modifying the knowledge base (not shown; see FIG. 12) in server 16 according to the response policies and business practices of the operator of server 16. In the preferred embodiment, server 16 is the Brightware™ BrightResponse™ automated message understanding and response system developed by Brightware, Inc. of Novato, Calif. and preferably customized to the particular business needs of the operator of the server (the “system operator”). FIG. 2, 4:60-5:29:

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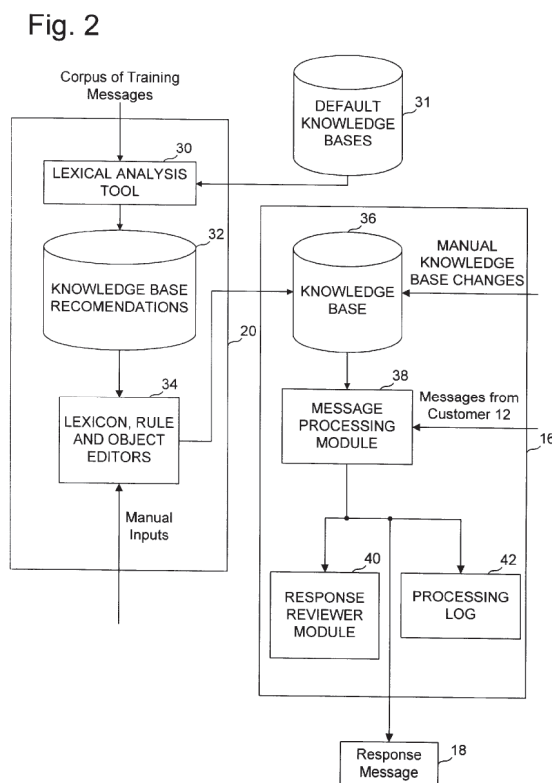
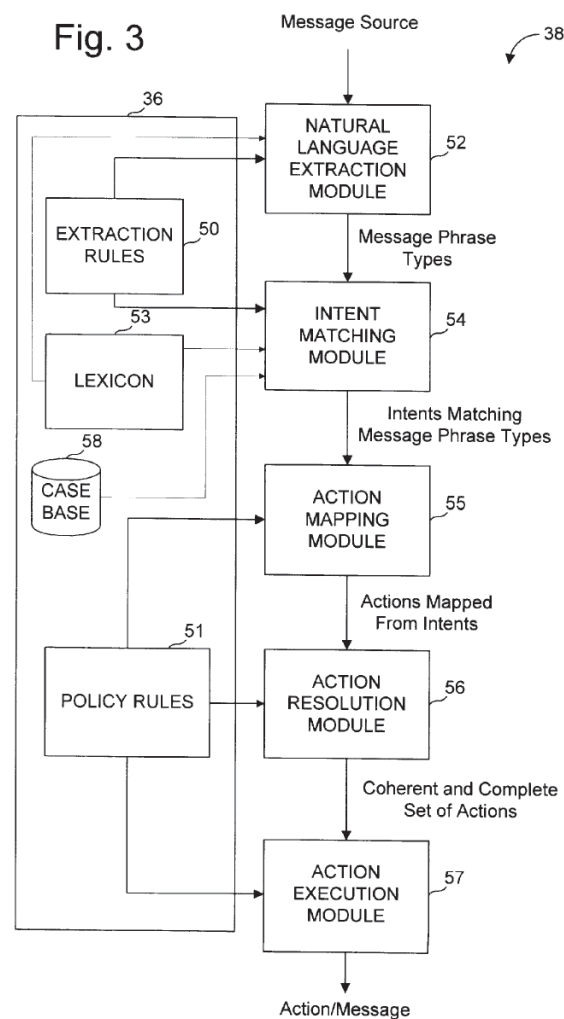
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FIG. 2 shows server 16 and management system 20 in greater detail. Management system 20 is shown comprising a lexical analysis tool 30, a default knowledge base 31, storage for knowledge base recommendations 32 and editors 34 for editing the lexicon, rules and objects. Before the regular automatic response operation, the lexical analysis tool 30 is fed a corpus of training messages and provided with default knowledge base 31 to arrive at recommendations for the contents of the knowledge base to be used in processing messages. Those recommendations can be edited by the end user (the operator of server 16) before they are included in the knowledge base. The knowledge base (36) is shown as part of server 16, along with a message processing module 38 and a response viewer module 40. Message processing

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	module 38 uses knowledge base 36 and the input message to determine what actions to take, be it sending back message 18, sending a request to response viewer module 40 and/or adding to a processing log 42. Generally, customer system 12, server 16 and management system 20 are general purpose computer systems programmed according to their use and comprising one or more central processing unit, memory (ROM and RAM), and associated peripheral equipment, such as disk drives, compact discs, printers, facsimile machines and video display terminals. The programs used to implement the programming might reside in memory, in one of the storage devices, or a combination of the two. Knowledge base 36 is maintained on a disk drive and/or memory within server 16, but might also include portions resident on remote storage systems. FIG. 3, 5:23-28:

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Referring now to FIG. 3, details of message processing module 38 and its connections to knowledge base 36 are shown therein. The details of a component of knowledge base 36, an extraction rule set 50 and an initial module of message

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processing module 38, a natural language extraction (NLE) module 52, are shown in FIG. 4.

FIG. 4, 3:29-34:

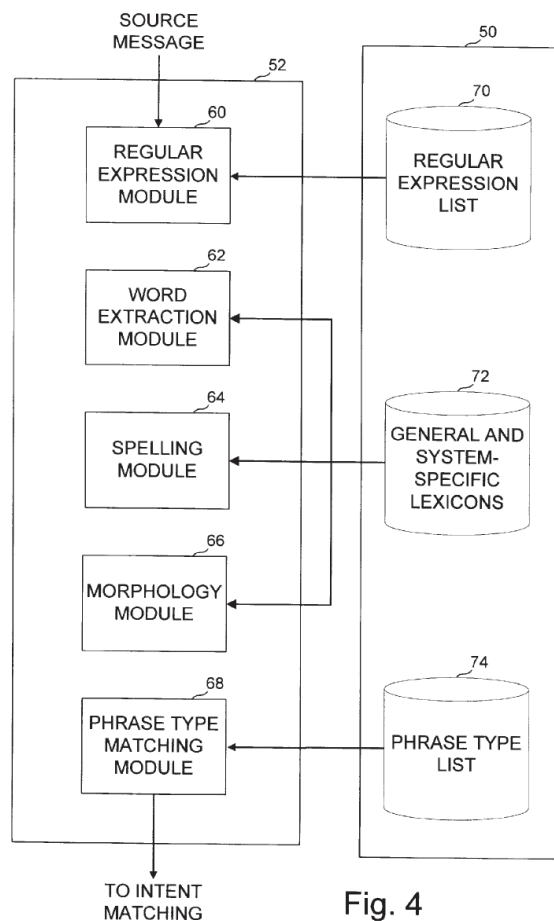


Fig. 4

FIG. 4 shows NLE module 52 comprising a regular expression module 60, a word extraction module 62, spelling module 64, a morphology module 66, and a phrase-

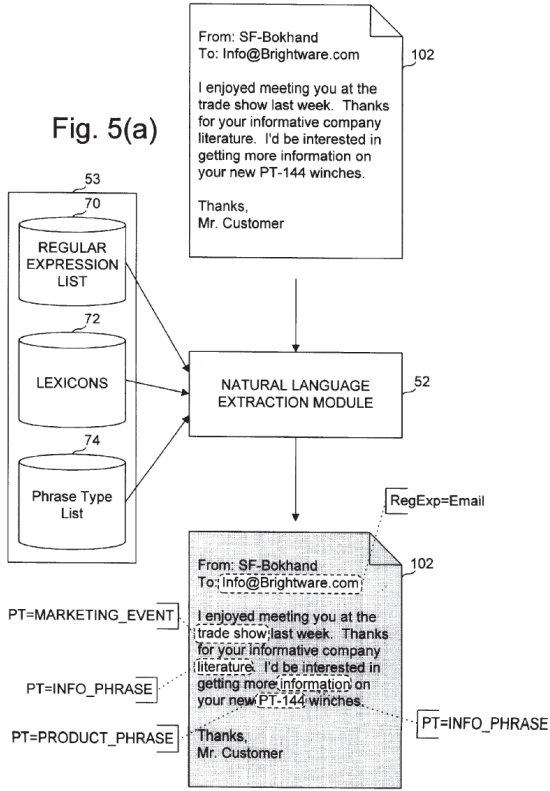
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	type matching of module 68. Extraction rule set 50 is shown comprising a regular expression lexicon 70 and overall lexicon 72 and a phrase type lexicon 74. FIG. 5, 8:50-9:27:  As shown in FIG. 5(a), NLE module 52 uses a regular expression list 104 and a phrase types list 106 in assigning tags to a message. An example of regular expression list 104 and a phrase types list 106, as might be used in the example of FIG. 5(a), is presented in Table 1 and Table 2, respectively. Those lists contain only

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	a few entries, but nonetheless illustrate the process. In an actual application, the lists would typically have many more entries. TABLE 1 <table> <tr> <th colspan="2">Regular Expression List</th></tr> <tr> <th>Expression</th><th>Type</th></tr> <tr> <td>http://*{/}*}></td><td>URL</td></tr> <tr> <td>###.###.####</td><td>Phone</td></tr> <tr> <td>[a-zA-Z]{1,25}@.*</td><td>Email</td></tr> <tr> <td>...</td><td>...</td></tr> </table> TABLE 2 <table> <tr> <th colspan="2">Phrase Type List</th></tr> <tr> <th>Phrase</th><th>Type</th></tr> <tr> <td>information</td><td>INFO_PHRASE</td></tr> <tr> <td>"product literature"</td><td>INFO_PHRASE</td></tr> <tr> <td>...</td><td>...</td></tr> <tr> <td>PT-140</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>PT-141A</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>PT-143</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>PT-144</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>"trade show"</td><td>MARKETING_EVENT</td></tr> <tr> <td>...</td><td>...</td></tr> <tr> <td>#\$%%\$^!!*</td><td>PROFANITY_PHRASE</td></tr> <tr> <td>...</td><td>...</td></tr> </table> Regular expression list 104 is used to isolate and identify character strings in the message which match the expressions in the list. If a regular expression from list 104 is matched in the message, the matching text is tagged with a "RegExp" tag. In the example shown, an e-mail address is matched and tagged with a "RegExp=Email" tag. Of course, in an actual application, more complex regular expressions could be listed, such as a regular expression that identifies not only that it is an e-mail address, but that it is the "To:" address. Other regular expressions will locate telephone numbers, or even the signature lines of an e-mail message. <u>Richardson</u> further discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. <i>See, e.g.,</i>	Regular Expression List		Expression	Type	http://*{/}*}>	URL	###.###.####	Phone	[a-zA-Z]{1,25}@.*	Email	...	...	Phrase Type List		Phrase	Type	information	INFO_PHRASE	"product literature"	INFO_PHRASE	...	...	PT-140	PRODUCT_PHRASE	PT-141A	PRODUCT_PHRASE	PT-143	PRODUCT_PHRASE	PT-144	PRODUCT_PHRASE	"trade show"	MARKETING_EVENT	...	...	#\$%%\$^!!*	PROFANITY_PHRASE	...	...
Regular Expression List																																							
Expression	Type																																						
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###.###.####	Phone																																						
[a-zA-Z]{1,25}@.*	Email																																						
...	...																																						
Phrase Type List																																							
Phrase	Type																																						
information	INFO_PHRASE																																						
"product literature"	INFO_PHRASE																																						
...	...																																						
PT-140	PRODUCT_PHRASE																																						
PT-141A	PRODUCT_PHRASE																																						
PT-143	PRODUCT_PHRASE																																						
PT-144	PRODUCT_PHRASE																																						
"trade show"	MARKETING_EVENT																																						
...	...																																						
#\$%%\$^!!*	PROFANITY_PHRASE																																						
...	...																																						

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	FIG. 3, 6:34-7:17: Referring back to FIG. 3, the input message with all the phrase types identified is passed to an intent matching module ("IMM") 54. In the preferred embodiment, the elements of the input message which are not associated with any identified phrase type are ignored and need not be passed on to IMM 54. IMM 54 identifies, for the phrase type(s) present in the input message, which intents are composed of the most similar phrase types. Generally, the intents are a set of typical cases for which appropriate response actions can be established. The system evaluates the match for each of the phrase types and for other data extracted from the input message text to determine which of the intents in knowledge base 36 is closest to the intents expressed in the input message text. An input message text may have several intents. These are identified and stored on an intents list associated with the input message text. In addition to identifying the intent or intents of the writer, IMM 54 also will try to identify message characteristics of interest to the system operator. These characteristics may or may not be part of the writer's intent, or even be things the writer is aware of. For example, message processing module 38 might use phrase types and other deductions to determine whether the message is in a foreign language, is a continuation of an earlier message, or is a message with legal ramifications. This characteristic classification is appended to the accumulated information about the input message. The confidence in the system's intent determination is represented by a variety of mechanisms, such as threshold scoring, which vary according to domain. In some situations only approximate information is needed, while in others information must be exact and conclusive. Important factors in confidence of the interpretation of an input message text include: the exactness of matches to a set of phrase types indicating intent, whether the information about the input text message supports ambiguous interpretations, and the sensitivity of the subject matter (for example issues of toxicology raises the sensitivity of a message).

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	Information is stored in the system's knowledge base to understand and interpret incoming messages, but the system is also able access information in external knowledge bases, which can be located at any location available on a network or internet. A typical example would be the checking account status of the writer of the incoming e-mail. This information can be used to determine response actions. Searches and reasoning processes in the system as a whole are embodied in business and linguistic rules and functions specified by the system operator, using a combination of object editors, rule editors, browsers, and other tools which manipulate the knowledge base using the system operator's terminology, rather than computer languages. FIG. 5(a), 9:37-10:19: After the regular expressions are tagged, the remaining text is scanned for phrase matches. In the preferred embodiment, spelling is corrected to the extent possible and words are reduced to their base morphological forms so that phrase matching is simplified. The matched phrases are tagged with phrase type ("PT") tags which identify the type of phrase. When deciding on intents and actions, the system uses the phrase type and the phrase value. The corresponding phrase values are shown in FIG. 5(a) surrounded by a dotted line. Several phrase types from list 106 are shown in Table 2. The phrase type "INFO_PHRASE" is used to identify words and phrases relating to information. "PRODUCT_PHRASE" is used to identify words and phrases associated with a particular product. In this example, the product part number is spelled out ("PT-144") making detection of it simple. However, some product phrases might be more complex, such as the phrase "your new four-door passenger van" which would be identified as a phrase of type "PRODUCT_PHRASE" even though no part number was mentioned. However, if the system was set up to address customer service for a non-automotive company or the application was such that it had no actions to take in which it mattered that the message writer is interested in a car, that phrase would not match any phrase type and would thus be ignored. The other phrase type found in message 102 is "trade show" which is a "MARKETING_EVENT" phrase type. In this hypothetical, the system operator has

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	added that phrase type to catch any messages expressing interest in the trade show so that tickets could be sent to the writer. Of course, as the message makes clear at least to a human reader, since the trade show was in the past, the system should not go so far as to actually send tickets, since it is too late to do so. Also shown in Table 2 is a "PROFANITY_PHRASE" phrase type. This phrase type does not appear in message 102, but for messages which do have the profanity in them, the system can identify them. In such a case, the action taken might not relate to the intent of the message. For example, the message might contain a request for a refund and profanity. While the main intent of the writer is to get a refund, the classification of the system operator with respect to this message may well override the writer's intent. For example, the message might be classified not necessarily as a request for refund, but as a complaint. In this case, the existence of that phrase type might trigger an intent to discourage the writer or an intent to identify and respond to any complaints the customer might have. Those intents would, in turn, trigger an action of sending a polite response to the writer saying their message was classified as a complaint. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[1C] extracting the portion of information.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. <i>See, e.g.,</i> FIG. 1, 4:34-59:

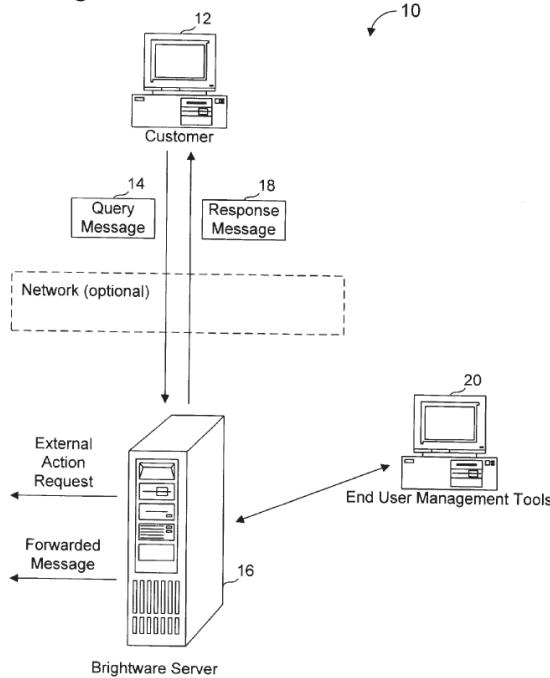
'796 Patent	<u>Richardson</u>
	Fig. 1  FIG. 1 illustrates a network 10 in which an embodiment of the present invention is implemented. In network 10, a customer system 12 is coupled to a server 16 either directly or over a network to send input message 14. Use of customer system 12 is not limited to internal customer messaging, but can be used by anyone who wishes to communicate with the customer's company. Customer system 12 sends input message 14 to server 16 for processing. If a network is interposed between customer system 12 and server 16, it could be a local area network, the Internet, an intranet, an extranet, or the like. Server 16 is adapted to take an action based on an internal knowledge base and the text of query message 14. If the action is a response message

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	18, that response message 18 is sent to customer system 12. If the action is an external action or a forwarded message, those are sent to other systems (not shown). Network 10 is also shown including a management system 20 including end-user management tools for modifying the knowledge base (not shown; see FIG. 12) in server 16 according to the response policies and business practices of the operator of server 16. In the preferred embodiment, server 16 is the Brightware™ BrightResponse™ automated message understanding and response system developed by Brightware, Inc. of Novato, Calif. and preferably customized to the particular business needs of the operator of the server (the “system operator”). FIG. 2, 4:60-5:29:

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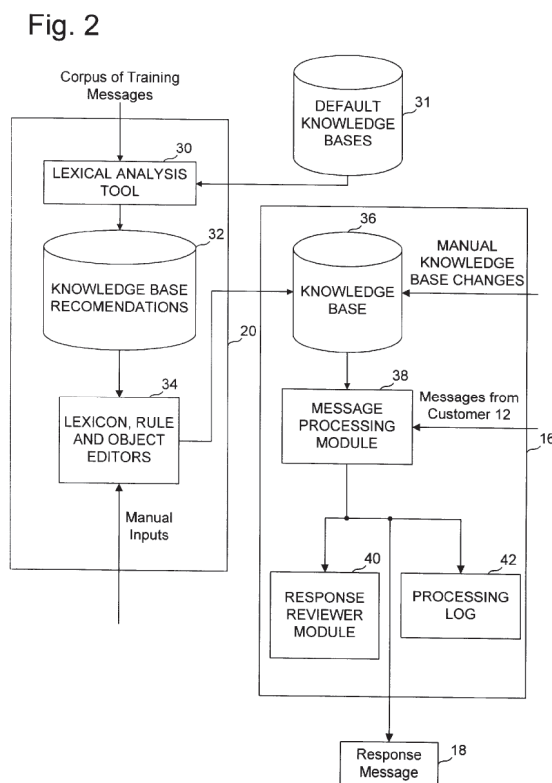
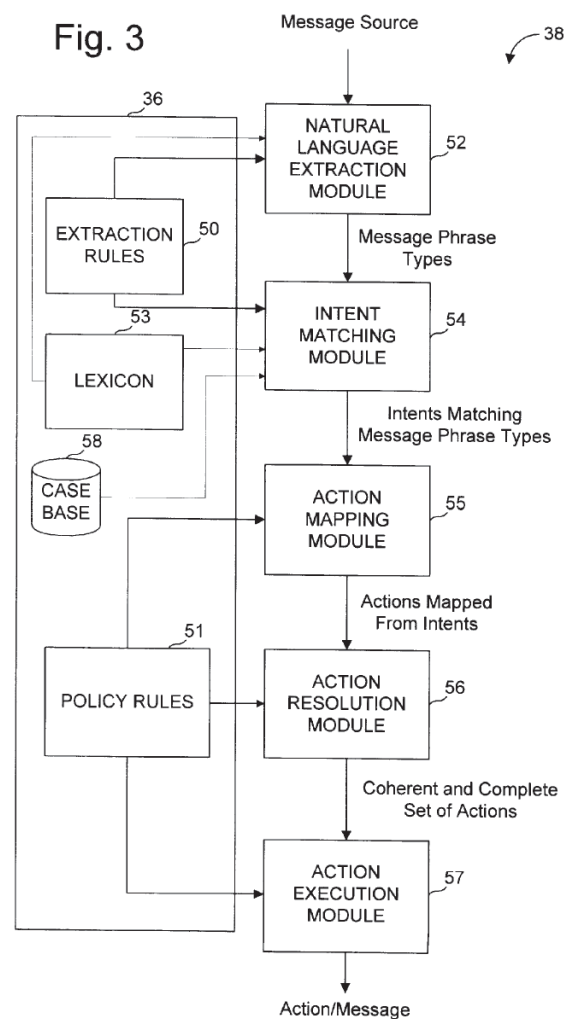
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FIG. 2 shows server 16 and management system 20 in greater detail. Management system 20 is shown comprising a lexical analysis tool 30, a default knowledge base 31, storage for knowledge base recommendations 32 and editors 34 for editing the lexicon, rules and objects. Before the regular automatic response operation, the lexical analysis tool 30 is fed a corpus of training messages and provided with default knowledge base 31 to arrive at recommendations for the contents of the knowledge base to be used in processing messages. Those recommendations can be edited by the end user (the operator of server 16) before they are included in the knowledge base. The knowledge base (36) is shown as part of server 16, along with a message processing module 38 and a response viewer module 40. Message processing

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	module 38 uses knowledge base 36 and the input message to determine what actions to take, be it sending back message 18, sending a request to response viewer module 40 and/or adding to a processing log 42. Generally, customer system 12, server 16 and management system 20 are general purpose computer systems programmed according to their use and comprising one or more central processing unit, memory (ROM and RAM), and associated peripheral equipment, such as disk drives, compact discs, printers, facsimile machines and video display terminals. The programs used to implement the programming might reside in memory, in one of the storage devices, or a combination of the two. Knowledge base 36 is maintained on a disk drive and/or memory within server 16, but might also include portions resident on remote storage systems. FIG. 3, 5:23-28:

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Referring now to FIG. 3, details of message processing module 38 and its connections to knowledge base 36 are shown therein. The details of a component of knowledge base 36, an extraction rule set 50 and an initial module of message

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	processing module 38, a natural language extraction (NLE) module 52, are shown in FIG. 4. 7:17-67: Once the intents are identified, the message and the intents list is passed to an action mapping module ("AMM") 55, which generates a list of proposed actions. In the course of processing the input message text, decisions are made to add actions to a list for later evaluation. Actions are selected from among those deemed appropriate by the system operator, as expressed in a policy rule set 51. These tentative actions are discovered as the message is processed, and the actions are stored on an action list until all the intents of the message and other cogent information is identified. Once all plausible actions are tentatively identified, the actions are examined to determine if they are complete, correct and do not conflict with each other. For example, a tentative, general action which specifies the writer be answered automatically might conflict with an tentative action specifying that the specific intent must be answered manually. Actions which cannot, or should not, be executed are marked for non-execution and the remaining actions are executed. This process of resolving the correctness and consistency of the actions is performed by an action resolution module ("ARM") 56 which has as its input the intents identified in the message, as well as results from application of the policy rule set 51. If one of the actions is a response to the writer, the composition of the response message text may include an explicit recitation of the writer's intent as determined by the system, as well as other phrases and extracted information relating to those intents. The actions taken are determined by ARM 56, and executed by an action execution module ("AEM") 57, with consultation of policy rule set 51. Depending on the list of actions, multiple responses and/or other actions may be initiated by AEM 57. In the preferred embodiment, a response to the writer will give an indication of how the writer's message was interpreted, in addition to giving the response. Thus, a response message may include a paraphrasing of the system's understanding of the intents, a statement about the nature of the response, and the response itself. In some systems, for debugging purposes or legal reasons, the input message text, response

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results and other processing information might be logged for later analysis, reporting or record keeping.

FIG. 4, 3:29-34:

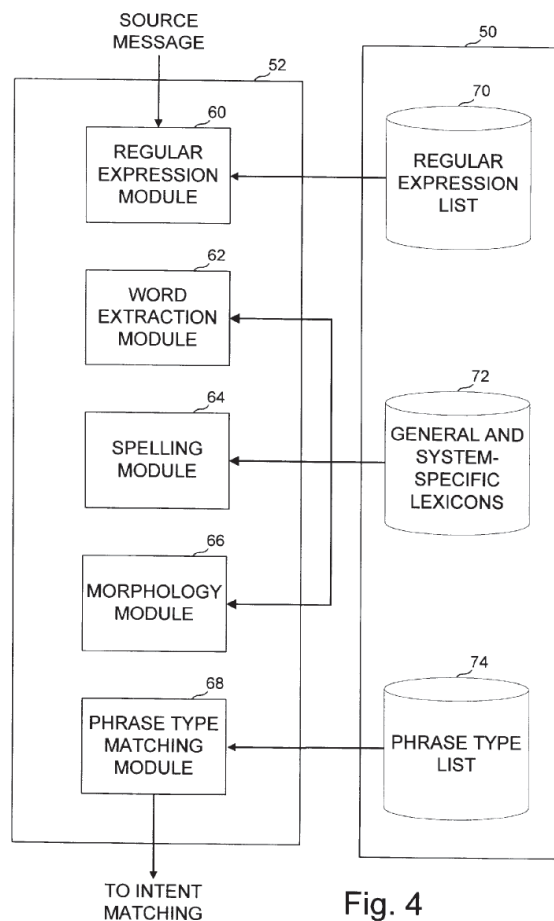


Fig. 4

FIG. 4 shows NLE module 52 comprising a regular expression module 60, a word extraction module 62, spelling module 64, a morphology module 66, and a phrase-

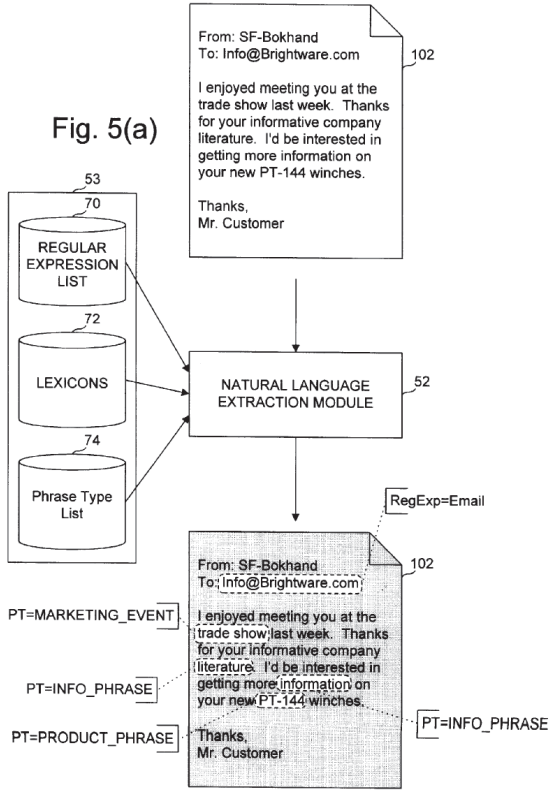
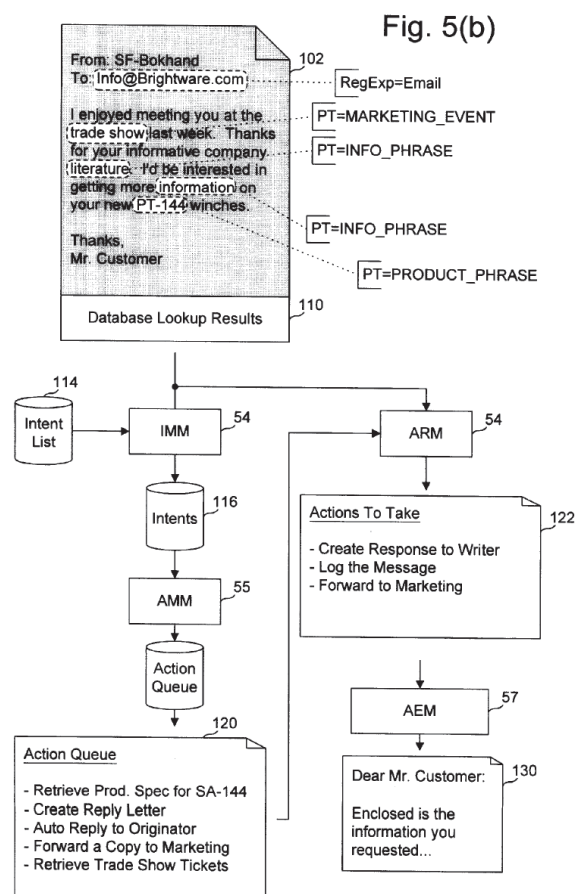
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	type matching of module 68. Extraction rule set 50 is shown comprising a regular expression lexicon 70 and overall lexicon 72 and a phrase type lexicon 74. FIG. 5(a), 8:50-52, 10:24-35:  As shown in FIG. 5(a), NLE module 52 uses a regular expression list 104 and a phrase types list 106 in assigning tags to a message. ...

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	In any case, once the regular expressions and phrase types are identified, the analysis process continues, as shown in FIG. 5(b). Using the tagged phrases and regular expressions, the system performs any necessary database lookups. For example, a database lookup might be used to determine the customer's full identity just from a name in the message or the e-mail address. These database lookup results and other additional data fields are attached to the message as additional data 110. Of course, the additional data does not need to be explicitly attached to the message, but could be merely associated with a message or have a pointer to a message. FIG. 5(b), 11:14-23:

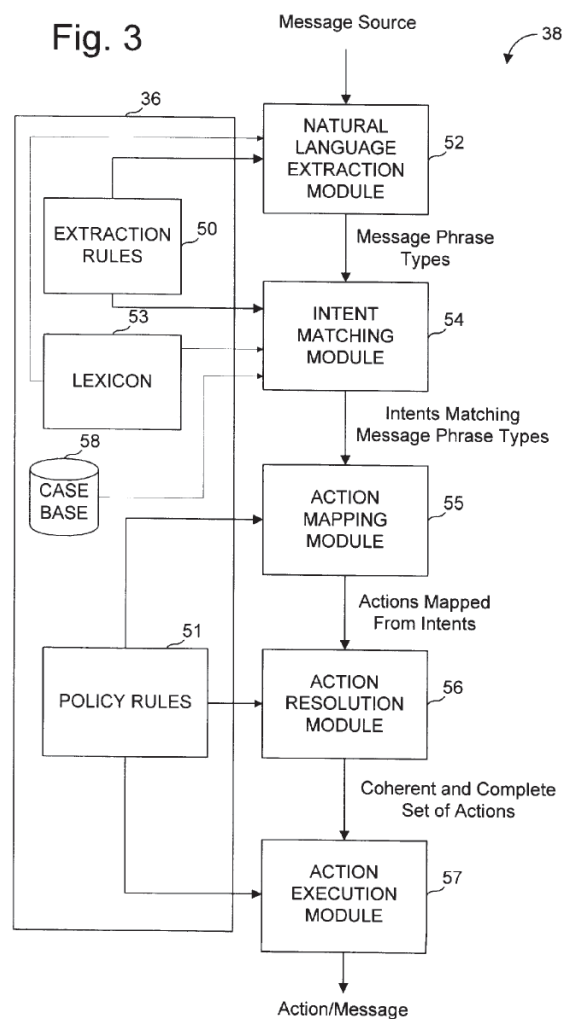
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Once the actions to be taken are resolved, a list **122** of actions to take is passed to action execution module ("AEM") **57**, which performs the actions listed on list **122**, such as creating a response **130**. A preferred response **130** includes all or part of the original message, information satisfying the writer's intent (if the writer's intent was to get a response of some sort) and an indication of how the message was interpreted.

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	One way to show how the message was interpreted is to show the tags and the values for tagged regular expressions and tagged phrase types. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[2] The method of claim 1, wherein the regularly identifiable expression identifying step comprises comparing the input sequence of data symbols to one or more previously-stored regularly identifiable expressions to determine if there is a match between a portion of the input sequence and at least one of the previously-stored regularly identifiable expressions.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. 2:51-63: SUMMARY OF THE INVENTION An improved message text understanding and response system is provided by virtue of the present invention. In one embodiment of an understanding and response system, the system isolates the writer's critical words which relate to prototypical statements stored in the system. These in turn are mapped to models which represent understanding of the writer's possible intents. The writer's intents are then mapped to prototypical response actions as defined by the system operators. Thus the system models typical message writer requests and answers by selecting among typical responses. FIG. 3, 6:50-59:

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In addition to identifying the intent or intents of the writer, IMM 54 also will try to identify message characteristics of interest to the system operator. These characteristics may or may not be part of the writer's intent, or even be things the

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	writer is aware of. For example, message processing module 38 might use phrase types and other deductions to determine whether the message is in a foreign language, is a continuation of an earlier message, or is a message with legal ramifications. This characteristic classification is appended to the accumulated information about the input message. FIG. 4, 5:29-6:32:

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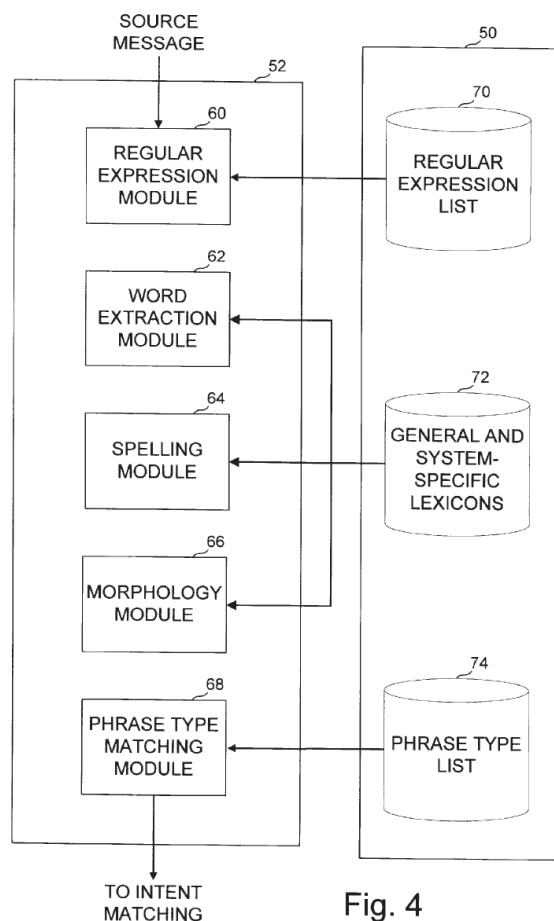
Richardson

Fig. 4

FIG. 4 shows NLE module 52 comprising a regular expression module 60, a word extraction module 62, spelling module 64, a morphology module 66, and a phrase-type matching of module 68. Extraction rule set 50 is shown comprising a regular expression lexicon 70 and overall lexicon 72 and a phrase type lexicon 74. The process of understanding and responding to text messages begins with accepting the input text message, which is first processed by NLE module 52. One possible

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	ordering of modules within the NLE module shown in FIG. 4 is that the regular expression module 60 receives the input text message and reads from regular expression lexicon 70. Because the input text may include, in addition to natural language free-form text, other data constructs such as documents, graphic objects, field formatted text, and control characters, the input text is scanned for these data constructs which are not free-form text. All formatted data constructs are tagged for later use. As each module operates on the input message, it adds tags to the message. These tags are used in later stages to determine the intents present in the message and message classification. Depending on implementation, these tags may be inserted directly into the text of the message, or may be separated into an adjoining data structure. Regular expression module 60 looks for regular expressions which are known to regular expression lexicon 70. For example, regular expression lexicon may have rules for identifying regular expressions such as telephone numbers, e-mail addresses, customer account numbers, and part numbers. Regular expression module 60 identifies instances of the regular expressions represented in regular expression lexicon 70, it inserts tags into the message to indicate those regular expressions. Once a regular expressions is identified, it is excluded from further analysis in the free-form text. Modules 62, 64 and 66 then continue to operate on the free-form text. Word extraction module 62 identifies the bounds of words. Most of the bounds are words can be identified by looking for one or more consecutive characters separated by a space character, but word extraction module 62 also identifies word boundaries in more unusual situations, such as where punctuation and typing errors might interfere with normal parsing. Spelling module 64 identifies incorrectly spelled words and adds tags to those words identifying the correct spelling. Characters and words not found in any phrase type or regular expression are ignored. An overall lexicon 72 contains words from a general dictionary as well as words specific to the system operator's business. Morphology module 66 uses overall lexicon 72 to transform the words into their regularized form. For example, morphology module 66 might convert the word "said" to "say" in an effort to simplify the message. As should be apparent,

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	modules 60, 62, 64, and 66 can operate on the input message non-sequentially. For example, after the spelling module removes a typographical error, the result may match a regular expression which was not earlier matched, in which case regular expression module 60 would add additional regular expression tags when the message is revisited. Once the regular expressions are tagged, the word boundaries are identified, spelling is corrected, and text is regularized, the text is compared to a regularized list of phrase types from phrase type lexicon 74. As each phrase type is identified in the input message, phrase type tags are added to the message. Depending on the lexicon used and the input message, any given word may be tagged as part of one phrase type, multiple phrase types, or no phrase type. In the preferred embodiment, none of the operations performed by the various modules of NLE module 52 delete the original text, that is, characteristics other than phrase type and regular expression can be tagged to words in addition to phrase type and regular expression. FIG. 5(a), 8:50-9:27:

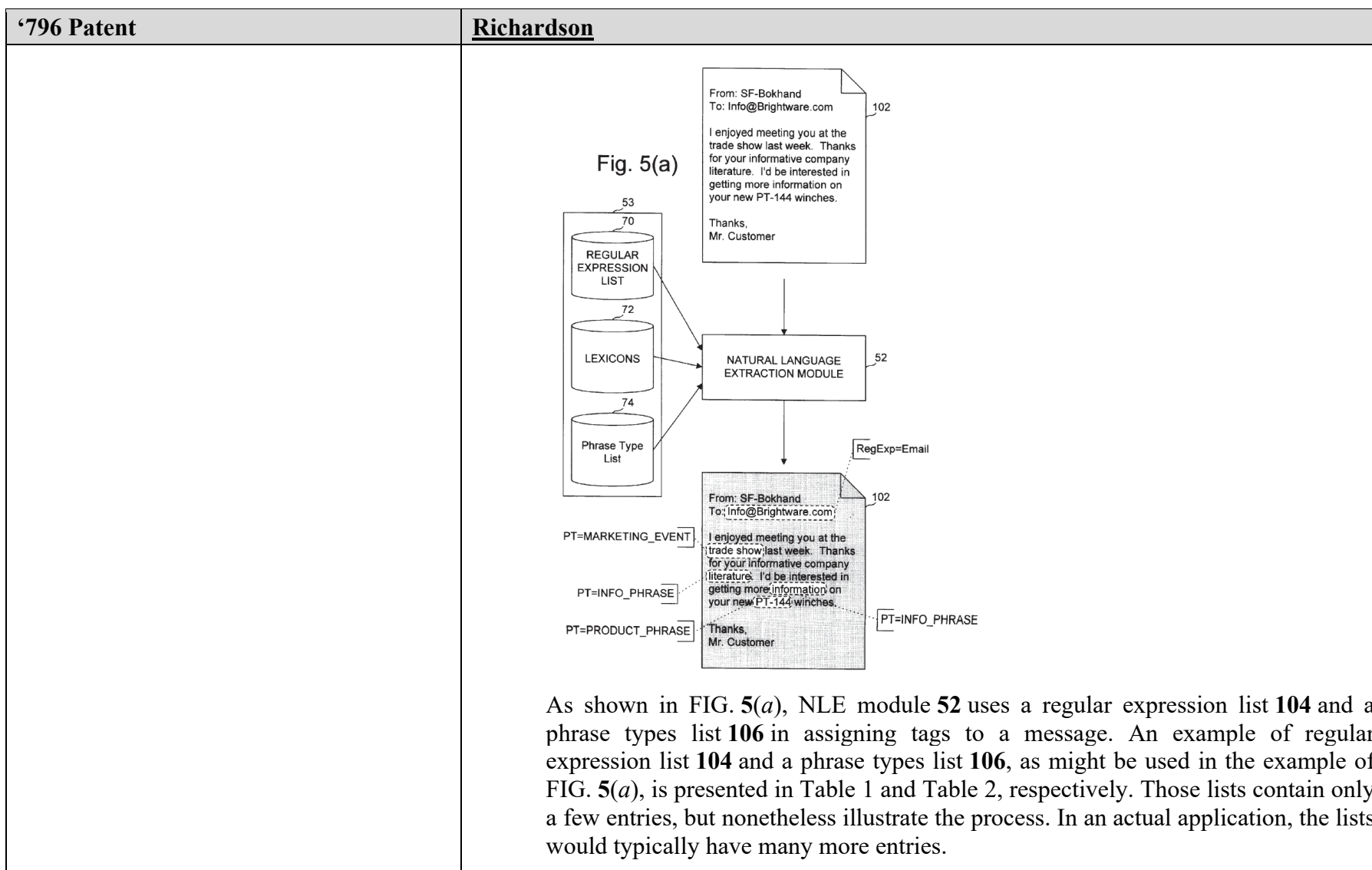


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	TABLE 1 Regular Expression List <table> <tr> <th>Expression</th><th>Type</th></tr> <tr> <td>http://*{ /* }></td><td>URL</td></tr> <tr> <td>### ###</td><td>Phone</td></tr> <tr> <td>[a-zA-Z]@*.*</td><td>Email</td></tr> <tr> <td>...</td><td>...</td></tr> </table> TABLE 2 Phrase Type List <table> <tr> <th>Phrase</th><th>Type</th></tr> <tr> <td>information</td><td>INFO_PHRASE</td></tr> <tr> <td>"product literature"</td><td>INFO_PHRASE</td></tr> <tr> <td>...</td><td>...</td></tr> <tr> <td>PT-140</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>PT-141A</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>PT-143</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>PT-144</td><td>PRODUCT_PHRASE</td></tr> <tr> <td>"trade show"</td><td>MARKETING_EVENT</td></tr> <tr> <td>...</td><td>...</td></tr> <tr> <td>#\$%%\$^!!*</td><td>PROFANITY_PHRASE</td></tr> <tr> <td>...</td><td>...</td></tr> </table> Regular expression list 104 is used to isolate and identify character strings in the message which match the expressions in the list. If a regular expression from list 104 is matched in the message, the matching text is tagged with a "RegExp" tag. In the example shown, an e-mail address is matched and tagged with a "RegExp=Email" tag. Of course, in an actual application, more complex regular expressions could be listed, such as a regular expression that identifies not only that it is an e-mail address, but that it is the "To:" address. Other regular expressions will locate telephone numbers, or even the signature lines of an e-mail message. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common	Expression	Type	http://*{ /* }>	URL	### ###	Phone	[a-zA-Z]@*.*	Email	...	...	Phrase	Type	information	INFO_PHRASE	"product literature"	INFO_PHRASE	...	...	PT-140	PRODUCT_PHRASE	PT-141A	PRODUCT_PHRASE	PT-143	PRODUCT_PHRASE	PT-144	PRODUCT_PHRASE	"trade show"	MARKETING_EVENT	...	...	#\$%%\$^!!*	PROFANITY_PHRASE	...	...
Expression	Type																																		
http://*{ /* }>	URL																																		
### ###	Phone																																		
[a-zA-Z]@*.*	Email																																		
...	...																																		
Phrase	Type																																		
information	INFO_PHRASE																																		
"product literature"	INFO_PHRASE																																		
...	...																																		
PT-140	PRODUCT_PHRASE																																		
PT-141A	PRODUCT_PHRASE																																		
PT-143	PRODUCT_PHRASE																																		
PT-144	PRODUCT_PHRASE																																		
"trade show"	MARKETING_EVENT																																		
...	...																																		
#\$%%\$^!!*	PROFANITY_PHRASE																																		
...	...																																		

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	sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.

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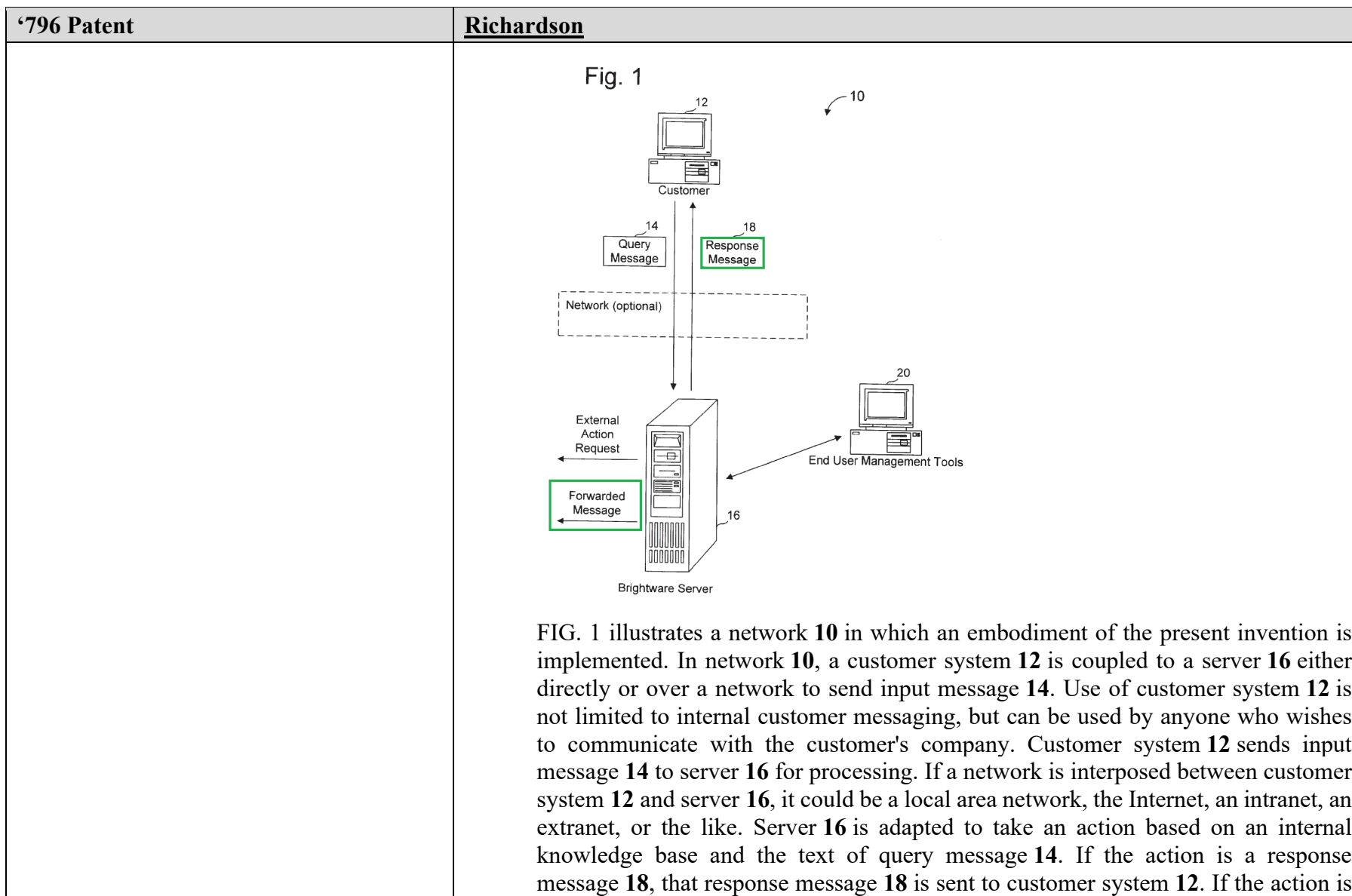
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[7] The method of claim 1, wherein the extracted portion of information is used to take a specified action.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. Abstract: A message understanding and response system recognizes and answers messages based on the message writer's intent in unconstrained natural language text messages. The system has a set of knowledge bases with linked domain specific words, phrases, and regular expressions relating to the domain of the writer and the domain of the respondent. The writer's domain is represented by special purpose lexicons linked to representations of typical intents. The typical intents are linked to a domain knowledge base of typical and appropriate respondent actions. The system is initialized by manually classifying a training text corpus according to the respondent's policies. A lexical analysis tool with prototypical intents and phrases indicating intents is applied to the training text corpus, which includes the domain specific characteristics of both the writer and the respondent. The output results are an operable knowledge base which is a conjunction of keywords used to communicate

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	between the two domains of the writer and the respondent. During automatic operation, the input text is pre-processed to remove irregularities in a manner similar to how the data in the training text corpus was regularized. Sets of extracted keywords and concepts are matched against the sets of stored, pre-classified keywords and concepts, producing a list of intents. The intents and other extracted features are then mapped to appropriate actions as defined by the system operator. The actions use the common linked domain knowledge terms to formulate a textual reply which is tailored to and answering the intent of writer of the input message. 2:51-3:34: SUMMARY OF THE INVENTION An improved message text understanding and response system is provided by virtue of the present invention. In one embodiment of an understanding and response system, the system isolates the writer's critical words which relate to prototypical statements stored in the system. These in turn are mapped to models which represent understanding of the writer's possible intents. The writer's intents are then mapped to prototypical response actions as defined by the system operators. Thus the system models typical message writer requests and answers by selecting among typical responses. To accomplish this, a tokenizing identifier accepts input message text and analyzes the text against a lexicon specific to the system operator's domain, in order to generate a structured data representation of input message text. The structured data and message text is fed to an intent identifier, which uses the structured text and a knowledge base to infer the intent of the writer of the input message. Intent determination can be supplemented by verifying and augmenting input message data against databases outside the system. The identified intents, and possibly the structured data and the message text itself, are passed to a response formulator, which assembles a set of actions according to a set of business rules to formulate a response. The assembled potential actions are evaluated and executed. Examples of potential actions include responding to the writer, giving recommendations for the next step in

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	processing, possibly outside the system, routing the message to a third party for automatic or manual response, or invoking an external system. The response message text, as well as the input message text, can be transported between the system and the writer of the message using conventional message transport techniques. The input message text can be electronic mail and may include text and other computer formats such as documents, graphic representations, formatted fields, and computer control characters. If the input message contains special formats of structured data, those are flagged for special processing which uses the additional information provided by the structure. The response actions can include: responding to the writer, creating a message summary for later review by system operators, forwarding the message for manual review, output the message to printers and facsimile machines, adding items to workflow systems, etc. A further understanding of the nature and advantages of the inventions herein may be realized by reference to the remaining portions of the specification and the attached drawings. FIG. 1, 4:34-49:



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an external action or a forwarded message, those are sent to other systems (not shown).

FIG. 2, 4:60-5:10:

Fig. 2

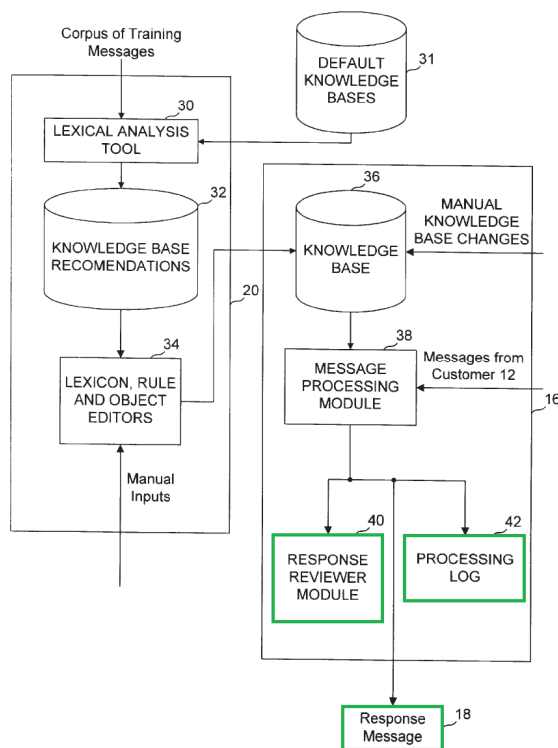
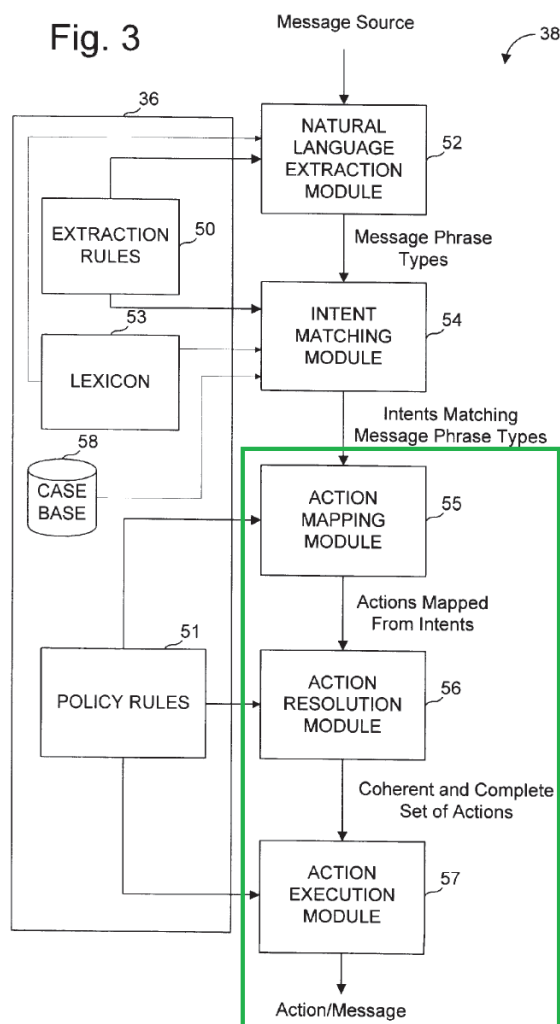


FIG. 2 shows server 16 and management system 20 in greater detail. Management system 20 is shown comprising a lexical analysis tool 30, a default knowledge base 31, storage for knowledge base recommendations 32 and editors 34 for editing the lexicon, rules and objects. Before the regular automatic response operation, the lexical analysis tool 30 is fed a corpus of training messages and provided with default

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	knowledge base 31 to arrive at recommendations for the contents of the knowledge base to be used in processing messages. Those recommendations can be edited by the end user (the operator of server 16) before they are included in the knowledge base. The knowledge base (36) is shown as part of server 16, along with a message processing module 38 and a response viewer module 40. Message processing module 38 uses knowledge base 36 and the input message to determine what actions to take, be it sending back message 18, sending a request to response viewer module 40 and/or adding to a processing log 42. FIG. 3, 7:17-58:

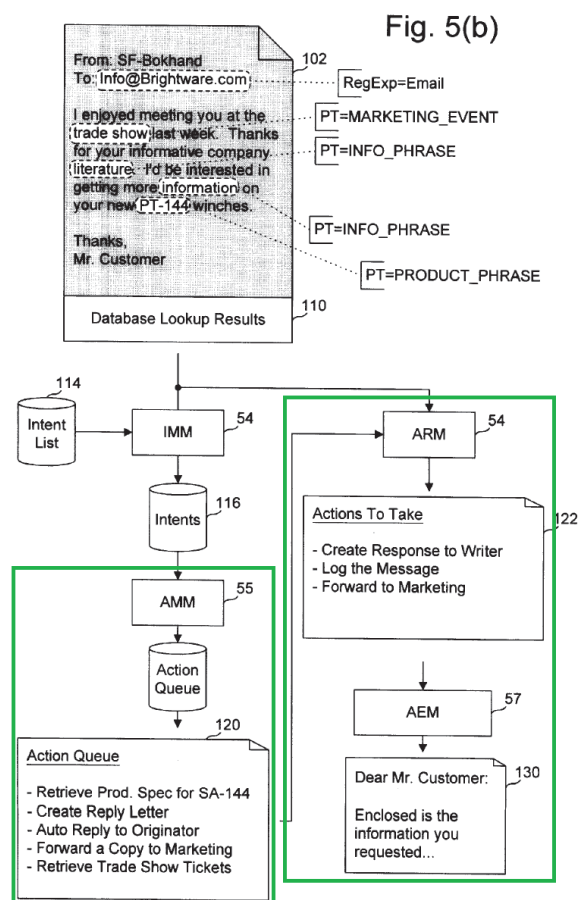
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Once the intents are identified, the message and the intents list is passed to an action mapping module ("AMM") 55, which generates a list of proposed actions. In the course of processing the input message text, decisions are made to add actions to a

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	list for later evaluation. Actions are selected from among those deemed appropriate by the system operator, as expressed in a policy rule set 51. These tentative actions are discovered as the message is processed, and the actions are stored on an action list until all the intents of the message and other cogent information is identified. Once all plausible actions are tentatively identified, the actions are examined to determine if they are complete, correct and do not conflict with each other. For example, a tentative, general action which specifies the writer be answered automatically might conflict with an tentative action specifying that the specific intent must be answered manually. Actions which cannot, or should not, be executed are marked for non-execution and the remaining actions are executed. This process of resolving the correctness and consistency of the actions is performed by an action resolution module ("ARM") 56 which has as its input the intents identified in the message, as well as results from application of the policy rule set 51. If one of the actions is a response to the writer, the composition of the response message text may include an explicit recitation of the writer's intent as determined by the system, as well as other phrases and extracted information relating to those intents. The actions taken are determined by ARM 56, and executed by an action execution module ("AEM") 57, with consultation of policy rule set 51. Depending on the list of actions, multiple responses and/or other actions may be initiated by AEM 57. In the preferred embodiment, a response to the writer will give an indication of how the writer's message was interpreted, in addition to giving the response. Thus, a response message may include a paraphrasing of the system's understanding of the intents, a statement about the nature of the response, and the response itself. In some systems, for debugging purposes or legal reasons, the input message text, response results and other processing information might be logged for later analysis, reporting or record keeping. FIG. 5(b), 10:48-11:23:

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The identified intents, the tags and their values are provided to action mapping module 55, which continues generating an action queue 120 based on the intents. For example, based on the intents which might have been associated with message 102, action mapping module 55 might have determined that the appropriate actions were to get product information to send to the writer, create a response letter template, reply to the writer, forward a copy to marketing (if the customer is a new customer),

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	add the customer to the customer database (if a new customer), prepare electronic trade show tickets (or, if the tickets are not electronic, initiate the mailing process), etc. The retrieval of product information and creation of reply letter are triggered by a product information request intent, while the forwarding to marketing is based on an intent rule triggered by the system operator's intent. Action queue 120 and the tagged elements of message 102 are passed to action resolution module ("ARM") 56 to resolve inconsistent actions on action queue 102. Of course, the entire message 102 might be passed along for use as uninterpreted text, as might be used to form a "quoted reply" type e-mail message. In the example shown in FIG. 5(b), ARM 54 will note that the date of the trade show has already passed and the action of sending tickets is deleted from action queue 120. Other intents could eliminate or override other actions. For example, if message 102 had contained profanity and one of the intents of the system operator mapped the intent CENSURE_WRITER with the phrase type PROFANITY_PHRASE, the action for that intent might be to send a censure response and delete all other actions from action queue 120. Many variations of these structures for specific applications will be apparent to one of skill in the art after reading this disclosure. Once the actions to be taken are resolved, a list 122 of actions to take is passed to action execution module ("AEM") 57, which performs the actions listed on list 122, such as creating a response 130. A preferred response 130 includes all or part of the original message, information satisfying the writer's intent (if the writer's intent was to get a response of some sort) and an indication of how the message was interpreted. One way to show how the message was interpreted is to show the tags and the values for tagged regular expressions and tagged phrase types. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element

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	would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.

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[10] The method of claim 1, wherein the input sequence of data symbols is representative of at least one of text data, transcribed spoken data, deoxyribonucleic acid sequence data, ribonucleic acid sequence data, amino-acid sequence data, audio sequence data, and video sequence data.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. FIG. 4, 5:34-45:

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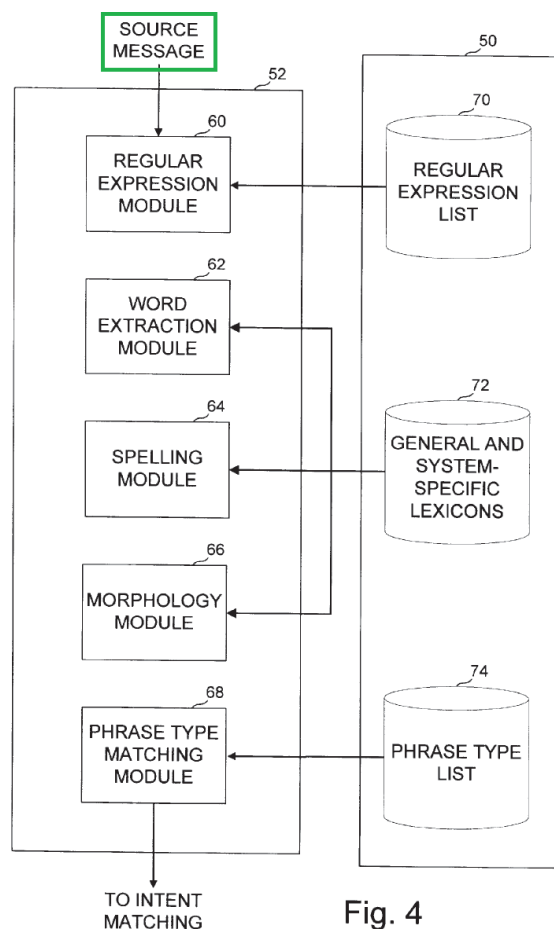
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Fig. 4

The process of understanding and responding to text messages begins with accepting the input text message, which is first processed by NLE module 52. One possible ordering of modules within the NLE module shown in FIG. 4 is that the regular expression module 60 receives the input text message and reads from regular expression lexicon 70. Because the input text may include, in addition to natural language free-form text, other data constructs such as documents, graphic objects,

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	field formatted text, and control characters, the input text is scanned for these data constructs which are not free-form text. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.

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[12P] Apparatus for automatically processing an input sequence of data symbols, the apparatus comprising: at least one processor operative to:	To the extent the preamble of claim 12 is found to be limiting, <u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. Abstract: A message understanding and response system recognizes and answers messages based on the message writer's intent in unconstrained natural language text messages. The system has a set of knowledge bases with linked domain specific words, phrases, and regular expressions relating to the domain of the writer and the domain of the respondent. The writer's domain is represented by special purpose lexicons linked to representations of typical intents. The typical intents are linked to a domain knowledge base of typical and appropriate respondent actions. The system is initialized by manually classifying a training text corpus according to the respondent's policies. A lexical analysis tool with prototypical intents and phrases indicating intents is applied to the training text corpus, which includes the domain specific characteristics of both the writer and the respondent. The output results are an

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	operable knowledge base which is a conjunction of keywords used to communicate between the two domains of the writer and the respondent. During automatic operation, the input text is pre-processed to remove irregularities in a manner similar to how the data in the training text corpus was regularized. Sets of extracted keywords and concepts are matched against the sets of stored, pre-classified keywords and concepts, producing a list of intents. The intents and other extracted features are then mapped to appropriate actions as defined by the system operator. The actions use the common linked domain knowledge terms to formulate a textual reply which is tailored to and answering the intent of writer of the input message. 1:20-26: FIELD OF INVENTION The present invention is directed to a method and apparatus for automatically recognizing and responding to intent in message text, particularly as used in a large-scale automatic message response system to examine input text and respond appropriately with output text relevant to the writer's intent. 2:51-3:34: SUMMARY OF THE INVENTION An improved message text understanding and response system is provided by virtue of the present invention. In one embodiment of an understanding and response system, the system isolates the writer's critical words which relate to prototypical statements stored in the system. These in turn are mapped to models which represent understanding of the writer's possible intents. The writer's intents are then mapped to prototypical response actions as defined by the system operators. Thus the system models typical message writer requests and answers by selecting among typical responses. To accomplish this, a tokenizing identifier accepts input message text and analyzes the text against a lexicon specific to the system operator's domain, in order to generate a structured data representation of input message text. The structured data and

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	message text is fed to an intent identifier, which uses the structured text and a knowledge base to infer the intent of the writer of the input message. Intent determination can be supplemented by verifying and augmenting input message data against databases outside the system. The identified intents, and possibly the structured data and the message text itself, are passed to a response formulator, which assembles a set of actions according to a set of business rules to formulate a response. The assembled potential actions are evaluated and executed. Examples of potential actions include responding to the writer, giving recommendations for the next step in processing, possibly outside the system, routing the message to a third party for automatic or manual response, or invoking an external system. The response message text, as well as the input message text, can be transported between the system and the writer of the message using conventional message transport techniques. The input message text can be electronic mail and may include text and other computer formats such as documents, graphic representations, formatted fields, and computer control characters. If the input message contains special formats of structured data, those are flagged for special processing which uses the additional information provided by the structure. The response actions can include: responding to the writer, creating a message summary for later review by system operators, forwarding the message for manual review, output the message to printers and facsimile machines, adding items to workflow systems, etc. A further understanding of the nature and advantages of the inventions herein may be realized by reference to the remaining portions of the specification and the attached drawings. 3:54-4:33: One embodiment of the present invention provides a framework for recognizing, storing, and matching domain knowledge about input message text and the domain of the possible response actions. The input system interfaces with message text systems such as electronic mail, and the output interface encompasses a variety of appropriate response actions including message text responses, message forwarding,

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	summaries of message text for later review, interfaces to printers and facsimile machines, and addition of items to workflow systems. A preferred embodiment of a message text understanding and response system according to the present invention is shown in the figures. Using this system, the intent of a writer of an input text message is determined from the text of the message, and the system responds to that intent in a way that is appropriate to the system operator's domain. In a simple case, a company's customer service department might use the system to automatically act on messages received from customers. The system determines the customer's intent, to the extent that it relates to the company's customer needs, and takes an action appropriate for that intent. If the intent of the customer (as evidenced by the text of the message) is a request for information on a particular product, the system might respond by sending a message back to the customer with the requested information. However, in more complex or ambivalent cases, various answers are possible. Also, the system might take an action which is not what the customer intended, but what the company intends for that situation. The system recognizes phrase types and intents from input text and maps these to domain knowledge pertaining to common kinds of intents. The intents are in turn mapped to actions. Phrase types, intents and actions have an association where each is dependent on the others for overall meaning and utility. It is the conjunction of phrase types, intents and actions which form single associations which constitute a reasonable response to an input text message. The input message arrives at the system via electronic mail, network transport, or any number of well-known communication methods. The source of the input message is referred to as the writer. The writer is usually a person, but might also be another computer system. The action of the system in response to the input message can take a variety of forms, such as sending a response message to the writer, forwarding the message to another person or computer system for further handling, summarizing the message for later handling, outputting to printers or facsimile machines, or adding items to workflow systems. FIG. 1, 4:34-59:

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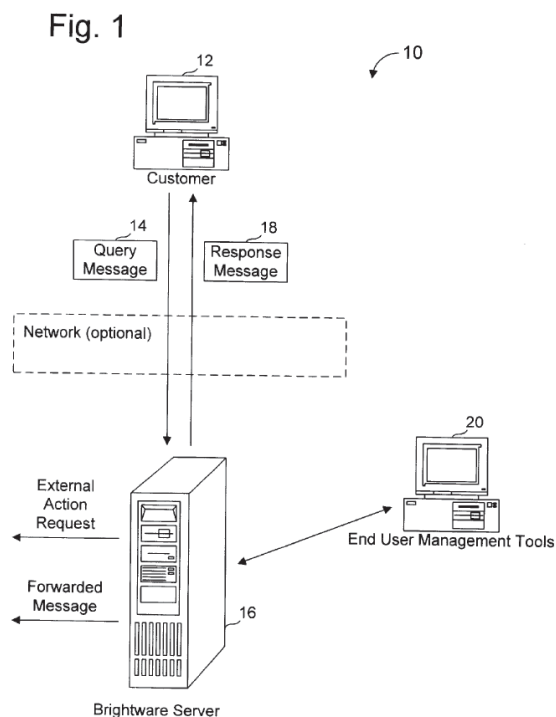
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FIG. 1 illustrates a network 10 in which an embodiment of the present invention is implemented. In network 10, a customer system 12 is coupled to a server 16 either directly or over a network to send input message 14. Use of customer system 12 is not limited to internal customer messaging, but can be used by anyone who wishes to communicate with the customer's company. Customer system 12 sends input message 14 to server 16 for processing. If a network is interposed between customer system 12 and server 16, it could be a local area network, the Internet, an intranet, an extranet, or the like. Server 16 is adapted to take an action based on an internal knowledge base and the text of query message 14. If the action is a response message

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	18, that response message 18 is sent to customer system 12. If the action is an external action or a forwarded message, those are sent to other systems (not shown). Network 10 is also shown including a management system 20 including end-user management tools for modifying the knowledge base (not shown; see FIG. 12) in server 16 according to the response policies and business practices of the operator of server 16. In the preferred embodiment, server 16 is the Brightware™ BrightResponse™ automated message understanding and response system developed by Brightware, Inc. of Novato, Calif. and preferably customized to the particular business needs of the operator of the server (the “system operator”). FIG. 2, 4:60-5:29:

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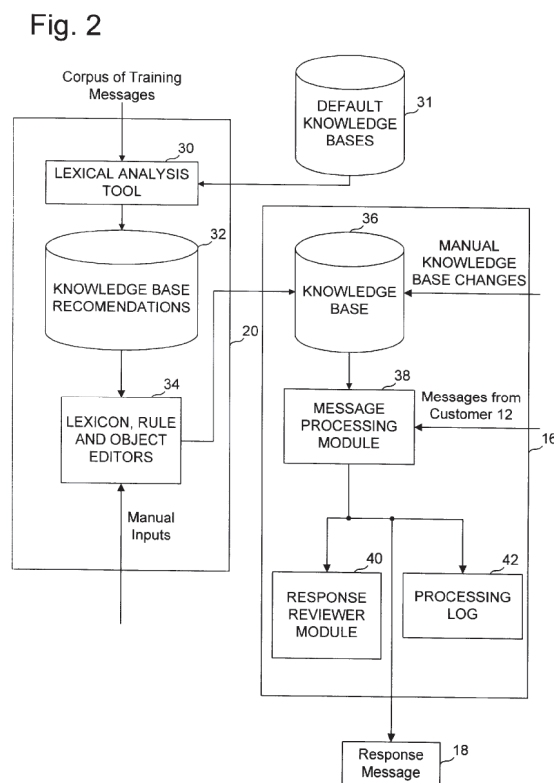
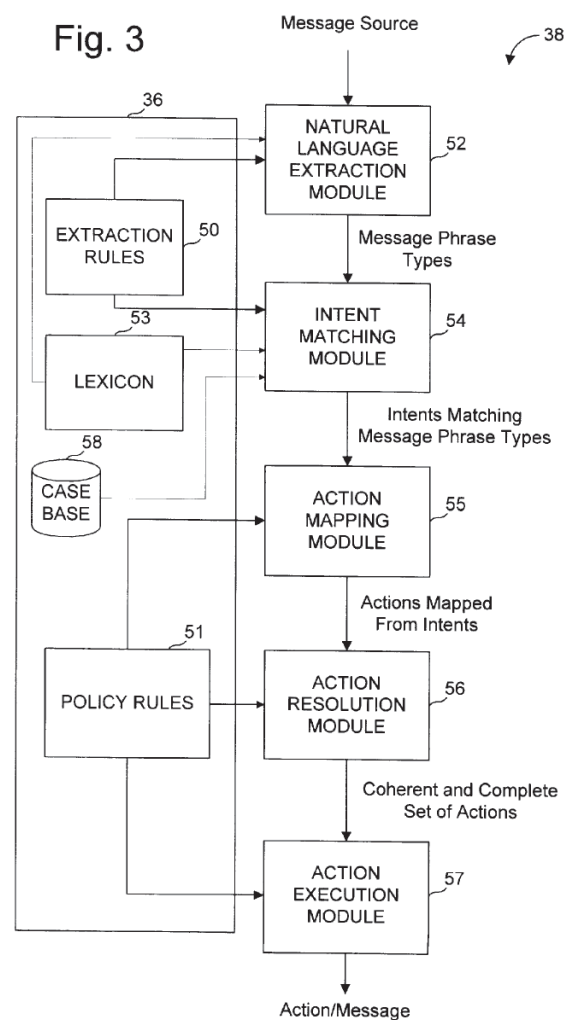
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FIG. 2 shows server 16 and management system 20 in greater detail. Management system 20 is shown comprising a lexical analysis tool 30, a default knowledge base 31, storage for knowledge base recommendations 32 and editors 34 for editing the lexicon, rules and objects. Before the regular automatic response operation, the lexical analysis tool 30 is fed a corpus of training messages and provided with default knowledge base 31 to arrive at recommendations for the contents of the knowledge base to be used in processing messages. Those recommendations can be edited by the end user (the operator of server 16) before they are included in the knowledge base. The knowledge base (36) is shown as part of server 16, along with a message processing module 38 and a response viewer module 40. Message processing

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	module 38 uses knowledge base 36 and the input message to determine what actions to take, be it sending back message 18, sending a request to response viewer module 40 and/or adding to a processing log 42. Generally, customer system 12, server 16 and management system 20 are general purpose computer systems programmed according to their use and comprising one or more central processing unit, memory (ROM and RAM), and associated peripheral equipment, such as disk drives, compact discs, printers, facsimile machines and video display terminals. The programs used to implement the programming might reside in memory, in one of the storage devices, or a combination of the two. Knowledge base 36 is maintained on a disk drive and/or memory within server 16, but might also include portions resident on remote storage systems. FIG. 3, 5:23-28:

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Referring now to FIG. 3, details of message processing module 38 and its connections to knowledge base 36 are shown therein. The details of a component of knowledge base 36, an extraction rule set 50 and an initial module of message

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processing module 38, a natural language extraction (NLE) module 52, are shown in FIG. 4.

FIG. 4, 3:29-34:

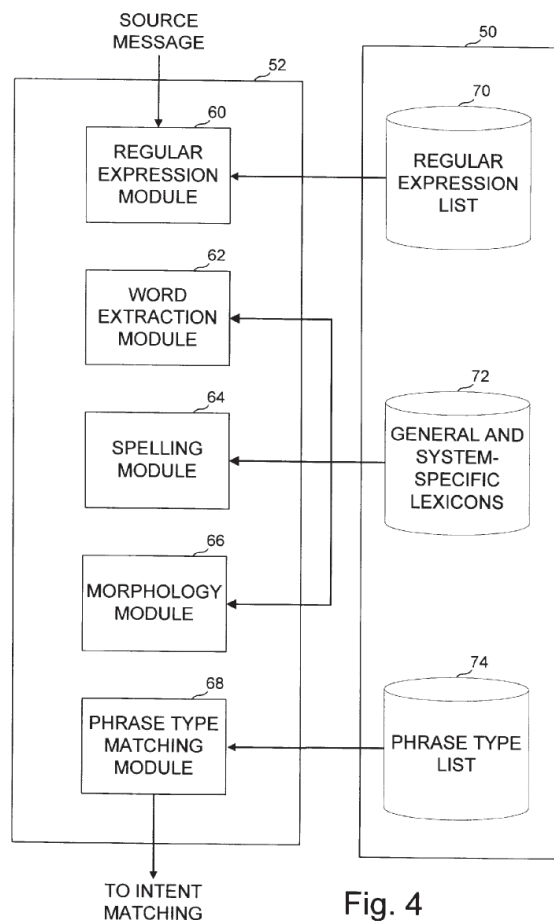


Fig. 4

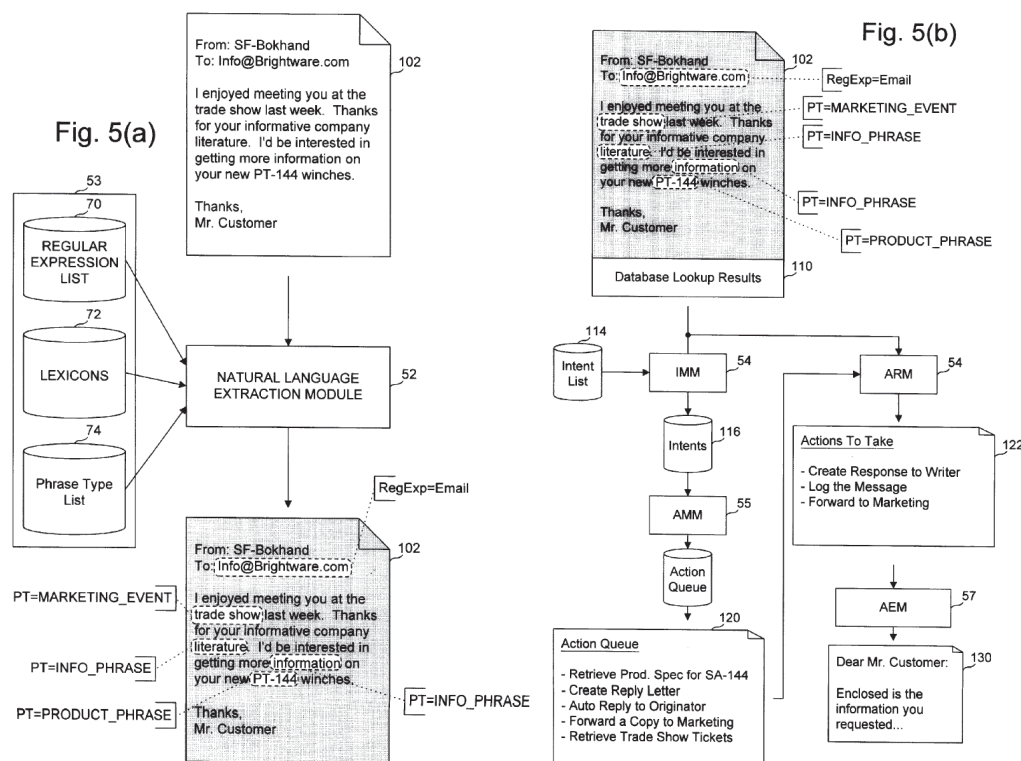
FIG. 4 shows NLE module 52 comprising a regular expression module 60, a word extraction module 62, spelling module 64, a morphology module 66, and a phrase-

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type matching of module 68. Extraction rule set 50 is shown comprising a regular expression lexicon 70 and overall lexicon 72 and a phrase type lexicon 74.

FIGS. 5(a)-(b), 8:49-57, 10:24-26:

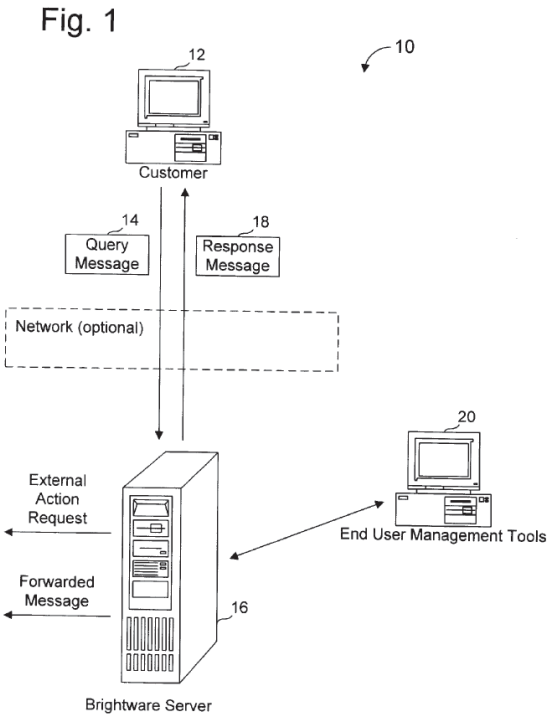


FIGS. 5(a)-(b) show an example of an input message 102 being processed by the system described above. The input message is processed by NLE module 52 to generate tags associated with portions of the input message. As described above, the tagged elements are the elements used to process the input message; the remaining text of the message (shown by shading in FIGS. 5(a)-(b)) need not be used.

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	... In any case, once the regular expressions and phrase types are identified, the analysis process continues, as shown in FIG. 5(b). 11:24-33: The above description discloses how to make and use embodiments of an automated text understanding and response system. As explained herein, the task of interpreting message text is greatly simplified by not processing text with which no action is to be taken. In such a system, a system operator familiar with their business, but not necessarily with the details of how to construct an electronic dictionary, could compile rules mapping intents to actions and phrase types mapping to intents, as well as specifying the conditions for system operator intents. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[12A] (i) identify at least one regularly identifiable expression in the input sequence of data symbols, wherein the at least one regularly identifiable expression represents a pattern that is matchable in accordance with a programming language that supports such a regularly identifiable expression;	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [1A]. <i>See Claim Element [1A]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this

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	reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[12B] (ii) identify at least a portion of information associated with the at least one regularly identifiable expression; and	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [1B]. <i>See Claim Element [1B]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[12C] (iii) extract the portion of information; and	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [1C]. <i>See Claim Element [1C]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art.

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	Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[12D] memory, operatively coupled to the at least one processor, for storing at least a portion of results associated with the identifying and extracting operations.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. FIG. 1, 4:34-59:  FIG. 1 illustrates a network 10 in which an embodiment of the present invention is implemented. In network 10, a customer system 12 is coupled to a server 16 either directly or over a network to send input message 14. Use of customer system 12 is not limited to internal customer messaging, but can be used by anyone who wishes

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	to communicate with the customer's company. Customer system 12 sends input message 14 to server 16 for processing. If a network is interposed between customer system 12 and server 16, it could be a local area network, the Internet, an intranet, an extranet, or the like. Server 16 is adapted to take an action based on an internal knowledge base and the text of query message 14. If the action is a response message 18, that response message 18 is sent to customer system 12. If the action is an external action or a forwarded message, those are sent to other systems (not shown). Network 10 is also shown including a management system 20 including end-user management tools for modifying the knowledge base (not shown; see FIG. 12) in server 16 according to the response policies and business practices of the operator of server 16. In the preferred embodiment, server 16 is the Brightware™ BrightResponse™ automated message understanding and response system developed by Brightware, Inc. of Novato, Calif. and preferably customized to the particular business needs of the operator of the server (the "system operator"). FIG. 2, 4:60-5:29:

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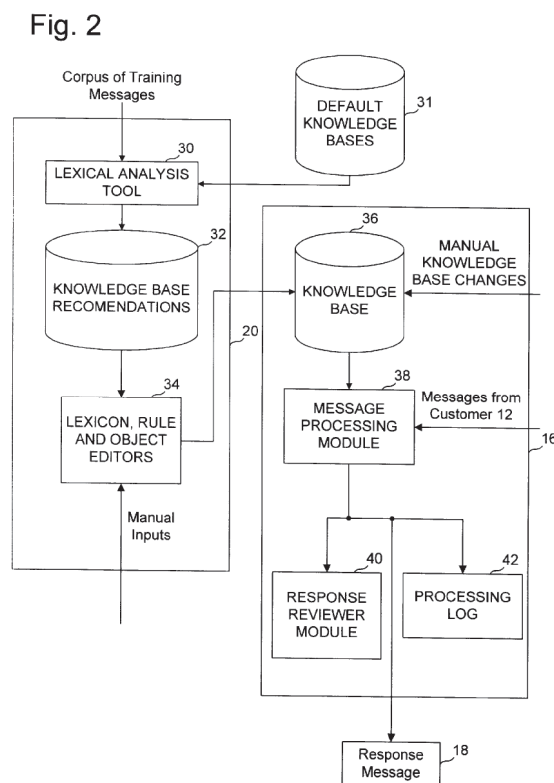
Richardson

FIG. 2 shows server 16 and management system 20 in greater detail. Management system 20 is shown comprising a lexical analysis tool 30, a default knowledge base 31, storage for knowledge base recommendations 32 and editors 34 for editing the lexicon, rules and objects. Before the regular automatic response operation, the lexical analysis tool 30 is fed a corpus of training messages and provided with default knowledge base 31 to arrive at recommendations for the contents of the knowledge base to be used in processing messages. Those recommendations can be edited by the end user (the operator of server 16) before they are included in the knowledge base. The knowledge base (36) is shown as part of server 16, along with a message processing module 38 and a response viewer module 40. Message processing

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	module 38 uses knowledge base 36 and the input message to determine what actions to take, be it sending back message 18, sending a request to response viewer module 40 and/or adding to a processing log 42. Generally, customer system 12, server 16 and management system 20 are general purpose computer systems programmed according to their use and comprising one or more central processing unit, memory (ROM and RAM), and associated peripheral equipment, such as disk drives, compact discs, printers, facsimile machines and video display terminals. The programs used to implement the programming might reside in memory, in one of the storage devices, or a combination of the two. Knowledge base 36 is maintained on a disk drive and/or memory within server 16, but might also include portions resident on remote storage systems. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
13. The apparatus of claim 12, wherein the regularly identifiable expression identifying operation comprises comparing the input sequence of data symbols to one or more regularly identifiable expressions, previously stored in the memory, to determine if there is a match between a portion of the input sequence and at least one	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [2]. <i>See Claim Element [2]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common

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of the previously-stored regularly identifiable expressions.	sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
18. The apparatus of claim 12, wherein the extracted portion of information is used to take a specified action.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [7]. <i>See Claim Element [7]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.

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21. The apparatus of claim 12, wherein the input sequence of data symbols is representative of at least one of text data, transcribed spoken data, deoxyribonucleic acid sequence data, ribonucleic acid sequence data, amino-acid sequence data, audio sequence data, and video sequence data.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [10]. <i>See Claim Element [10]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.

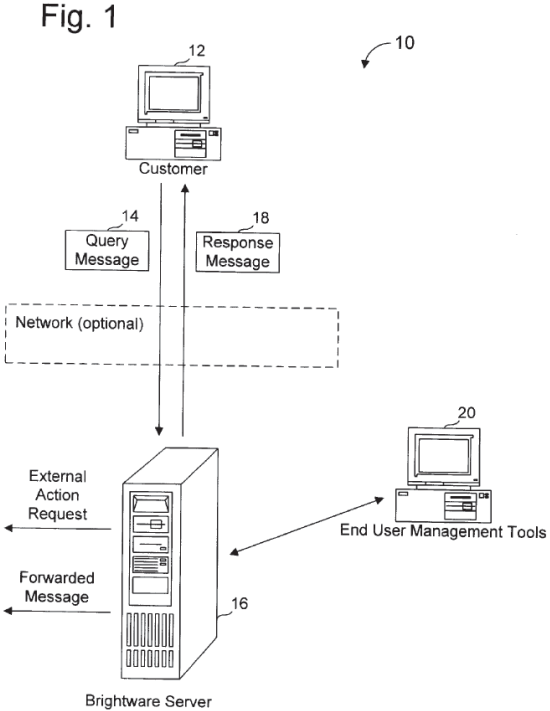
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[23P] An article of manufacture for use in automatically processing an input sequence of data symbols, comprising a machine readable medium containing one or more programs which when executed implement the steps of:	To the extent the preamble of claim 23 is found to be limiting, <u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. FIG. 1, 4:34-59: Fig. 1  FIG. 1 illustrates a network 10 in which an embodiment of the present invention is implemented. In network 10, a customer system 12 is coupled to a server 16 either directly or over a network to send input message 14. Use of customer system 12 is not limited to internal customer messaging, but can be used by anyone who wishes to communicate with the customer's company. Customer system 12 sends input message 14 to server 16 for processing. If a network is interposed between customer

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	system 12 and server 16, it could be a local area network, the Internet, an intranet, an extranet, or the like. Server 16 is adapted to take an action based on an internal knowledge base and the text of query message 14. If the action is a response message 18, that response message 18 is sent to customer system 12. If the action is an external action or a forwarded message, those are sent to other systems (not shown). Network 10 is also shown including a management system 20 including end-user management tools for modifying the knowledge base (not shown; see FIG. 12) in server 16 according to the response policies and business practices of the operator of server 16. In the preferred embodiment, server 16 is the Brightware™ BrightResponse™ automated message understanding and response system developed by Brightware, Inc. of Novato, Calif. and preferably customized to the particular business needs of the operator of the server (the “system operator”). FIG. 2, 4:60-5:29:

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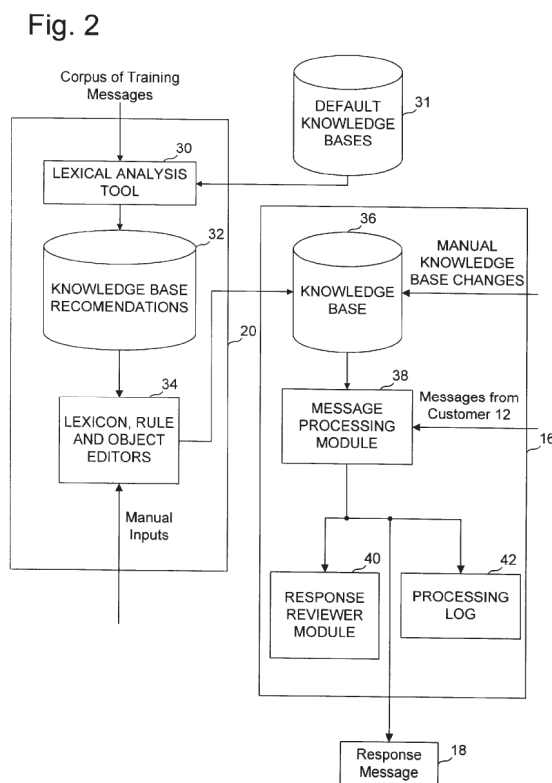
Richardson

FIG. 2 shows server 16 and management system 20 in greater detail. Management system 20 is shown comprising a lexical analysis tool 30, a default knowledge base 31, storage for knowledge base recommendations 32 and editors 34 for editing the lexicon, rules and objects. Before the regular automatic response operation, the lexical analysis tool 30 is fed a corpus of training messages and provided with default knowledge base 31 to arrive at recommendations for the contents of the knowledge base to be used in processing messages. Those recommendations can be edited by the end user (the operator of server 16) before they are included in the knowledge base. The knowledge base (36) is shown as part of server 16, along with a message processing module 38 and a response viewer module 40. Message processing

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	module 38 uses knowledge base 36 and the input message to determine what actions to take, be it sending back message 18, sending a request to response viewer module 40 and/or adding to a processing log 42. Generally, customer system 12, server 16 and management system 20 are general purpose computer systems programmed according to their use and comprising one or more central processing unit, memory (ROM and RAM), and associated peripheral equipment, such as disk drives, compact discs, printers, facsimile machines and video display terminals. The programs used to implement the programming might reside in memory, in one of the storage devices, or a combination of the two. Knowledge base 36 is maintained on a disk drive and/or memory within server 16, but might also include portions resident on remote storage systems. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[23A] identifying at least one regularly identifiable expression in the input sequence of data symbols, wherein the at least one regularly identifiable expression represents a pattern that is matchable in accordance with a programming language that supports such a regularly identifiable expression;	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [1A]. See Claim Element [1A], above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element

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	would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[23B] identifying at least a portion of information associated with the at least one regularly identifiable expression; and	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [1B]. <i>See Claim Element [1B]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[23C] extracting the portion of information.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [1C]. <i>See Claim Element [1C]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other

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	prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[24P] Apparatus for automatically processing an input sequence of data symbols, the apparatus comprising:	To the extent the preamble of claim 24 is found to be limiting, <u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [12P]. <i>See Claim Element [12P]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[24A] a data capture device for obtaining the input sequence of data symbols;	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation. Abstract: A message understanding and response system recognizes and answers messages based on the message writer's intent in unconstrained natural language text messages. The system has a set of knowledge bases with linked domain specific words, phrases, and regular expressions relating to the domain of the writer and the domain of the respondent. The writer's domain is represented by special purpose lexicons linked to representations of typical intents. The typical intents are linked to a domain knowledge base of typical and appropriate respondent actions. The system is initialized by manually classifying a training text corpus according to the respondent's policies. A lexical analysis tool with prototypical intents and phrases indicating intents is applied to the training text corpus, which includes the domain specific characteristics of both the writer and the respondent. The output results are an

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	operable knowledge base which is a conjunction of keywords used to communicate between the two domains of the writer and the respondent. During automatic operation, the input text is pre-processed to remove irregularities in a manner similar to how the data in the training text corpus was regularized. Sets of extracted keywords and concepts are matched against the sets of stored, pre-classified keywords and concepts, producing a list of intents. The intents and other extracted features are then mapped to appropriate actions as defined by the system operator. The actions use the common linked domain knowledge terms to formulate a textual reply which is tailored to and answering the intent of writer of the input message. 1:20-26: FIELD OF INVENTION The present invention is directed to a method and apparatus for automatically recognizing and responding to intent in message text, particularly as used in a large-scale automatic message response system to examine input text and respond appropriately with output text relevant to the writer's intent. 2:51-3:34: SUMMARY OF THE INVENTION An improved message text understanding and response system is provided by virtue of the present invention. In one embodiment of an understanding and response system, the system isolates the writer's critical words which relate to prototypical statements stored in the system. These in turn are mapped to models which represent understanding of the writer's possible intents. The writer's intents are then mapped to prototypical response actions as defined by the system operators. Thus the system models typical message writer requests and answers by selecting among typical responses. To accomplish this, a tokenizing identifier accepts input message text and analyzes the text against a lexicon specific to the system operator's domain, in order to generate a structured data representation of input message text. The structured data and

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	message text is fed to an intent identifier, which uses the structured text and a knowledge base to infer the intent of the writer of the input message. Intent determination can be supplemented by verifying and augmenting input message data against databases outside the system. The identified intents, and possibly the structured data and the message text itself, are passed to a response formulator, which assembles a set of actions according to a set of business rules to formulate a response. The assembled potential actions are evaluated and executed. Examples of potential actions include responding to the writer, giving recommendations for the next step in processing, possibly outside the system, routing the message to a third party for automatic or manual response, or invoking an external system. The response message text, as well as the input message text, can be transported between the system and the writer of the message using conventional message transport techniques. The input message text can be electronic mail and may include text and other computer formats such as documents, graphic representations, formatted fields, and computer control characters. If the input message contains special formats of structured data, those are flagged for special processing which uses the additional information provided by the structure. The response actions can include: responding to the writer, creating a message summary for later review by system operators, forwarding the message for manual review, output the message to printers and facsimile machines, adding items to workflow systems, etc. A further understanding of the nature and advantages of the inventions herein may be realized by reference to the remaining portions of the specification and the attached drawings. 3:54-4:33: One embodiment of the present invention provides a framework for recognizing, storing, and matching domain knowledge about input message text and the domain of the possible response actions. The input system interfaces with message text systems such as electronic mail, and the output interface encompasses a variety of appropriate response actions including message text responses, message forwarding,

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	summaries of message text for later review, interfaces to printers and facsimile machines, and addition of items to workflow systems. A preferred embodiment of a message text understanding and response system according to the present invention is shown in the figures. Using this system, the intent of a writer of an input text message is determined from the text of the message, and the system responds to that intent in a way that is appropriate to the system operator's domain. In a simple case, a company's customer service department might use the system to automatically act on messages received from customers. The system determines the customer's intent, to the extent that it relates to the company's customer needs, and takes an action appropriate for that intent. If the intent of the customer (as evidenced by the text of the message) is a request for information on a particular product, the system might respond by sending a message back to the customer with the requested information. However, in more complex or ambivalent cases, various answers are possible. Also, the system might take an action which is not what the customer intended, but what the company intends for that situation. The system recognizes phrase types and intents from input text and maps these to domain knowledge pertaining to common kinds of intents. The intents are in turn mapped to actions. Phrase types, intents and actions have an association where each is dependent on the others for overall meaning and utility. It is the conjunction of phrase types, intents and actions which form single associations which constitute a reasonable response to an input text message. The input message arrives at the system via electronic mail, network transport, or any number of well-known communication methods. The source of the input message is referred to as the writer. The writer is usually a person, but might also be another computer system. The action of the system in response to the input message can take a variety of forms, such as sending a response message to the writer, forwarding the message to another person or computer system for further handling, summarizing the message for later handling, outputting to printers or facsimile machines, or adding items to workflow systems. FIG. 1, 4:34-59:

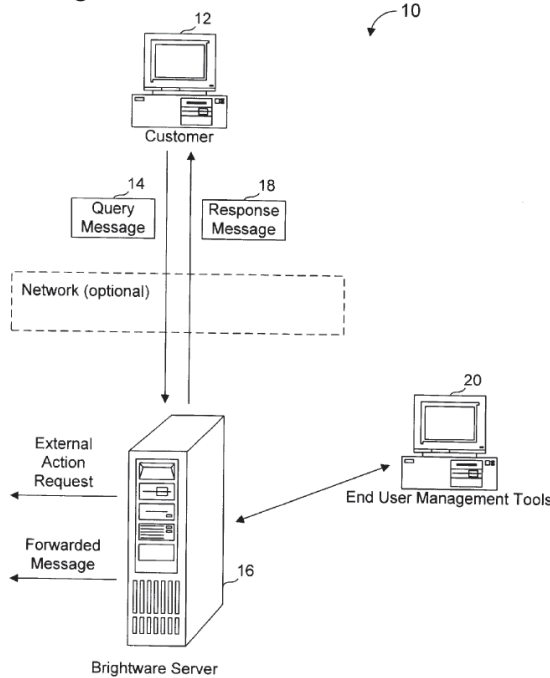
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	Fig. 1  FIG. 1 illustrates a network 10 in which an embodiment of the present invention is implemented. In network 10, a customer system 12 is coupled to a server 16 either directly or over a network to send input message 14. Use of customer system 12 is not limited to internal customer messaging, but can be used by anyone who wishes to communicate with the customer's company. Customer system 12 sends input message 14 to server 16 for processing. If a network is interposed between customer system 12 and server 16, it could be a local area network, the Internet, an intranet, an extranet, or the like. Server 16 is adapted to take an action based on an internal knowledge base and the text of query message 14. If the action is a response message

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	18, that response message 18 is sent to customer system 12. If the action is an external action or a forwarded message, those are sent to other systems (not shown). Network 10 is also shown including a management system 20 including end-user management tools for modifying the knowledge base (not shown; see FIG. 12) in server 16 according to the response policies and business practices of the operator of server 16. In the preferred embodiment, server 16 is the Brightware™ BrightResponse™ automated message understanding and response system developed by Brightware, Inc. of Novato, Calif. and preferably customized to the particular business needs of the operator of the server (the “system operator”). FIG. 2, 4:60-5:29:

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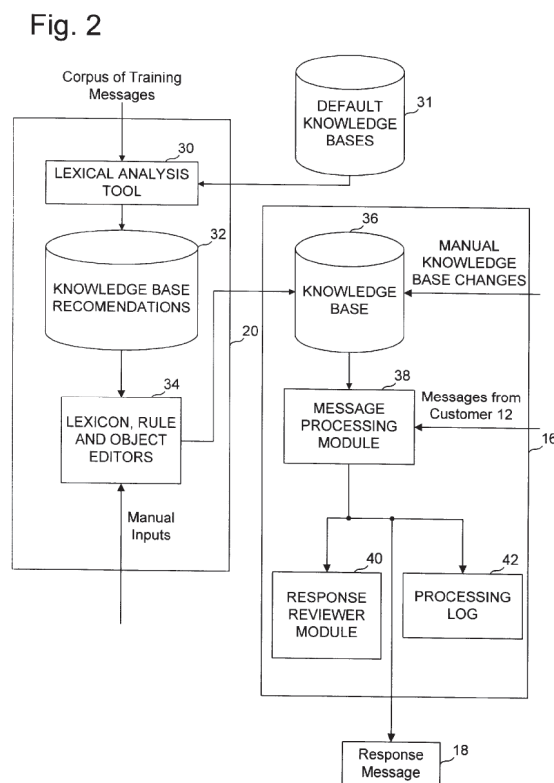
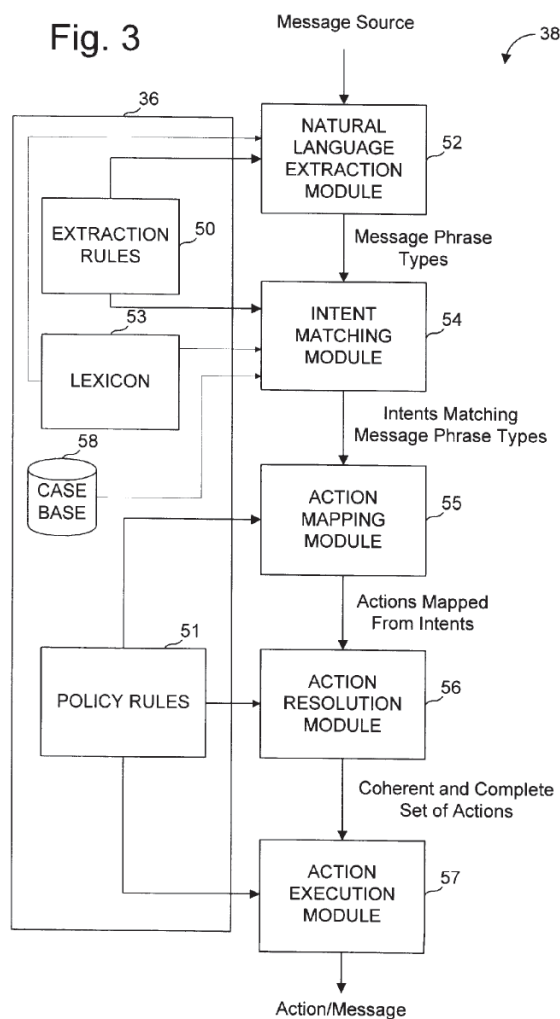
Richardson

FIG. 2 shows server 16 and management system 20 in greater detail. Management system 20 is shown comprising a lexical analysis tool 30, a default knowledge base 31, storage for knowledge base recommendations 32 and editors 34 for editing the lexicon, rules and objects. Before the regular automatic response operation, the lexical analysis tool 30 is fed a corpus of training messages and provided with default knowledge base 31 to arrive at recommendations for the contents of the knowledge base to be used in processing messages. Those recommendations can be edited by the end user (the operator of server 16) before they are included in the knowledge base. The knowledge base (36) is shown as part of server 16, along with a message processing module 38 and a response viewer module 40. Message processing

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	module 38 uses knowledge base 36 and the input message to determine what actions to take, be it sending back message 18, sending a request to response viewer module 40 and/or adding to a processing log 42. Generally, customer system 12, server 16 and management system 20 are general purpose computer systems programmed according to their use and comprising one or more central processing unit, memory (ROM and RAM), and associated peripheral equipment, such as disk drives, compact discs, printers, facsimile machines and video display terminals. The programs used to implement the programming might reside in memory, in one of the storage devices, or a combination of the two. Knowledge base 36 is maintained on a disk drive and/or memory within server 16, but might also include portions resident on remote storage systems. FIG. 3, 5:23-28:

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Referring now to FIG. 3, details of message processing module 38 and its connections to knowledge base 36 are shown therein. The details of a component of knowledge base 36, an extraction rule set 50 and an initial module of message

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processing module 38, a natural language extraction (NLE) module 52, are shown in FIG. 4.

FIG. 4, 3:29-34:

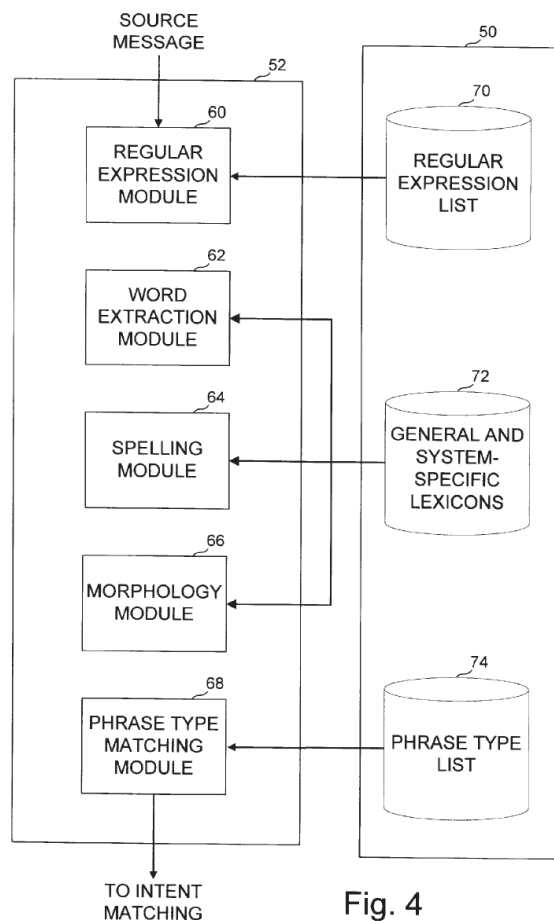


Fig. 4

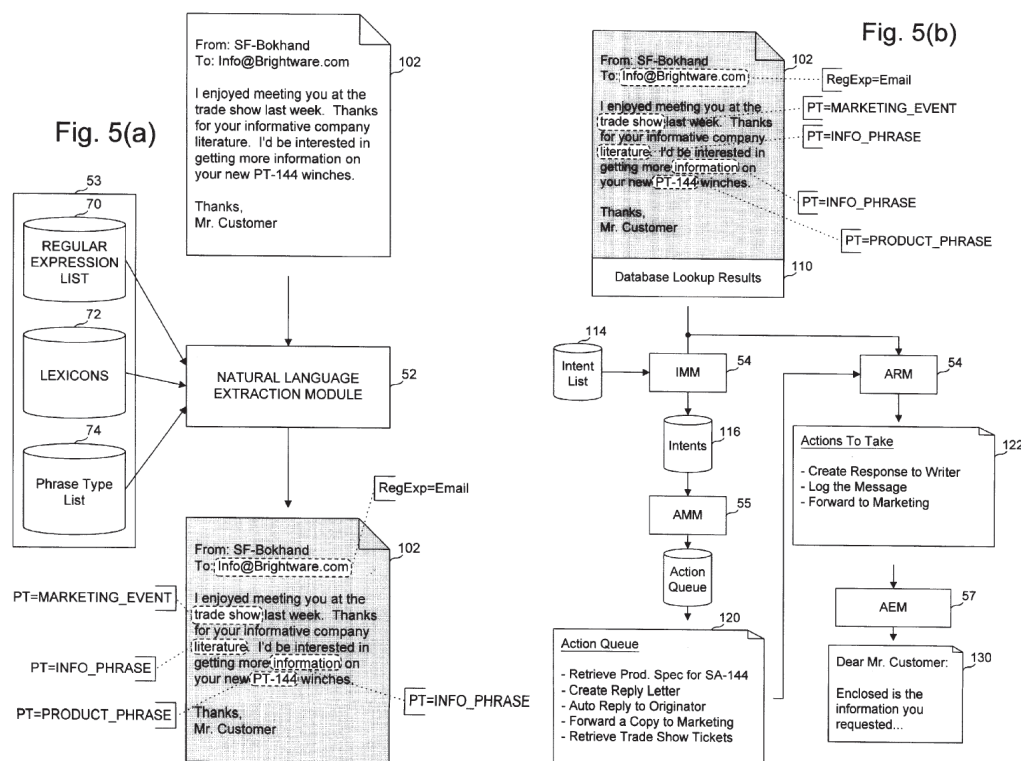
FIG. 4 shows NLE module 52 comprising a regular expression module 60, a word extraction module 62, spelling module 64, a morphology module 66, and a phrase-

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type matching of module 68. Extraction rule set 50 is shown comprising a regular expression lexicon 70 and overall lexicon 72 and a phrase type lexicon 74.

FIGS. 5(a)-(b), 8:49-57, 10:24-26:



FIGS. 5(a)-(b) show an example of an input message 102 being processed by the system described above. The input message is processed by NLE module 52 to generate tags associated with portions of the input message. As described above, the tagged elements are the elements used to process the input message; the remaining text of the message (shown by shading in FIGS. 5(a)-(b)) need not be used.

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	... In any case, once the regular expressions and phrase types are identified, the analysis process continues, as shown in FIG. 5(b). 11:24-33: The above description discloses how to make and use embodiments of an automated text understanding and response system. As explained herein, the task of interpreting message text is greatly simplified by not processing text with which no action is to be taken. In such a system, a system operator familiar with their business, but not necessarily with the details of how to construct an electronic dictionary, could compile rules mapping intents to actions and phrase types mapping to intents, as well as specifying the conditions for system operator intents. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[24B] at least one processor, operatively coupled to the data capture device, operative to: (i) identify at least one regularly identifiable expression in the input sequence of data symbols. wherein the at least one regularly identifiable expression represents a pattern that is matchable in accordance with a programming language that supports	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [12A]. See Claim Element [12A], above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this

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such a regularly identifiable expression; (ii) identify at least a portion of information associated with the at least one regular expression; and (iii) extract the portion of information;	reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[24C] memory, operatively coupled to the at least one processor, for storing at least a portion of results associated with the identifying and extracting operations; and	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [12B]. See Claim Element [12B], above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[24D] a data output device, operatively coupled to the at least one processor, for presenting the extracted portion of information to a user.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [8]. See Claim Element [8], above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other

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	prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[25P] A method of automatically processing an input document, the method comprising the steps of:	To the extent the preamble of claim 25 is found to be limiting, <u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [1P]. <i>See Claim Element [1P]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.
[25A] identifying one or more regular expressions in the input document by comparing the input document to one or more previously-stored regular expressions to determine if there is a match between a portion of the input document and at least one of the previously-stored regular expressions, wherein a regular expression represents a pattern that is matchable in accordance with a programming language that supports such a regular expression; and	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim element [1A] and [2]. <i>See Claim Elements [1A] and [2]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.

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[25B] identifying at least a portion of information associated with the at least one regular expression for extraction.	<u>Richardson</u> discloses this claim limitation explicitly, inherently, or as a matter of common sense, or it would have been obvious to add missing aspects of the limitation for the same reasons as provided above with respect to claim elements [1B] and [1C]. <i>See Claim Elements [1B]-[1C]</i>, above. One of ordinary skill would find this limitation disclosed either expressly or inherently in the teachings of this reference and its incorporated disclosures taken as a whole, or in combination with the state of the art at the time of the alleged invention. To the extent this reference is not found to teach this element explicitly, implicitly, or inherently, the element would have been obvious to one of ordinary skill in the art based on this reference, common sense, ordinary creativity of one of ordinary skill in the art, and the state of the art. Additionally, it would have been obvious to combine this reference with one or more other prior art references identified in Defendants' Invalidity Contentions Cover Pleading. Rather than repeat those disclosures here, they are incorporated by reference into this chart.