

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,

Petitioner

v.

VEVEO, INC.

Patent Owner

Patent No. 7,937,394

Filing Date: August 2, 2010

Issue Date: May 3, 2011

Title: METHOD AND SYSTEM FOR DYNAMICALLY PROCESSING
AMBIGUOUS, REDUCED TEXT SEARCH QUERIES AND HIGHLIGHTING
RESULTS THEREOF

Inter Partes Review No.: IPR2019-00291

**DECLARATION OF DR. EDWARD A. FOX IN SUPPORT OF
PETITIONER COMCAST CABLE COMMUNICATIONS, LLC'S
PETITION FOR
INTER PARTES REVIEW OF U.S. PAT. NO. 7,937,394**

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I, Edward A. Fox, declare that I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so competently.

I. INTRODUCTION

1. I have been retained as an expert witness on behalf of the Petitioner, Comcast Cable Communications, LLC (“Petitioner”), for the above-referenced *inter partes* review proceeding.

2. I reside in Blacksburg, Virginia.

3. I have been asked to provide testimony regarding the unpatentability grounds set forth in this declaration pertaining to U.S. Patent No. 7,937,394 (“the ’394 Patent”).

4. I am being compensated at my usual consulting rate of \$500 per hour (\$600 per hour for time spent testifying at a deposition or trial) for my work on this matter. I also am being reimbursed for reasonable and customary expenses associated with my work and testimony in this investigation. My compensation is not dependent upon my opinions or testimony or the outcome of this proceeding.

II. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

5. I have extensive academic and industry experience and computer science background in the field of information retrieval, and, in particular, regarding techniques for performing searches for desired content. Having taught undergraduate

and graduate students in the field since 1983, I am familiar with the relevant skill set that would have been possessed by a hypothetical person of ordinary skill in the art (POSA) at the time of the alleged invention of the '394 Patent (in 2005).

A. Education and Certifications

6. I earned a bachelor's degree in electrical engineering (in the computer science option) from the Massachusetts Institute of Technology in 1972, a master's degree in computer science from Cornell University in 1981, and a Ph.D. degree in computer science from Cornell University in 1983. My undergraduate advisor was JCR Licklider, then Director of Project MAC, who, when working at DARPA, managed projects that led to the Internet. My graduate advisor was Gerard Salton, often called the father of information retrieval. Some of my bachelor's work was in the area of information storage and retrieval, and that area has been the focus of my work since 1978.

7. My curriculum vitae, including my grants, publications, and patent, is attached as Ex. 1119 to the Petition. As is detailed therein and below, I have led development of a number of information retrieval (IR) systems, including but not limited to: SMART, REVTOLC, CODER (including LEND), MARIAN, ENVISION, CITIDEL, CTRnet, and IDEAL/GETAR. I have published papers about (hierarchical) thesauri and lexicons, query expansion (using both algorithmic and AI methods), relevance feedback, automatic Boolean query construction,

extended Boolean retrieval, hashing, clustering, categorizing, parallel and distributed approaches, advanced IR interfaces including those helping with the management of result sets, metadata, digital libraries, Web archiving, text analysis, and many other of the subtopics related to IR. By the mid-1980s my work in IR connected with the field of human-computer interaction (HCI), by the late 1980s that broadened into work on multimedia information and systems, and since the early 1990s my work has included a concentration on digital libraries. With regard to HCI, I have worked with topics including user interfaces, portals, user studies, interactive systems and applications, user-centered databases, hypertext/hypermedia, personalization, recommendation, annotation, virtual environments, and social networks. With regard to multimedia, I have worked with technologies, systems, content, and applications, including digital video, electronic publishing, multimedia databases, multimedia file systems, fingerprint matching, indexing, and searching with image collections. With regard to digital libraries, I have worked broadly, on theory, content, technologies, applications, and user aspects, thus connecting the fields of IR, HCI, and multimedia.

8. I am a member of ACM (since 1967) and its Special Interest Group on Information Retrieval (SIGIR), for which I served from 1987-1995 as vice chairman and then chairman. I served from 1988-1992 on the ACM Publications Board, and now again serve on that Board, also as co-chair of its Digital Libraries Committee.

ACM has awarded me seven recognition of service awards. I am a Fellow of ACM (cited for contributions in information retrieval and digital libraries) and a Fellow of IEEE (cited for leadership in digital libraries and information retrieval), as well as a member of IEEE-CS and its Technical Committee on Digital Libraries (including serving on its Executive Committee, and its chairman from 2004-2008).

9. Since 1987, I have led activities so that theses and dissertations could be prepared, archived, and made accessible in electronic forms. Since 1996, I have served as Executive Director of the Networked Digital Library of Theses and Dissertations, which was incorporated in 2003; I also serve as Founder and Chairman of the Board for NDLTD, which now has over 5 million electronic theses and dissertations in its Union Catalog.

B. Career Synopsis

10. I have been a professor at Virginia Polytechnic Institute & State University (“Virginia Tech”) since September 1983, in the Department of Computer Science. Since February 2016, I also have had a courtesy appointment in the Department of Electrical and Computer Engineering. Since January 1998, I have been the Director of the Digital Library Research Laboratory at Virginia Tech. From June 1990 to June 2014, I was the Associate Director for Research at Virginia Tech’s Computing Center, a position that evolved to Faculty Advisor to Information Technology.

11. Before that, during August 1982 to April 1983, I was Manager of Information Systems at the International Institute of Tropical Agriculture, in Ibadan, Nigeria.

12. Before that, from September 1978 to August 1982, I was Instructor, Research Assistant, and Teaching Assistant at the Department of Computer Science at Cornell University.

13. Before that, from September 1972 to August 1978, in Florence, SC, I was Data Processing Manager in the Vulcraft Division of NUCOR Corporation.

14. Before that, from September 1971 to June 1972, I was Data Processing Instructor at Florence Darlington Technical College.

15. I have been the recipient of a number of honors and awards relating to my work in information retrieval and other areas. One recent related honor, at Virginia Tech, is the XCaliber Award 2016 “for extraordinary contributions to technology-enriched learning activities” for project “Enhanced problem-based learning connecting big data research with classes.” I have taught classes on information retrieval since the early 1980s, and about multimedia since the early 1990s.

16. I have held numerous board positions in various editorial, professional, and industry organizations and groups. For example, I served from 2010-2013 as an

elected member of the Computing Research Association Board, broadly representing the U.S. computing research community.

17. I have a strong background in many of the key areas related to handling information with computers, including information retrieval, digital libraries, and Web archiving. This work involves theory, algorithms, systems, and interfaces/user studies. It also is described currently by buzz words such as search engines, big data, data analytics, machine learning, and natural language processing.

18. In these areas, I have participated in, organized, and presented at various conferences and workshops, and I have over 612 related keynotes, papers, book chapters, posters, demonstrations, and reports, and over 336 other presentations.

19. I have conducted over 83 tutorials in over 28 countries.

20. I have received over 127 grants to fund my research, (co)authored 19 books, and edited book series for two publishers. In addition, I have (co)authored 130 journal or magazine articles. Google Scholar reports my works have been cited over 17,000 times, with an h-index of 59 and i10-index of 236.

21. I have been involved in numerous software and information systems projects and products over the years.

22. I am a longstanding member of multiple professional societies. These include ACM (which I joined in 1967) and IEEE, as explained above, as well as the Association for Information Science & Technology and Sigma Xi (since 1972)

23. My Curriculum Vitae (Ex. 1119) provides a more complete listing of these honors, awards, and my activities.

C. Detailed Research Activity

24. Paragraphs 25-28 describe in more detail some of the research work I have been involved in, largely in the context of digital library or IR theories, frameworks, and systems. Much of this research involves areas of technology that are directly related to the subject matter of the patent at issue in the Petition.

25. One topic of research relates to queries, query operations, searching, ranking, and related sub-topics.

26. Another topic of research relates to content, text, multimedia, and related types of information and data, in collections.

27. Another topic of research relates to indexing and related work with indexes and other data structures to improve retrieval performance.

28. Another topic of research relates to human-computer interaction, presentation of results and content items, information visualization, and other aspects of user interfaces and retrieval system usage.

D. Invention

29. I am an inventor on U.S. Patent No. 7,346,621, issued March 18, 2008, and entitled “Method and System for Ranking Objects Based on Intra-type and Inter-type Relationships.” I have a general understanding of the U.S. patent prosecution process and of the novelty and non-obviousness requirements for patentability.

III. MATERIALS REVIEWED

30. The analysis that I provide in this Declaration is based on my education, research, and experience in the field of information storage and retrieval, as well as the documents I have considered, including the '394 Patent, that is Ex. 1121 to Petitioner's Petition for *Inter Partes* Review (“the Petition”), and which claims priority to application 11/312,908, which issued as U.S. Pat. No. 7,779,011 (“the '011 Patent”), and also claims priority to two provisional applications filed on August 26, 2005 (Ex. 1128 to the Petition), and September 12, 2005 (“the '101 Provisional application”) (Ex. 1103 to the Petition). I have also reviewed the file history for the '394 Patent (Ex. 1122 to the Petition) and the '011 Patent (Ex. 1102 to the Petition), which contains very similar claims as the '394 Patent. *See* Appendix A.

31. In addition, I have reviewed a related patent owned by Patent Owner as well as relevant materials associated therewith. In particular, I have reviewed related

U.S. Patent 8,433,696 (Ex. 1105 to the Petition) and a final written decision invalidating U.S. Patent 8,433,696 in an IPR proceeding (Ex. 1106 to the Petition).

32. Furthermore, I have reviewed various relevant patents and publications from the art at the time of the alleged invention of the '394 Patent, to which this Declaration relates. These publications include those listed below:

- U.S. Publication No. 2005/0256846 (“Zigmond”) (Ex. 1112 to the Petition)
- U.S. Patent No. 6,529,903 (“Smith”) (Ex. 1113 to the Petition)
- U.S. Patent No. 6,370,518 (“Payne”) (Ex. 1109 to the Petition)
- U.S. Patent No. 7,885,963 (“Sanders”) (Ex. 1110 to the Petition)
- U.S. Patent No. 6,501,956 (“Weeren”) (Ex. 1125 to the Petition)

33. I have also reviewed all of the exhibits listed in Appendix B of this declaration

34. I may rely upon these materials and/or additional materials to rebut arguments raised by Patent Owner in response to the Petition or as necessary to address the Board’s decision on institution should the Board institute these proceedings. Further, I also may consider additional documents and information in forming any necessary opinions that were not yet available at the time of this declaration.

35. I reserve the right to revise, supplement, and/or amend my opinions based on new information or further developments in these or related proceedings.

IV. UNDERSTANDING OF APPLICABLE LEGAL STANDARDS

36. Although I am not an attorney, I have a general understanding of the applicable legal standards pertaining to the patentability issues presented in this proceeding. I understand that the Petitioner is challenging the patentability of the claims of the '394 Patent based on the following grounds:

- Claims 1, 2, 4-6, and 8-11 of the '394 Patent would have been obvious under 35 U.S.C. § 103(a) based on U.S. Publication No. 2005/0256846 (“Zigmond”) in view of U.S. Patent No. 6,529,903 (“Smith”) and further in view of U.S. Patent No. 6,370,518 (“Payne”); and
- Claim 3 of the '394 Patent would have been obvious under 35 U.S.C. § 103(a) based on Zigmond in view of Smith and Payne and further in view of U.S. Patent No. 7,885,963 (“Sanders”).
- Claim 7 of the '394 Patent would have been obvious under 35 U.S.C. § 103(a) based on Zigmond in view of Smith and Payne and further in view of U.S. Patent No. 6,501,956 (“Weeren”).

37. I understand that, in this *inter partes* review, Petitioner has the burden of proving that each challenged claim is unpatentable by a preponderance of the evidence.

38. I understand that a patent claim is unpatentable if, at the time of the invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of the prior art to yield the patent claim. I also understand that it is not required (although it is acceptable) that each element/limitation of a patent claim be found in a single reference in order to find a patent claim obvious. Rather, for a patent claim to be found obvious, all the elements/limitations of the patent claim must be found in teachings of one or more references that could be combined by a POSA with a reasonable expectation of success. I understand that a proper analysis of whether an invention is unpatentable for obviousness includes a review of the scope and content of the prior art, the differences between the patent claims at issue and the prior art, the level of ordinary skill in the field of the invention at the time of the invention, and other objective considerations.

39. I understand that a showing of obviousness requires some articulated reasoning with a rational underpinning to support the combination of the references. I understand that in consideration of the issue of obviousness it is important to identify whether a reason existed at the time of the invention that would have led a POSA to combine elements of the references in a way that yielded the claimed invention.

40. I understand that a claim may be considered unpatentable for obviousness for various reasons. I have been informed that the following exemplary rationales may support a finding of obviousness:

- combining prior art elements according to known methods to yield predictable results;
- simply substituting one known element for another to obtain predictable results;
- use of a known technique to improve similar devices in the same way;
- applying a known technique to a known device ready for improvement to yield predictable results;
- choosing from a finite number of identified, predictable solutions with a reasonable expectation of success;
- known work in a field that prompts variations in the work in the same or a different field that leads to predictable results; and
- some teaching, suggestion, or motivation in the prior art that would have led a POSA to modify a prior art reference or combine multiple prior art references or teachings to arrive at the claimed invention.

41. I understand that various objective or “real world” factors may be indicative of non-obviousness. I understand that such factors include:

- the commercial success of the claimed invention;

- the existence of a long-felt, unresolved need for a solution to the problem solved by the claimed invention;
- failed attempts to solve the problem solved by the claimed invention;
- copying of the claimed invention;
- unexpected results of the claimed invention;
- praise for the claimed invention by others in the relevant field; and
- willingness of others to accept a license under the patent because of the merits of the claimed invention.

A. Person Having Ordinary Skill in the Art

42. I understand that my assessment of claims of the '394 Patent must be undertaken from the perspective of what would have been known or understood by a person having ordinary skill in the art as of the relevant filing date of the '394 Patent. I will refer to such a person as a "POSA".

43. For the relevant priority date for the '394 Patent, I have used in this Declaration the earliest application date on the face of the patent: August 26, 2005. In other declarations pertaining to the '394 Patent, I analyze whether the '394 Patent is entitled to that date for its priority and conclude it is not entitled to that date. But all of the cited prior art discussed in this declaration antedates the earliest claimed priority of August 25, 2005, so a determination of priority is unnecessary for this declaration.

44. Counsel has advised me that to determine the appropriate level of one of ordinary skill in the art, the following four factors may be considered: (a) the types of problems encountered by those working in the field and prior art solutions thereto; (b) the sophistication of the technology in question, and the rapidity with which innovations occur in the field; (c) the educational level of active workers in the field; and (d) the educational level of the inventor.

45. With 40 years of experience in information retrieval, I am well acquainted with the level of ordinary skill required to implement the subject matter of the '394 Patent. I have direct experience with and am capable of rendering an informed opinion on what the level of ordinary skill in the art was for the relevant field as of August 26, 2005.

46. The relevant technology field for the '394 Patent is search-query processing techniques. Based on this, and the four factors above, it is my opinion that a POSA would have had at least a bachelor's degree in computer science and at least two years of experience in the field of search-query processing, designing, constructing, and/or testing systems that utilize data and/or information search techniques. My analysis and opinions regarding the '394 Patent have been based on the perspective of a POSA as of the '394 Patent's earliest claimed priority date of August 26, 2005. If the priority date to which the '394 Patent is entitled is earlier or later, my opinion on the level of ordinary skill in the art would not change.

47. I understand that the law provides categories of information that constitute prior art that may be used to anticipate or render obvious patent claims. To be prior art to a particular patent claim under the relevant law, I understand that a reference must have been published, or patented, or be the subject of a patent application by another, before the priority date of the patent. I also understand that the POSA is presumed to have knowledge of the relevant prior art. I further understand that Smith and the pre-grant publication of Sanders are cited on the '394 Patent, that Zigmond, Payne, and Weeren are not cited on the '394 Patent, and that none of the arguments herein were presented to or considered by the U.S. Patent & Trademark Office.

B. Broadest Reasonable Interpretation

48. I understand that, in the present *inter partes* review proceeding, the patent claims are given their broadest reasonable interpretation (BRI) in light of the specification of the patent at issue.

V. STATE OF THE ART AND OVERVIEW OF THE '394 PATENT

A. State of the Art

49. A broad overview of the state of the art is covered by *Modern Information Retrieval* (ACM Press Books, New York, 1999) (ISBN 0-201-39829-X) (excerpted in Ex. 1104 to the Petition). I co-authored Chapter 15 (Digital Libraries) with Ohm Sornil, then a Ph.D. student I advised. As is explained above

in Section II.C, much of my research connects with the topics covered in many of the other chapters as well. As discussed in this book, “[i]nformation retrieval (IR) deals with the representation, storage, organization of, and access to information items. The representation and organization of the information items should provide the user with easy access to the information in which he is interested.” Ex. 1104, p.15. Germane to the discussion of obviousness in this matter is the focus of the book: “We put great emphasis on the integration of the different areas which are closed [sic] related to the information retrieval problem and thus, should be treated together.” *Id.*, p. 17. This is made clear in Figure 1.3 (*id.*, p. 24), copied below.

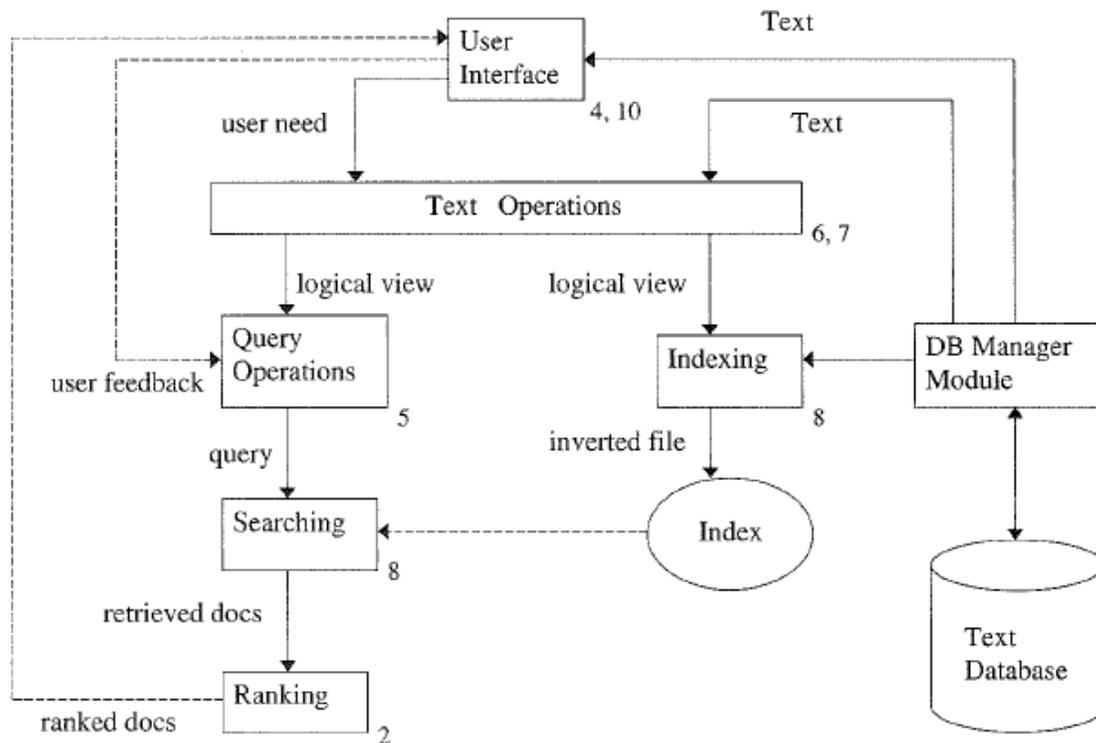


Figure 1.3 The process of retrieving information (the numbers beside each box indicate the chapters that cover the corresponding topic).

50. Chapter 2 on “Modeling” includes in Section 2.5.1 a discussion on basic concepts of classic information retrieval, and explains “[t]he classic models in information retrieval consider that each document is described by a set of representative keywords called index terms.” *Id.*, p. 38.

51. Chapter 4, “Query Languages,” includes in Section 4.3 a discussion of Pattern Matching (including words, prefixes, substrings, ranges, regular expressions), including the broad method considered in the ’394 Patent as successive characters are entered and matched with terms that begin with the characters already

seen. Even more complex patterns are described than occur with overloaded keyboards:

For instance, consider a query like ‘pro (blem | tein) (s | ε) (0 | 1 | 2)*’ (where ε denotes the empty string). It will match words such as ‘problem02’ and ‘proteins.’ As in previous cases, the matches can be restricted to comprise a whole word, to occur inside a word, or to match an arbitrary text segment.

Id., p. 93.

52. Chapter 8, on “Indexing and Searching,” in Section 8.2, explains Inverted Files, illustrated in Figure 8.1 (*id.*, p. 129) below, showing how words are mapped to their occurrence locations in storage.

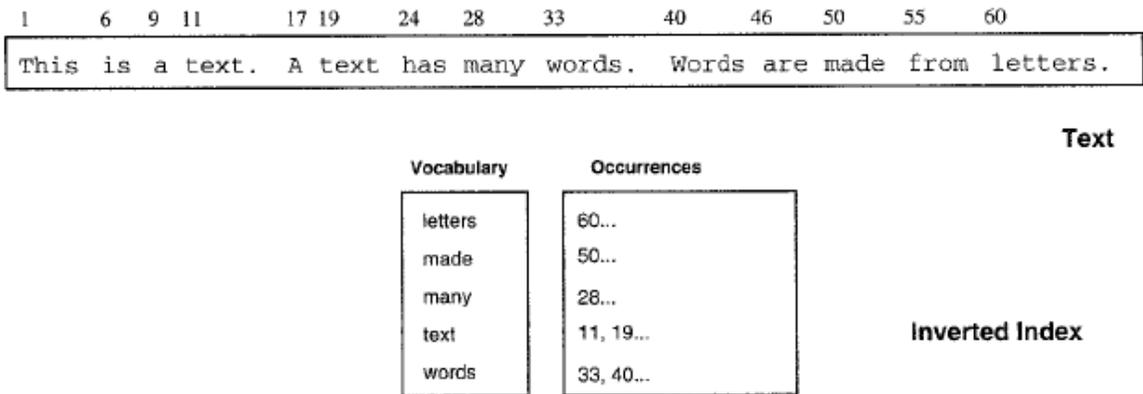


Figure 8.1 A sample text and an inverted index built on it. The words are converted to lower-case and some are not indexed. The occurrences point to character positions in the text.

53. Figure 8.3 (*id.*, p. 133), shown below, extends that discussion, including a discussion about the use of a vocabulary trie, explaining the building of an inverted index, which is an aid to fast retrieval, here organized so that prefixes of words are

mapped to sub-trees of sets of words starting with those prefixes, and to the individual words and their occurrences.

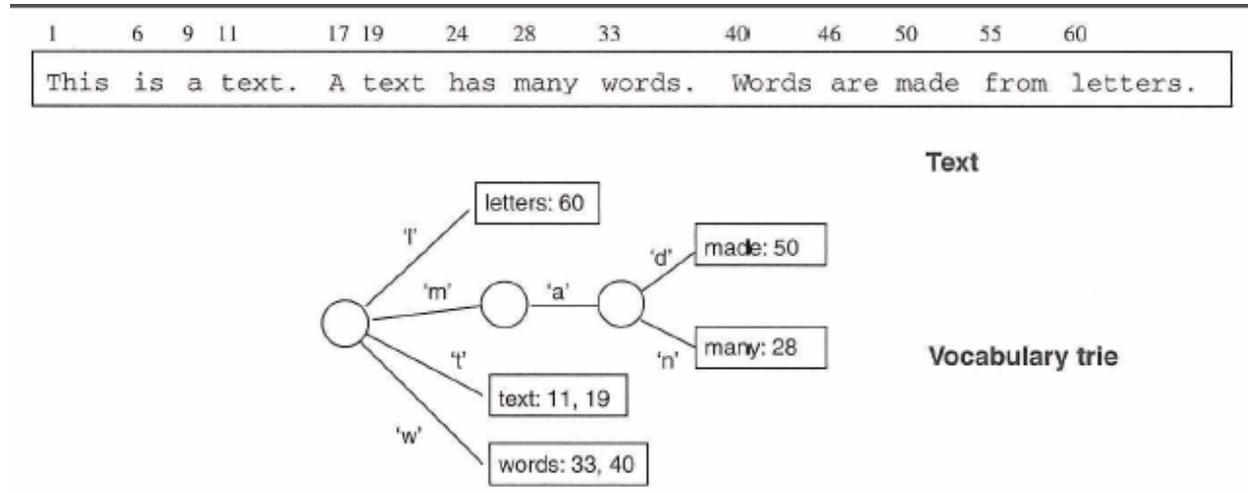


Figure 8.3 Building an inverted index for the sample text.

54. Section 8.3.1, on Suffix Trees and Suffix Arrays, explains, and illustrates in Figure 8.6 (*id.*, p. 200) below, another type of data structure (*e.g.*, trie) that also could index the terms so they can be identified quickly given a prefix of a term entered as discussed in the '394 Patent; the searching operation is explained on pp. 138-139.

1 6 9 11 17 19 24 28 33 40 46 50 55 60
 This is a text. A text has many words. Words are made from letters.

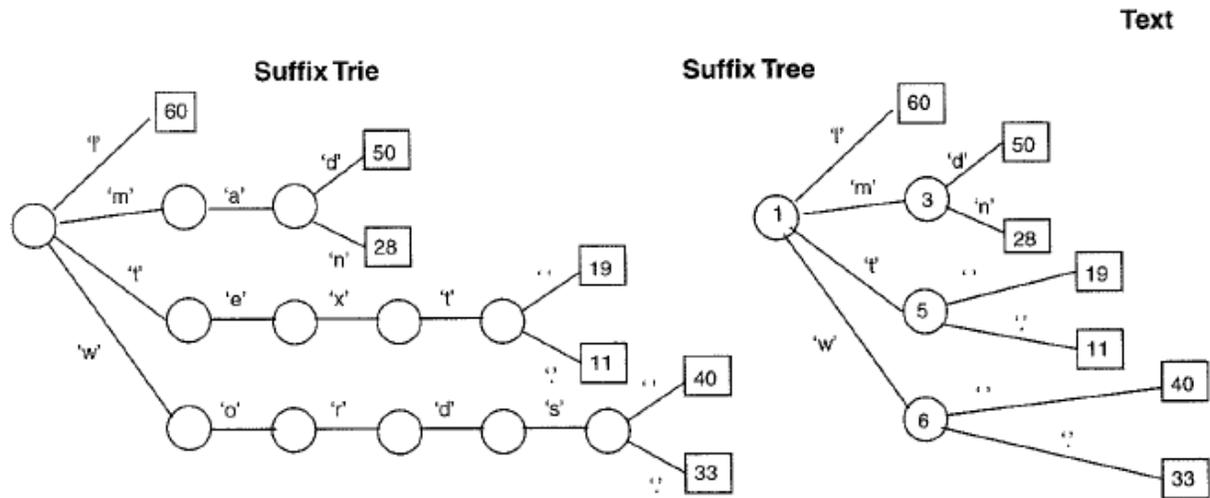


Figure 8.6 The suffix trie and suffix tree for the sample text.

55. Going beyond considering individual terms, Chapters 2 (“Modeling”) and 5 (“Query Operations”) discuss multiple approaches to:

- a. take queries made of multiple terms, associate weights (relevance values) with those query terms;
- b. associate weights with terms in documents, namely a set of possibly desired items (popularity values); and
- c. find and order a group of matching documents for a query.

56. Further, Chapter 10 discusses “User Interfaces and Visualization”, starting with an overview:

This chapter discusses user interfaces for communication between human information seekers and information retrieval systems. Information seeking is an imprecise process. When users approach an information access system they

often have only a fuzzy understanding of how they can achieve their goals. Thus the user interface should aid in the understanding and expression of information needs. It should also help users formulate their queries, select among available information sources, understand search results, and keep track of the progress of their search.

Id., p. 165.

57. Chapter 10 goes on to discuss, for search results, contextual methods for making a document set more understandable, which include showing query term hits within document content. *Id.*, p. 197. Chapter 10 further states that “it is often useful to *highlight* the occurrences of the terms or descriptors that match those of the user’s query” and “[h]ighlighting of query terms has been found time and again to be a useful feature for information access interfaces.” *Id.*, original emphasis.

58. As discussed above, multiple combinable techniques were known in the art as of August 26, 2005, covering the various aspects of information retrieval, including varied types of content items, queries interpreted as ordered or unordered sets of words or strings or patterns (including prefixes), indexing of desired items (yielding tries and other index structures), result sets in different formats, and user interfaces that include highlighting of query terms. These combinable techniques allowed for searching one or more characters and displaying search results, as well as searching using patterns, as are found in an overloaded keypad environment.

B. Overview of the '394 Patent

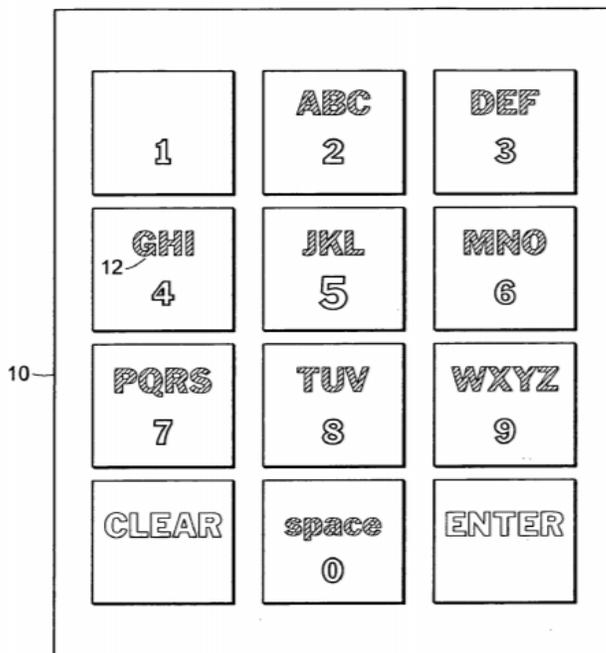
59. The '394 Patent's title is "Method And System For Dynamically Processing Ambiguous, Reduced Text Search Queries And Highlighting Results Thereof." According to the Abstract, in the '394 Patent a "method and system are provided of processing a search query entered by a user of a device having a text input interface with overloaded keys. The search query is directed at identifying an item from a set of items. Each of the items has a name including one or more words." Ex. 1121, Abstract. Thus far, the discussion is exactly situated as information retrieval.

60. The Abstract continues:

The system receives from the user an ambiguous search query directed at identifying a desired item. The search query comprises a prefix substring of at least one word in the name of the desired item. The system dynamically identifies a group of one or more items from the set of items having one or more words in the names thereof matching the search query as the user enters each character of the search query. The system also orders the one or more items of the group in accordance with given criteria. The names of the one or more items of the identified group are output to be displayed on the device operated by the user as ordered with the characters of the one or more words in the names corresponding to the prefix substring of the search query being highlighted.

Id., Abstract. This description matches closely with well-known information retrieval and display techniques discussed above in Section V.A.

61. The ambiguous search query inputs are entered using an overloaded keypad, such as a telephone keypad illustrated at Figure 1 of the '394 patent:



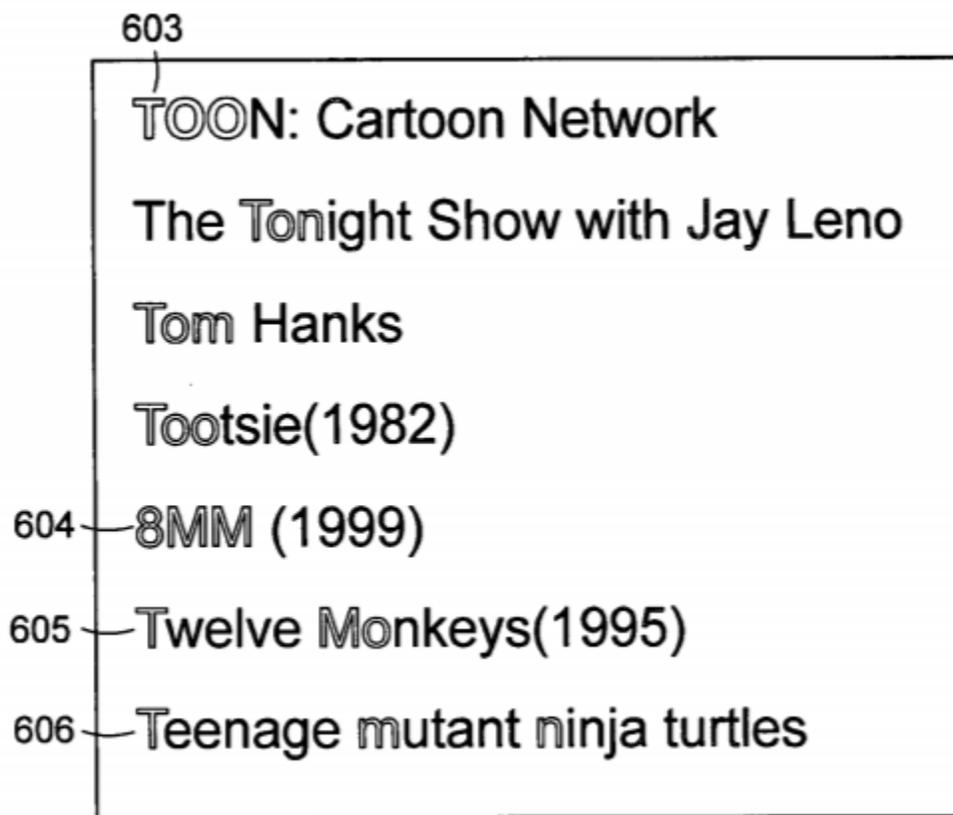
PRIOR ART
FIG. 1

Ex. 1121, FIG. 1.

62. When the user enters a query using the overloaded keypad, the query may be represented by a numeric key such as “2,” which may have been intended to mean any of alphanumeric characters “2,” “A,” “B,” or “C.” Ex. 1121, 1:44-50.

63. The specification describes creating an index that performs a mapping between alphanumeric characters and numeric characters corresponding to keys of the overloaded keypad. Ex. 1121, 3:47-59. This mapping enables an incremental search where each keystroke of a query retrieves results matching the various possible alphanumeric characters the keystrokes may represent. *Id.*, 3:47-67.

64. The '394 Patent describes a specific example where, after a user types in a numeric search query "866" on the overloaded keypad, the search system finds results with various alphanumeric characters corresponding to the query, as illustrated by FIG. 6B, reproduced below. Ex. 1121, 7:9-55.



Ex. 1121, Fig. 6B

65. The specification also describes highlighting characters that match the overloaded search query. For example, in the first item 603, the alphanumeric characters "TOO" are highlighted because they correspond to "866." Similarly, in the second item, the alphanumeric characters "TON" are highlighted because they also correspond to "866." Ex. 1121, FIG. 6B, 7:9-55. Highlighting is also briefly

mentioned in other parts of the specification. *Id.*, Fig. 4, 1:28-31, 2:31-35, 2:61-64, 3:20-24, 3:41-45, 6:29-36, 6:48-52, 7:9-11, 7:49-62, 8:12-20.

66. The specification does not describe how or when the characters for highlighting are determined, or whether the index is involved in the highlighting function.

C. Prosecution History

67. The '394 Patent was allowed after a brief prosecution involving only a double patenting rejection. Specifically, the application that led to the '394 Patent was rejected for double patenting over the '011 Patent. Ex. 1122, pp. 15-18. After the Applicant filed a terminal disclaimer, the application was allowed. *Id.*, pp. 7, 10.

68. The '394 Patent claims priority to, and is a continuation of, the application that issued as the '011 Patent. The '394 Patent claims contain similar limitations to the '011 Patent claims, so the prosecution of the '011 Patent provides context for the claims of the '394 Patent. *See* Appendix A (containing a comparison table showing the differences between the '394 and '011 Patent claims).

69. During prosecution of the application that issued as the '011 Patent, the claims were rejected in five separate office actions. Ex. 1102, pp. 156-178 (Non-Final Rejection of 1/10/2008), pp. 122-141 (Final Rejection of 8/29/2008), pp. 89-108 (Non-Final Rejection of 12/18/2008), pp. 60-79 (Final Rejection of 6/30/2009), pp. 24-45 (Non-Final Rejection of 12/3/2009).

70. The Applicant repeatedly argued that the highlighting feature distinguished over the prior art. *Id.*, pp. 150-154, pp. 109-114, pp. 86-87, pp. 56-59, pp. 19-23. But this argument was repeatedly found unpersuasive, and the Examiner rejected the claims each time. *Id.*, pp. 122-141, pp. 89-108, pp. 60-79.

71. The Applicant then shifted to arguing that the claims distinguished over the prior art by claiming “that the indexing be both (1) performed before receiving a search query, and (2) a direct mapping of subsets of items to unresolved keystrokes.” *Id.*, pp. 56-57 (original emphasis). This argument again did not overcome the prior art. *Id.*, pp. 24-45.

72. Subsequently, in the response dated March 26, 2010, the Applicant added a new feature to claim 35 (later renumbered as claim 1) for “determining letters and numbers:”

for at least one subset of items, determining letters and numbers present in the information associated with and describing the indexed items of said subset that correspond to the alphabetical and numerical symbols in fixed association with the strings of one or more unresolved keystrokes that are directly mapped to said subset;

Id., p. 15.

73. The Applicant also amended the “highlighting” step of claim 35 to refer back to this new determination:

in response to each unresolved keystroke, as the identified items are displayed, highlighting the ~~alphabetical and numerical symbols of~~ letters and numbers present in the one or more words in said information describing the identified items that were determined to correspond to ~~at least partially match~~ the alphabetical and numerical symbols in fixed

association with the unresolved keystrokes received so as to illustrate to the user how the unresolved keystrokes entered match the information associated with the displayed items; and

Id., pp. 15-16.

74. Along with this amendment, the Applicant argued that the “determining letters and numbers” step was related to the later “highlighting” step. The Applicant argued:

None of the cited references teach or suggest this combination of elements. Specifically, none of the cited references, alone or in combination, teach or suggest determining letters and numbers present in information associated with and describing items in a subset that correspond to alphabetical and numerical symbols in fixed association with the strings of unresolved keystrokes that are directly mapped to said subset and later highlighting these letters and numbers in response to a user's unresolved keystroke input. Thus, we submit that the claims, as amended, are patentable over the cited references.

Id., p. 20 (emphasis added).

75. The Applicant also argued that these new features found support in the specification at Fig. 6B and paragraphs 35-38 of the specification as filed. *Id.*, pg.

21. I note that paragraphs 35-38 of the specification corresponds to the '394 patent specification at column 6, line 53 to column 7, line 62. Ex. 1121.

76. After the March 26, 2010 amendment, an interview took place in which the "Examiner contacted applicant to advise of possible amendments that would put the application in condition for allowance," and the Applicant agreed to an amendment in exchange for allowance. Ex. 1102, pp. 7-10.

77. By the Examiner's Amendment, the "determining" step of claim 35 (later renumbered as claim 1) was amended to recite (with additions in underline and deletions in strikethrough) "determining which letters and numbers present in the information associated with and describing the indexed items of said subset caused said items to be associated ~~that correspond to alphabetical and numerical symbols in fixed association~~ with the strings of one or more unresolved keystrokes that are directly mapped to said subset." *Id.*, p. 8. The "highlighting" step was amended to recite "highlighting the letters and numbers present in the one or more words in said information describing the identified items that were determined to have caused the displayed items to be associated ~~correspond to the alphabetical and numerical symbols in fixed association~~ with the strings of unresolved keystrokes that are directly mapped to said items ~~received~~ so as to illustrate to the user how the unresolved keystrokes entered match the information associated with the displayed items." *Id.*

78. The Examiner did not address either of these steps in the reasons for allowance, but instead made the following statement:

The following is an examiner's statement of reasons for allowance: Claims 35, 36 and 37 recite a method for indexing a database for access using a device with overloaded keys; wherein the index is created by associating each item in the database with a string of unresolved keystrokes and upon receipt of a search request using said overloaded keys comparing the received unresolved keystrokes to the unresolved keystrokes mapped to the items in the database.

Id., p. 10. The '011 Patent then issued on August 17, 2010. Ex. 1101, p. 1.

VI. CLAIM CONSTRUCTIONS

A. “directly mapped”

79. The term “directly mapped” should be construed as “each alphanumeric character of a search query prefix substring associated with an item is matched with its corresponding numeric key equivalent on an overloaded keypad.”

80. The PTAB construed the similar term “direct mapping” in a proceeding for related U.S. Patent 8,433,696 as “matching each alphanumeric character of a descriptor identifying a content item with its corresponding numeric key equivalent on an overloaded keypad.” *See* Ex. 1106, pp. 7-9.

81. Both the '394 Patent and the '696 Patent are assigned to Patent Owner, name overlapping inventors, and claim priority to the same provisional applications. Both patents are directed to searching for items using unresolved keystrokes from

overloaded keypads. Ex. 1121, Abstract; Ex. 1105, Abstract. Therefore, the PTAB's construction of "direct mapping" for the '696 Patent is a useful starting point for construing the term "directly mapped" under BRI.

82. However, the '394 and '696 Patents use different terms for similar things in some cases. For example, the '696 Patent uses the term "descriptor" to refer to words associated with items that are used to match a search query. Ex. 1105, Abstract. The '696 Patent also states that "[t]he descriptors can include words in the name of the item or other information relating to the item." Ex. 1105, 3:6-12.

83. While the '394 Patent does not use the term "descriptor," the '394 Patent does discuss "words in the names thereof," among other similar phrases. For example, the table below shows that the '394 Patent describes words in item names as equivalent to the "descriptors" of the '696 Patent:

'696 Patent	'394 Patent
The system dynamically identifies a group of one or more items from the set of items having one or more descriptors matching the search query as the user enters each character of the search query. Ex. 1105, Abstract (emphasis added).	The system dynamically identifies a group of one or more items from the set of items having one or more words in the names thereof matching the search query as the user enters each character of the search query. Ex. 1121, Abstract (emphasis added).
The search query is directed at identifying an item from a set of items. Each of the items has one or more associated descriptors . Ex. 1105, 2:10-12 (emphasis added).	The search query is directed at identifying an item from a set of items. Each of the items has a name comprising one or more words . Ex. 1121, 2:20-22 (emphasis added).

84. In addition to the similarities between the '394 Patent specification and the '696 Patent specification, the claims use these phrases in similar manners as well. Specifically, the claim limitation of the '696 Patent that uses “direct mapping” is similar to the corresponding claim limitation of the '394 Patent that uses “directly mapped,” as demonstrated in the table below:

'696 Patent – claim 1	'394 Patent – claim 1
associating subsets of content items with corresponding strings of one or more overloaded keys of a keypad so that the subsets of content items are directly mapped to the corresponding strings of	providing access to an index of the items, the index having an association between subsets of the items and corresponding strings of one or more unresolved keystrokes for overloaded

one or more overloaded keys by a direct mapping	keys so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes for various search query prefix substrings
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85. Because of the similarity between the claim limitations and the disclosures, a similar construction of “directly mapped” is appropriate here. But the construction should account for differences between the ’394 Patent and ’696 Patent claims and specification.

86. The ’394 Patent claim limitation contains the extra phrase “for various search query prefix substrings.” The proposed construction reflects this extra phrase by referring to “each alphanumeric character of a **search query prefix substring** associated with an item,” rather than “each alphanumeric character of a **descriptor** identifying a content item.” See ¶¶ 79-80, above; Ex. 1106 at 7-9. This phrasing also reflects the ’394 Patent’s description of generating the mapping by “performing a many-to-many mapping from the alphanumeric space of terms to numeric strings corresponding to the **various prefixes of each alphanumeric term constituting the query string.**” Ex. 1121, 3:51-55 (emphasis added). Thus the specification makes clear, as a POSA would understand is the case in search systems, that indexing is in support of later searching, and index entries map candidate query strings to descriptors of content items.

87. The phrase “descriptors identifying a content item” should therefore be replaced with the phrase “search query prefix substring associated with an item.” As explained above, a POSA would view the inclusion of “search query” in “search query prefix substring” as a reminder that the prefix substring is a candidate or possible search query.

88. A table comparing the constructions between the ’394 Patent and the ’696 Patent appears below, with changes shown in corresponding colors for emphasis:

'696 Patent – “direct mapping”	'394 Patent – “directly mapped”
matching each alphanumeric character of a descriptor identifying a content item with its corresponding numeric key equivalent on an overloaded keypad.	each alphanumeric character of a search query prefix substring associated with an item is matched with its corresponding numeric key equivalent on an overloaded keypad.

89. I understand that Patent Owner, in a related ITC proceeding, proposed construing the term “directly mapped” as “each alphanumeric character of a prefix substring for at least one word in the information associated with an item is matched with its corresponding numeric key equivalent on an overloaded keypad.” Ex. 1117, pp. 24-25. I understand that the ITC declined to adopt this proposed construction, and instead construed “directly mapped” as “each alphanumeric character of a prefix

substring associated with an item is matched with its corresponding numeric key equivalent on an overloaded keypad.” *Id.* The claims are obvious under any of these constructions, as explained in detail below.

B. “letters and numbers”

90. This term should be construed as “alphanumeric characters.” This term appears twice in the claims – first in the “determining” step and second in the “highlighting” step. The term “alphanumeric characters” is used throughout the specification both with reference to the indexing as well as the highlighting. Ex. 1121, 3:49-59, 7:9-55. The many-to-many mapping described in the specification is a mapping from the “alphanumeric space of terms” to corresponding “numeric strings.” *Id.*, 3:49-59. The characters that are highlighted are also described as alphanumeric characters. *Id.*, 7:9-55.

91. Moreover, the keypad is described as having keys that “are overloaded with alpha-numeric characters” such that, for example, “the ‘2’ key can be used to enter the number ‘2’ and the letters ‘A,’ ‘B,’ and ‘C.’” Ex. 1121, 1:36-48. This description establishes that “alphanumeric characters” refers to “letters and numbers.” Moreover, the term “alphanumeric” is a well-known term that is defined as “consisting of both letters and numbers” Ex. 1120.

92. Additionally, the specification never requires any information associated with an item to have **both** letters and numbers. For example, the ’394

Patent describes several items with titles that do not have any numbers. *See, e.g.*, Fig. 6B (illustrating that at least the first three items have names with letters only). Therefore, the broadest reasonable interpretation of “letters and numbers” would not require both letters and numbers in any particular piece of information. The construction “alphanumeric characters” reflects this disclosure because, as a POSA would understand, each alphanumeric character can be either a letter or a number.

C. “caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset”

93. Under BRI, this phrase should be construed as “match a string of unresolved keystrokes directly mapped to the subset.” Specifically, the claimed determination of which characters “caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset” should be construed, under BRI, as a determination of the characters that “match a string of unresolved keystrokes directly mapped to the subset.”

94. This construction reflects that the match between characters and strings of unresolved keystrokes is what caused the association in the direct mapping. The specification teaches “performing a many-to-many mapping from the alphanumeric space of terms to numeric strings corresponding to the various prefixes of each alphanumeric term constituting the query string.” Ex. 1121, 3:50-55.

95. In other words, the mapping is generated by starting with alphanumeric terms, and matching them to corresponding numeric equivalents. *See VI.A, supra*

(“directly mapped” means “each alphanumeric character of a search query prefix substring associated with an item is matched with its corresponding numeric key equivalent on an overloaded keypad”). These numeric equivalents are strings of unresolved keystrokes entered via an overloaded keypad. Ex. 1121, 3:47-49, 3:59-62. Thus, the alphanumeric characters matching strings of unresolved keystrokes “caused” the direct mapping.

96. Therefore, under BRI, this phrase should be construed as the characters that “match a string of unresolved keystrokes directly mapped to the subset.”

97. As discussed above in Section V.C, the “determining” step in which this phrase appears was added by amendment during prosecution of the ’011 Patent. Ex. 1102, p. 20; *see also* V.C, *supra*.

98. The specification teaches that “the characters in the search result that match the overloaded single-word search prefix_characters are highlighted.” *Id.*, 7:49-51. Other portions of the specification use similar language. The specification states that search results are displayed “with the characters of the one or more words in the names corresponding to the prefix substring of the search query being highlighted.” *Id.*, 2:33-35, 3:43-45. Similarly, “the characters in the search result items that match the search prefix substring characters are highlighted to provide the user with a visual indication of the relationship between the key or keys pressed and the incremental match results.” *Id.*, 6:31-36; *see also* Fig. 6B and Fig. 7B. The

specification also describes “[t]he dynamic highlight of the prefix strings in the results for each character entry.” *Id.*, 6:48-50. Also, “the characters in the ordered result that match the multi-word overloaded search prefix characters are highlighted to provide the user with immediate feedback relating the key pressed to the incremental match results.” *Id.*, 8:12-16; *see also* Fig. 6B.

D. Ordering of Steps

99. I note that Patent Owner’s expert argued, in the related ITC proceeding, that the “determining” step of the ’011 Patent (*i.e.*, corresponding to limitation 1[b] of the ’394 Patent) “further defines the index of [the ‘indexing’ step of claim 1]” (*i.e.*, limitation 1[a] of the ’394 Patent). Ex. 1115, ¶187.

100. I disagree that limitation 1[b] **necessarily** further defines the index, since it does not explicitly limit the index. See Ex. 1121, claim 1.

101. Moreover, limitation 1[b] refers to the index and the direct mapping in the index (*e.g.*, “**indexed** items,” “caused said items to be associated with the strings of one or more unresolved keystrokes that are **directly mapped** to said subset”), indicating that the step of limitation 1[b] is separate from generating the index. *See* Appendix A, *infra*.

102. Additionally, a POSA would realize that the “determining” step (*i.e.*, limitation 1[b]) could be performed **before** a search query is received or **after** receiving a search query (*i.e.*, before or after limitation 1[c], which recites “receiving

from a user a search query”). *See* Appendix A, *infra*. This is because the claim and the specification do not state or otherwise indicate whether the step occurs before or after receiving a query. Nor do the claim or the specification indicate whether this step requires any modification to the index.

103. Claim 1’s ordering of the limitations places the step **before** receiving the search query, but the Applicant argued, during prosecution of the ’011 Patent, that the step was related to the highlighting step that occurs **after** receiving the search query. Ex. 1121, claim 1; Ex. 1102, at 21; *see* Section V.C, *supra*.

104. A POSA would understand that the plain text of the claim covers performing this step either before or after receiving the search query, under BRI. But, as described in detail below, the claims are obvious regardless of the relative ordering of the “determining” step (limitation 1[b]) and the “receiving . . . a search query” step (limitation 1[c]).

105. The specification provides no further guidance as to the ordering. The highlighting disclosure does not describe how or when this step would be performed. *See* Ex. 1121, 7:9-8:16.

106. I have reviewed the specification of the ’394 and ’011 Patents, including the provisional applications incorporated by reference, and find no clear and explicit disclosure of when or how to implement this step.

107. Although a POSA would find it obvious to implement limitation 1[b], as described below, the specification does not describe any example implementation, and a POSA would not recognize that the alleged inventors had possession of any example implementation.

VII. PRIOR ART

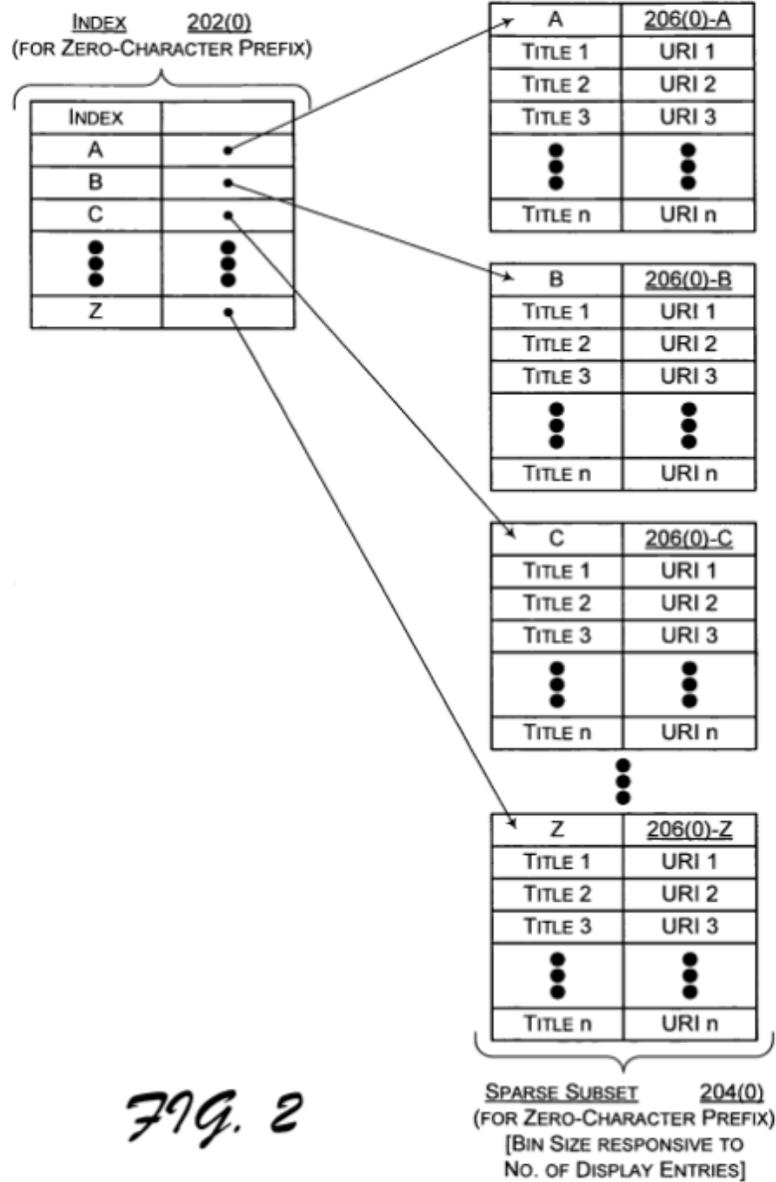
108. I understand that Petitioner is requesting *inter partes* review of claims 1-11 of the '394 Patent under the grounds set forth below.

References	Basis	Claims Challenged
Zigmond (Ex. 1112), Smith (Ex. 1113), Payne (Ex. 1109)	§ 103(a)	1, 2, 4, 5, 6, 8, 9, 10, 11
Zigmond (Ex. 1112), Smith (Ex. 1113), Payne (Ex. 1109), Sanders (Ex. 1110)	§ 103(a)	3
Zigmond (Ex. 1112), Smith (Ex. 1113), Payne (Ex. 1109), Weeren (Ex. 1125)	§ 103(a)	7

A. U.S. Publication No. 2005/0256846 (Zigmond)

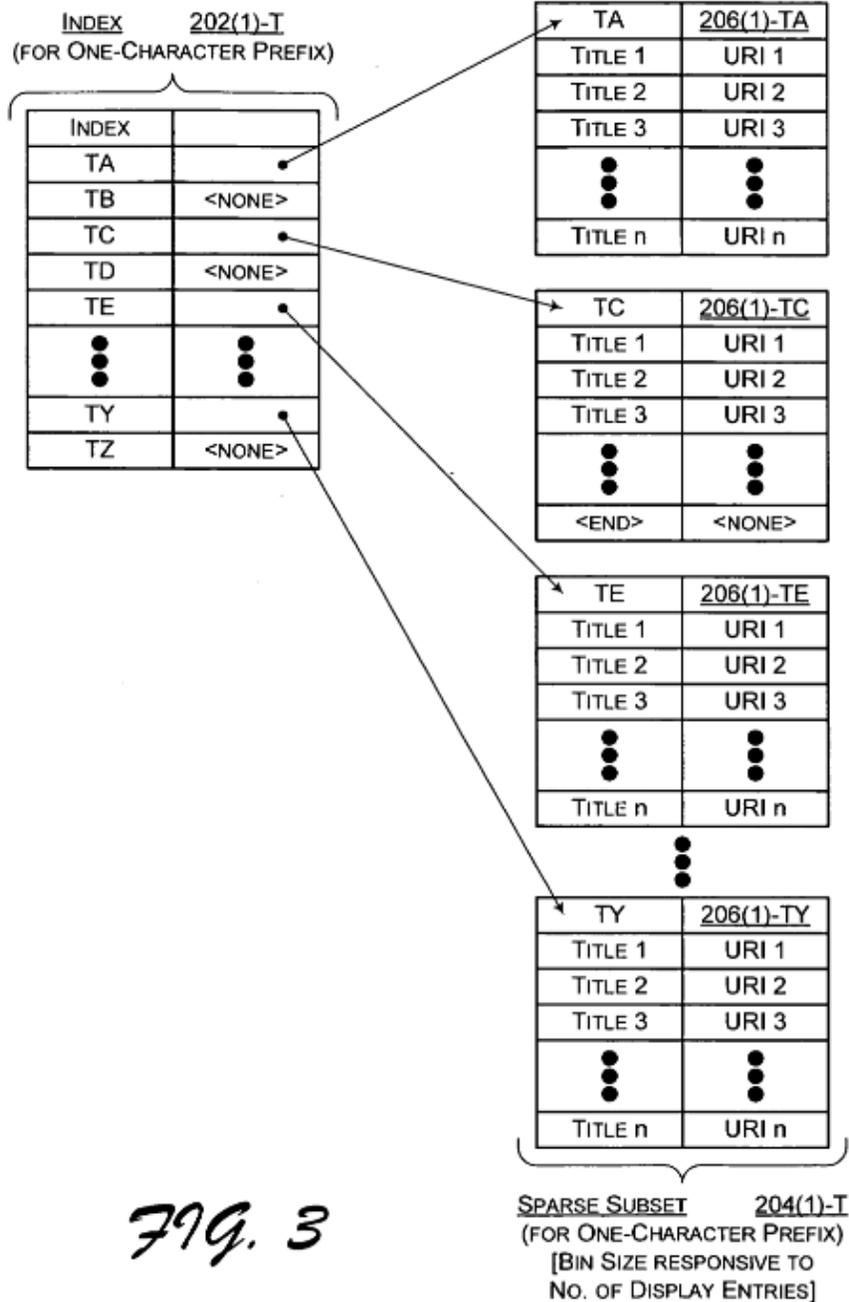
109. Zigmond discloses an interactive client-server data search that involves accepting incremental search inputs from a user at a client device. Ex. 1112, Abstract. This is described primarily in the context of television-based systems, but a client device in Zigmond may be any device with an associated display screen including set-top boxes and mobile phones, and both wired and wireless networks. *Id.*, ¶ [0037].

110. Zigmond teaches pre-mapping program titles into different bins based on the prefixes of each word in the program title. Ex. 1112, ¶ [0039]. For example, titles with words beginning with the character string “A” are mapped to an “A” bin; titles with words beginning with the character string “B” are mapped to the “B” bin; titles with words beginning with the character string “TA” are mapped to the “TA” bin, and so on. *Id.*, ¶¶ [0042], [0045], [0046], [0048], Figs. 2 and 3. An index for single character prefixes, including multiple segments, each of which is linked to a different bin, is shown in Fig. 2 of Zigmond, reproduced below:



Ex. 1112, Fig. 2.

111. Similarly, Fig. 3 (reproduced below), for two character prefixes, illustrates a second index comprising multiple segments, wherein each of the segments of the second index is linked to a different bin:



799. 3

Ex. 1112, Fig. 3.

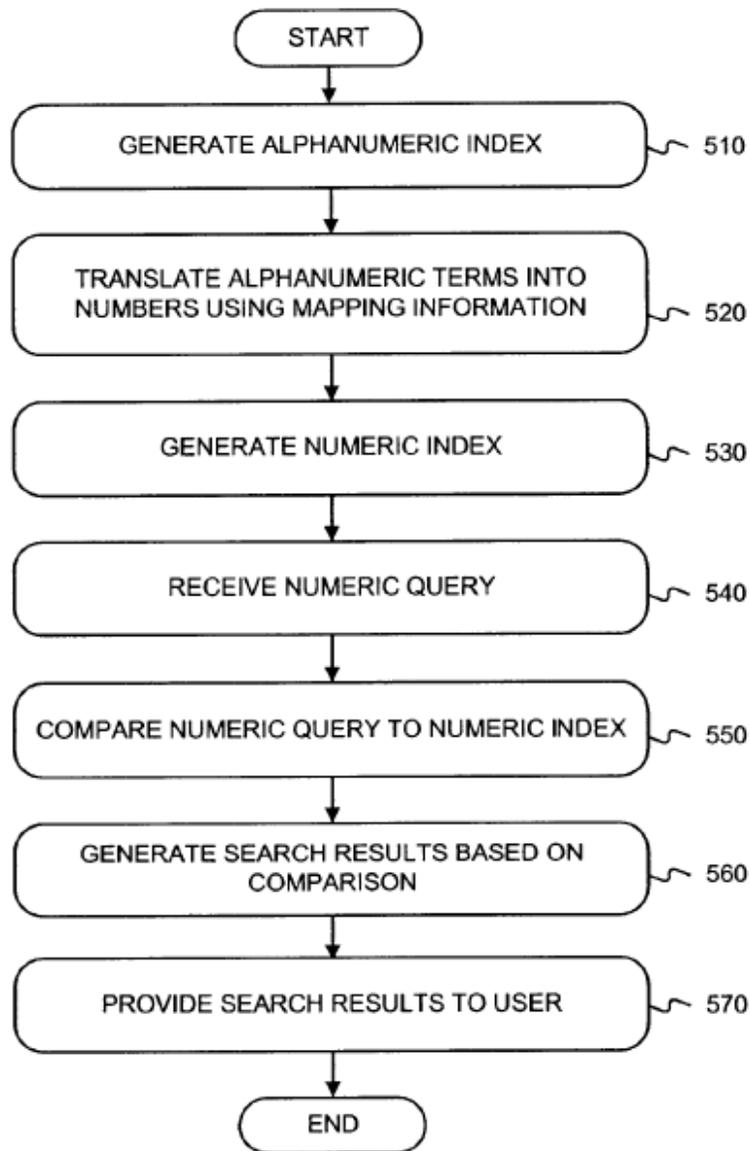
112. The pre-mapped lists of titles in a particular bin are then displayed on a screen of a client device when a user enters a search query that includes the character string prefix associated with that particular bin. Ex. 1112, ¶¶ [0065]-[0066].

B. U.S. Patent No. 6,529,903 (Smith)

113. Smith teaches “[a] system [that] allows a user to submit an ambiguous search query and to receive potentially disambiguated search results.” Ex. 1113, Abstract. Smith may be used in, but is not limited to, auto-completion applications. Smith teaches a process for generating a numeric index that can be used to find items based on an ambiguous search query:

In one implementation, a search engine's conventional alphanumeric index is translated into a second index that is ambiguated in the same manner as which the user's input is ambiguated. The user's ambiguous search query is compared to this ambiguated index, and the corresponding documents are provided to the user as search results.”

Id. Abstract. Accordingly, as shown below in the flow diagram given in Smith's Fig. 5A, a method is given “for providing search results in response to a numeric search query.” *Id.*, 2:40-42.



Ex. 1113, Fig. 5A

114. Smith's indexing system maps content items to strings of numeric keys originating from an overloaded keypad, which could be on a wireless telephone. Ex. 1113, Fig. 5A (above), Fig. 5B (below), Fig. 5C (below), 1:24-30, 4:57-5:62. The numeric keys are ambiguated keys (*i.e.*, unresolved keystroke entries) because they

may indicate a number or one of several letters. Smith also discloses a numeric index, illustrated in Fig. 5C, shown below.



Ex. 1113, Fig. 5B

TERM	LOCATION (DOCUMENT)
3	DOCUMENT 1
227	DOCUMENTS 1 AND 3
242672463	DOCUMENT 3
48367	DOCUMENT 3
736825	DOCUMENTS 1 AND 2
737247	DOCUMENTS 1
84336	DOCUMENT 2
8463	DOCUMENT 3

Ex. 1113, Fi. 5C

115. Smith’s numeric index may be used to find items based on a numeric search query by comparing the numeric search query to the numeric index. *Id.*, 5:33-42. The numeric index therefore allows searching using overloaded keys without requiring disambiguation of the unresolved keystrokes. *Id.*, 1:35-65, 2:56-64, 5:20-62. For example, instead of requiring the user to press the “2” key twice to indicate a “B,” Smith’s method only requires the user to press the “2” key once to find items

matching “B” (as well as documents matching “2,” “A,” and “C”). *See id.* Smith’s method thus reduces the number of keystrokes required to enter a query. *See id.*

C. U.S. Patent No. 6,370,518 (Payne)

116. Payne teaches a search system that provides a “progressively reduced list” of search results as a user enters characters of a search query. Ex. 1109, Abstract, 2:41-65, 7:35-60, 8:10-35, Figs. 3A-3D, claim 22. A POSA would also refer to such a search system as an incremental search system that enables searching using prefix search queries. The search queries may be entered using an overloaded keypad. *Id.*, 1:28-48, 2:27-37, 2:38-41, 4:36, 5:43-50, 6:62-7:10, 7:38-43, 10:59-67, Fig. 1.

117. Payne also provides “visual feedback indicators” that enhance the searching process for a user. *Id.*, 2:47-48, 5:43-50, 5:58-62. As a user incrementally enters an ambiguous search query (*e.g.*, depressing the “2” key twice), the matching characters of search results are highlighted. *Id.*, 6:60-7:65, Fig. 3D (reproduced below), claims 14, 16, 25, 32.

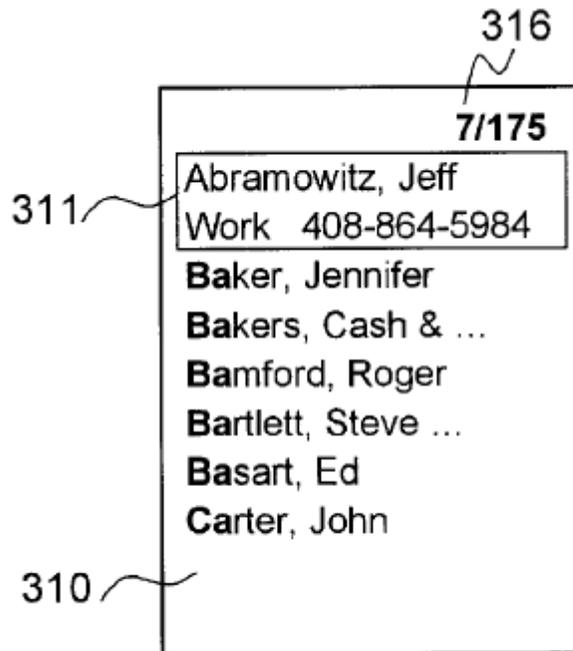


Fig. 3D

Ex. 1109, Fig. 3D.

118. The highlighted characters represent the unresolved keystrokes that have been entered as the overloaded prefix query. Ex. 1109, 7:13-15, 7:55-58, claim 25. Payne’s highlighting thus enables a user to search more efficiently using minimum keystrokes. *Id.*, Title, 2:47-65, 4:21-24, 5:45-62.

D. U.S. Patent No. 7,885,963 (Sanders)

119. Sanders describes a “progressive search” system that incrementally displays results as a user types in each character of a query. Ex. 1110, FIG. 5, 2:35-38. Sanders describes that its search system may rank search results based on various criteria. Ex. 1110, Abstract, Fig. 6, 2:31-36, 3:38-4:2, 6:4-8, 6:53-57, 7:9-10, 11:13-16, 11:34-12:12, 12:18-23, 14:4-7, 14:27-32, 15:27-31, 17:53-64. For example,

search results may be ranked alphabetically, chronologically, or by relevance, as well as other criteria. *Id.* Sanders describes an electronic program guide (EPG) database “capable of receiving and recording television broadcasts,” which a POSA would understand to include allowing the user to search for and watch television content items. *Id.*, 2:65-3:19, Figs. 4, 5.

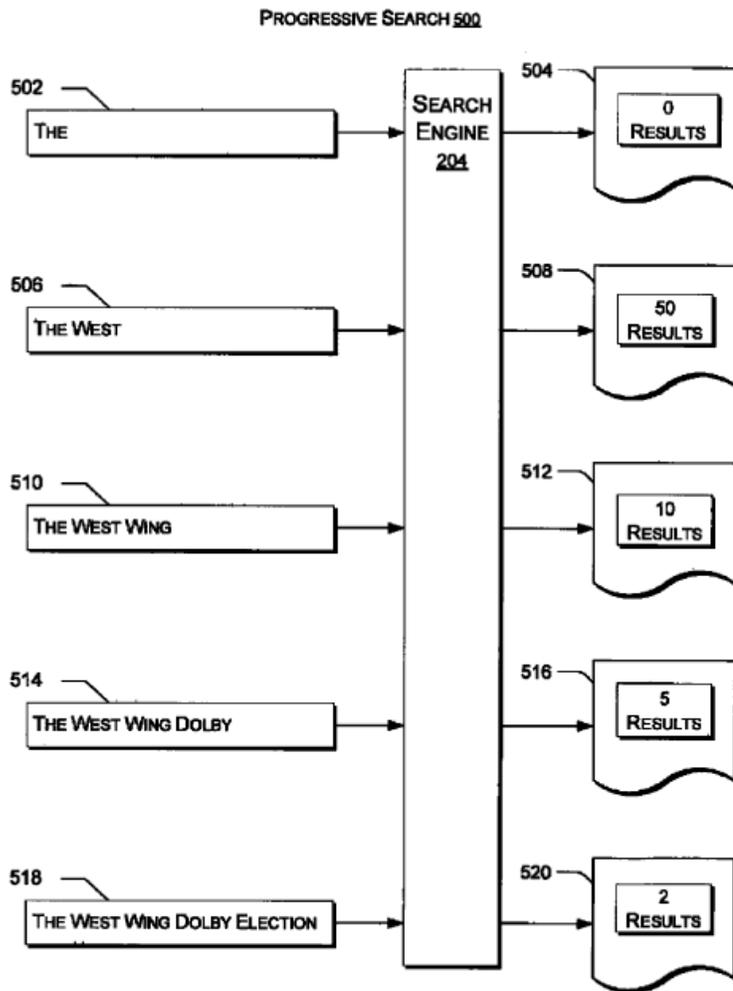


Fig. 5

Ex. 1110, Fig. 5

120. Sanders teaches abbreviating words to their word stems, then using the stemmed “search term to broaden the scope of a search.” Ex. 1110, 6:42-61. Sanders’s system also may adjust rankings based on whether search results are exact matches or partial matches. Sanders’s system adjusts the relevance such that exact matches receive a 100% relevance score, whereas partial matches (*e.g.*, matches achieved by stemming or spell correction) receive a lower relevance score. Ex. 1110, 11:48-62. Sanders’s relevance criteria based on exact vs. partial matches may be used together with other criteria to rank search items. *Id.*

E. U.S. Patent No. 6,501,956 (Weeren)

121. Weeren describes a system that provides access to information services, which may include retrieving information in databases and the like. Ex. 1125, 3:7-20. A user can receive and view the information on various mobile devices. *Id.*, 3:20-25. For example, a user may request information about particular stocks, and a server may retrieve the stock information and return it to the user’s device for display and optional interaction. *Id.*, 14:57-15:15. A POSA would thus determine that Weeren provides a type of search system that provides requested information in response to a user search query.

122. Weeren further teaches that, in addition to wireless devices, users may wish to access the information service using a “conventional wireline telephone” or “desk phone.” *Id.*, 5:3-18. This would beneficially allow a user to access the

information services using additional user devices. *Id.*, 5:14-18. A POSA would recognize that providing compatibility with additional devices, such as desk phones, would increase the potential customer base of the services, thus increasing the utility and reach of the information service.

VIII. FACTS AND OPINIONS RELEVANT TO THE UNPATENTABILITY GROUNDS ASSERTED IN THE PETITION WHICH FORM THE BASIS OF THE BOARD'S INSTITUTION DECISION

123. For reasons that I will address in more detail below, it is my firm belief and opinion that, at the time of the invention, it would have been obvious, and one of ordinary skill in the relevant art would have been motivated, to combine Zigmond, Smith, and Payne in a manner that yields all of the limitations of each of claims 1, 2, 4, 5, 6, and 8-11, and would have supplemented this combination with the teachings of Sanders in a manner that yields all of the limitations of claim 3. Additionally, a POSA would have supplemented the combination of Zigmond, Smith, and Payne with Weeren in a manner that yields all of the limitations of claim 7. In short, these claims are obvious in light of these references.

IX. GROUND 1 – CLAIMS 1, 2, 4, 5, 6, AND 8-11 ARE OBVIOUS OVER ZIGMOND IN VIEW OF SMITH AND PAYNE

A. Motivation to Combine Zigmond with Smith

124. Zigmond teaches an incremental search system that uses indexes to find items after each keystroke entered by a user. Ex. 1112, ¶¶ [0018]-[0020], [0042], [0045], [0046], [0048], Figs. 2, 3. A user may enter keystrokes using devices such

as a cell phone, remote control, or PDA. *Id.*, ¶¶ [0025], [0037]. As admitted by the '394 Patent, and as taught by Smith, these devices were known to use overloaded keypads. Ex. 1121, 1:33-50; Ex. 1113, 1:27-30. Smith teaches a method for finding items based on overloaded keystrokes using a numeric index. Ex. 1113, Abstract, 5:1-32, 2:56-64, 6:6-22. Smith also teaches generating a numeric index, either from an alphanumeric index or directly from items to be indexed. *Id.*, 5:1-32, 6:6-22, 6:36-41.

125. A POSA, being aware of both Zigmond and Smith, would have recognized several obvious benefits of combining them, and would have been motivated to do so for several reasons. Smith teaches a more efficient input and indexing method that reduces the number of keystrokes required to find items when receiving input from overloaded keypads. Ex. 1113, 1:36-65, 5:33-62. In particular, Smith's numeric indexes allow for fast and efficient searching using unresolved keystrokes from overloaded keypads. *Id.* A POSA would have been motivated to use Smith's index translation method to generate numeric indexes from Zigmond's alphanumeric indexes for use when receiving inputs from overloaded keypads in order to achieve these benefits in the system of Zigmond.

126. This combination would have been nothing more than the combination of known techniques (Smith's numeric index and Smith's method for searching on the numeric index) with a known system (Zigmond's search system that may receive

overloaded key inputs) that would yield predictable results (searching using Smith's efficient method in the system of Zigmond when input is received from overloaded keypads). Ex. 1112, Figs. 2, 3, ¶¶ [0025], [0037], [0039]-[0048]; Ex. 1113, 1:36-65, 5:1-62. Additionally, this combination would have predictably improved Zigmond's system by allowing a user to directly enter numeric keys from a remote control or other overloaded keypad input device without requiring extraneous keystrokes or a disambiguation step. Ex. 1113, 1:36-65, 5:33-62.

127. A POSA would also have considered the use of a numeric index (as taught by Smith) instead of or in addition to an alphanumeric index (as taught by Zigmond) to be nothing more than the combination of prior art elements according to known methods to yield predictable results, or a simple substitution of one known element for another to obtain predictable results. Specifically, a POSA would have recognized, from Smith's description of a numeric index and comparing a numeric query to the numeric index, how to modify Zigmond's system to use numeric indexes and numeric queries. *See* Ex. 1113, 5:20-6:22. A POSA would combine the references to predictably yield a system where numeric queries are compared to numeric prefix indexes in order to incrementally find results. *See* Ex. 1113, 5:1-42; Ex. 1112, ¶¶ [0039]-[0048], Figs. 2, 3.

128. A POSA combining Zigmond and Smith would have an expectation of success because the techniques involved in incremental searching, including the use

of indexes, were predictable techniques long known in the art. *See* Section V.A, *supra*. Additionally, because both Zigmond’s system and Smith’s system can search based on inputs from overloaded keypads, and because Smith teaches how to convert alphanumeric indexes (like Zigmond’s) to be numeric, a POSA would have found the modification to be a straightforward application of Smith’s teaching to Zigmond. Ex. 1112, ¶¶ [0025], [0037]; Ex. 1113, 1:27-30, 5:1-32, 6:6-22.

B. Motivation to Combine Zigmond and Smith with Payne

129. Zigmond and Smith in combination incrementally search based on inputs from overloaded keypads. *See* Section IX.A, *supra*. Payne further teaches highlighting search results in an incremental search system that receives inputs from overloaded keypads. *See* Ex. 1109, Figs. 1, 3B, 3D, 3E, 3G, 1:28-61, 2:38-65, 6:50-8:57; Section VII.C, *supra*.

130. Payne’s incremental highlighting method beneficially illustrates to the user both how many characters have been entered and how the highlighted characters of search results match the unresolved keystrokes. Ex. 1109, 7:13-15, 7:55-58, claim 25. Payne states that the highlighting shows how “each of highlighted characters represent[s] one of the symbols that has been entered.” *Id.*, claim 25. Payne’s highlighting and other visual feedback indicators, which are displayed “for the benefit of the user,” also “facilitate an efficient retrieval of pertinent information” “so that the effectiveness of the retrieval or search process can be easily understood.”

Id., 2:47-48, 5:43-50, 10:46-48. A POSA would understand that Payne's highlighting accomplishes these goals by illustrating which characters of the search results match the search query. *See id.*, 3:2-55, Figs. 3B, 3D, 3E, 3G, claim 25. A POSA would have been motivated to combine Payne's incremental highlighting method with the incremental search system of Zigmond in view of Smith in order to achieve these benefits.

131. A POSA also would have considered the combination of Payne with Zigmond and Smith to be nothing more than combination of prior art elements (Payne's incremental highlighting with the incremental search system of Zigmond and Smith) according to known methods (updating the software of Zigmond/Smith to highlight the characters that match the search query as taught by Payne) to yield predictable results (incrementally highlighting the characters that match the search query in the combined system). Ex. 1112, Figs. 2, 3, ¶¶ [0018]-[0020], [0025], [0037], [0039]-[0048]; Ex. 1113, 1:36-65, 5:33-62; Ex. 1109, Figs. 1, 3A-3D, 1:28-61, 2:38-65, 6:60-8:57.

132. A POSA further would have considered this combination to be the mere application of a known technique (*i.e.*, Payne's highlighting technique) to a piece of prior art ready for the improvement. Payne's incremental highlighting indicates how the items match an overloaded search query, which would have improved the incremental overloaded keypad search system of Zigmond and Smith by helping the

user understand how the search results match the query. Ex. 1112, Figs. 2, 3, ¶¶ [0018]-[0020], [0025], [0037], [0039]-[0048]; Ex. 1113, 1:36-65, 5:33-62; Ex. 1109, 2:47-48, 5:43-50, 7:13-15, 7:55-58, 10:46-48, claim 25.

133. A POSA combining Zigmond and Smith with Payne would have an expectation of success because highlighting characters that match a search query was a predictable technique long known in the art. *See* Section V.A, *supra*. Additionally, Payne’s system and the system of Zigmond/Smith both incrementally search based on inputs from overloaded keypads, so a POSA would have found it easy to adapt Payne’s highlighting to the system of Zigmond and Smith. *See* Section IX.A, *supra*; Ex. 1112, Figs. 2, 3, ¶¶ [0018]-[0020], [0025], [0037], [0039]-[0048]; Ex. 1113, 1:36-65, 5:33-62; Ex. 1109, Figs. 1, 3A-3D, 1:28-61, 2:38-65, 6:60-8:57.

C. Independent Claim 1

1[Preamble]. “A method of processing unresolved keystroke entries by a user from a keypad with overloaded keys in which a given key is in fixed association with a number and at least one alphabetic character, the unresolved keystroke entries being directed at identifying an item from a set of items, each of the items being associated with information describing the item comprising one or more words, the method comprising”

134. I understand from counsel that 1[Preamble] is a preamble of claim 1, and that the phrase “of processing unresolved keystroke entries by a user from a keypad with overloaded keys in which a given key is in fixed association with a number and at least one alphabetic character, said unresolved keystroke entries being

directed at identifying an item from a set of items, each of said items being associated with information describing the item comprising one or more words” can be understood to be a statement of the intended use (or application) for the method, but not a limitation of the claim. Nonetheless, I have been asked by counsel to assume that this language is a limitation of the claim. Zigmond and Smith in combination teach the features of the preamble of claim 1.

135. The preamble describes the purpose of the method (“processing unresolved keystroke entries . . . directed at identifying an item from a set of items,” as claimed), introduces the overloaded keypad (“unresolved keystroke entries by a user from a keypad with overloaded keys in which a given key is in fixed association with a number and at least one alphabetic character,” as claimed), and introduces the distinction and association between “items” and “information describing the item” that appears throughout the claim.

136. As explained in detail below, Zigmond describes a method with the same purpose, at least suggests an overloaded keypad, and also describes both “items” and “information describing the items.” Smith also discloses an overloaded keypad in more detail and describes an efficient process of searching using overloaded keypad inputs.

137. Zigmond describes a search system and method that, like the claimed method, involves “processing . . . keystroke entries being directed at identifying an

item from a set of items.” Ex. 1112, ¶¶ [0003]-[0007], [0016]-[0018]. Zigmond’s items include television programs, for which a user may search. *Id.*, ¶¶ [0002]-[0003], [0016]. The ’394 Patent similarly describes searching for items that include television content. Ex. 1121, 4:5-14. For at least this reason, Zigmond’s television programs are “items” and Zigmond teaches searching for the items.

138. Zigmond at least suggests the use of input from overloaded keypads by describing “accepting user input (*e.g.*, from a **remote, a keypad**, a touch pad/tablet, a keyboard, etc.).” Ex. 1112, ¶ [0025] (emphasis added). As the ’394 Patent admits, and as Smith discloses, it was common at the time of the alleged invention for remote controls and other devices to use overloaded keypads. Ex. 1121, 1:33-60; Ex. 1113, Fig. 5B, 1:27-61, 5:2-9. A POSA would interpret Zigmond’s “remote” to be an ordinary remote control device with an overloaded keypad, and thus would conclude that Zigmond’s search system is capable of accepting user input from devices having overloaded keypads, as claimed.

139. Zigmond also teaches that the client system may be part of a “mobile phone” or “PDA.” Ex. 1112, ¶ [0037]. The ’394 Patent also admits that it was common to use small overloaded keypads on mobile phones and PDAs. Ex. 1121, 1:33-50. Therefore, a POSA would also recognize that input for a search query could be received from overloaded keypads on devices such as mobile phones and PDAs in the system of Zigmond.

140. Zigmond further teaches that the items are each associated with information. For example, each item may be associated with several pieces of information including a title, a program description, captions, and other such information. Ex. 1112, ¶ [0081]. Zigmond teaches that such information, *e.g.*, program titles, is comprised of words. *Id.*, ¶ [0039], [0056], [0081], [0082]. Zigmond thus teaches “information describing the item comprising one or more words” as claimed.

141. A POSA would therefore conclude that Zigmond teaches each of the features of the preamble on its own. But to any extent a POSA might disagree that Zigmond explicitly teaches an overloaded keypad, Smith describes one.

142. Smith teaches an efficient (for users) method for searching using overloaded key inputs. Ex. 1113, 1:62-2:21, 4:59-5:62. Smith’s input may come from keypads on wireless telephones or other small devices with overloaded keypads. *Id.*, 1:20-34, Fig. 5B. Smith searches more efficiently by translating an alphanumeric index to a numeric index that enables direct searching on the numeric index using numeric inputs from the overloaded keypad. *Id.*, 5:20-42, Figs. 5A, 4A, 5C. Comparing the overloaded inputs directly to the numeric index obviates the need for a disambiguation step. *See* Ex. 1113, 1:35-2:3, 5:33-42. This approach reduces the number of keystrokes necessary to find matching items, which a POSA would recognize as desirable for users because it makes entering a query easier. *Id.*

Based on this disclosure, a POSA would understand that, for example, instead of pressing a “2” key twice to indicate “B,” Smith’s technique allows a user to simply press the “2” key once to find items associated with the character “B” (as well as items associated with “2,” “A,” or “C”). *Id.*

143. A POSA would have found it obvious to combine Smith with Zigmond in order to reduce the number of keystrokes required to find items when receiving input from overloaded keypads, as well as for other reasons. Ex. 1113, 1:36-65, 5:33-62; Section IX.A, *supra*. A POSA combining Smith with Zigmond would have an expectation of success because indexing was a well-known and predictable technique, because both Zigmond’s system and Smith’s system can search based on inputs from overloaded keypads, and because Smith teaches how to convert alphanumeric indexes (like Zigmond’s) to be numeric. Ex. 1112, ¶¶ [0025], [0037]; Ex. 1113, 1:27-30, 5:20-32, 6:6-22; Sections V.A, IX.A, *supra*.

144. Thus, a POSA would understand that Smith teaches “[a] method of processing unresolved keystroke entries by a user from a keypad with overloaded keys in which a given key is in fixed association with a number and at least one alphabetic character” and that the Zigmond and Smith combination teaches each of the features of the preamble.

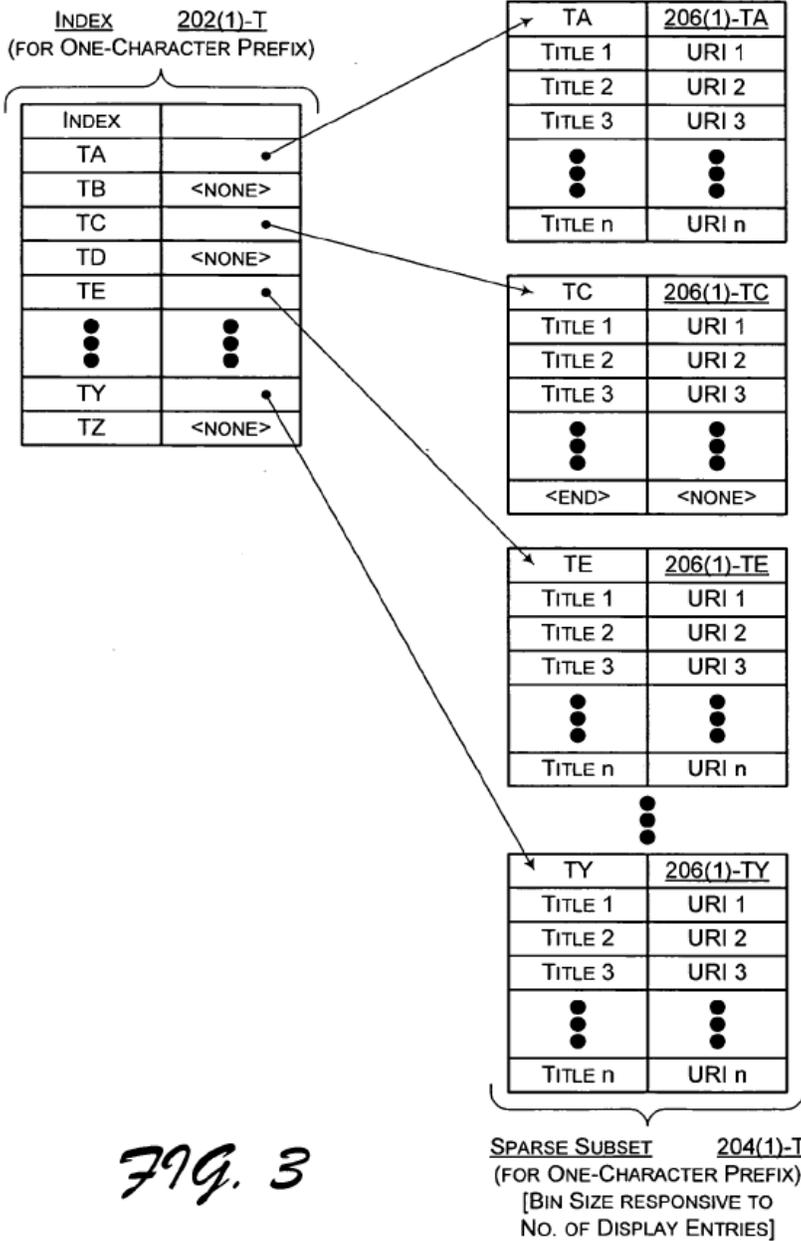
1[a]. “providing access to an index of the items, the index having an association between subsets of the items and corresponding strings of one or more unresolved keystrokes for overloaded keys so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes for various search query prefix substrings”

145. Zigmond and Smith in combination teach this feature.

146. This limitation requires an index that includes a direct mapping. The direct mapping, under the proposed construction, involves “each alphanumeric character of a search query prefix substring associated with an item is matched with its corresponding numeric key equivalent on an overloaded keypad.” *See* VI.A, *supra*.

147. Although Zigmond does not explicitly describe an index containing numeric key equivalents, Zigmond teaches an index that directly maps subsets of items to strings of keystrokes which may be search query prefix substrings, as explained in detail below. Smith further describes a process for converting an alphanumeric index to an index that contains numeric key equivalents.

148. As illustrated below, Zigmond describes index 202 that maps various alphanumeric prefix queries to “bins” of multiple items:



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Ex. 1112, Fig. 3.

149. As shown in Fig. 3 of Zigmond, a particular alphanumeric search query prefix (e.g., “TE”) may be mapped to a particular bin of items (e.g., 206(1)-TE), which contains entries for a subset of matching items in the bin. Ex. 1112, ¶¶ [0046]-

[0048]. Each entry includes information such as a title and a URI for the corresponding item. *Id.*, ¶ [0044].

150. Each entry of the bin is an “item” because each entry is “an item which contains information and is identifiable and selectable from a set of items through use of a search query.” *See* IX.C.1[Preamble], *supra*. Zigmond teaches receiving search queries for and identifying and selecting the items in the bins as matching the search query. Ex. 1112, ¶ [0066]. Furthermore, the presence of URIs (universal resource identifiers) would lead a POSA to conclude that each displayed title is selectable to access corresponding content. *Id.*, ¶ [0044]. A POSA would understand that a URI is essentially a link to content, and the presence of a URI implies a selectable link. In Zigmond’s case, a POSA would conclude that the URI would be selectable to display a corresponding television program item (*i.e.*, an “item” as claimed).

151. Zigmond further teaches that the query prefix substrings are “directly mapped” to the subsets of items, as illustrated by Fig. 3 of Zigmond. For example, the index 202(1)-T directly maps the prefix “TE” to the subset of items 206(1)-TE by virtue of providing a part of the index containing the subset of items indexed by the prefix “TE.” Ex. 1112, Fig. 3.

152. Similarly, Zigmond provides additional indexes for zero-character prefixes. *See id.*, Fig. 2. Such a zero-character index maps each of the one-character

prefixes (e.g., “T”) to a subset of items in the same manner as described above. Zigmond further teaches that the system would use separate indexes “for a zero-character prefix, for one-character prefixes, for two-character prefixes, and so forth.” *Id.*, ¶ [0056].

153. As discussed above, Zigmond at least suggests the use of input from overloaded keypads on devices like remote controls, mobile phones, and PDAs. Ex. 1112, ¶¶ [0025], [0037]. However, Zigmond’s indexes contain alphanumeric characters rather than “strings of unresolved keystrokes.” Ex. 1112, ¶ [0041].

154. Smith teaches a method of converting an alphanumeric index to a numeric index that is directly searchable using unresolved keystrokes from overloaded keypads. Ex. 1113, 5:20-42. The directly searchable numeric index provides a more efficient search method that requires fewer keystrokes when receiving input from overloaded keypads. Ex. 1113, 1:62-2:3, 5:32-62.

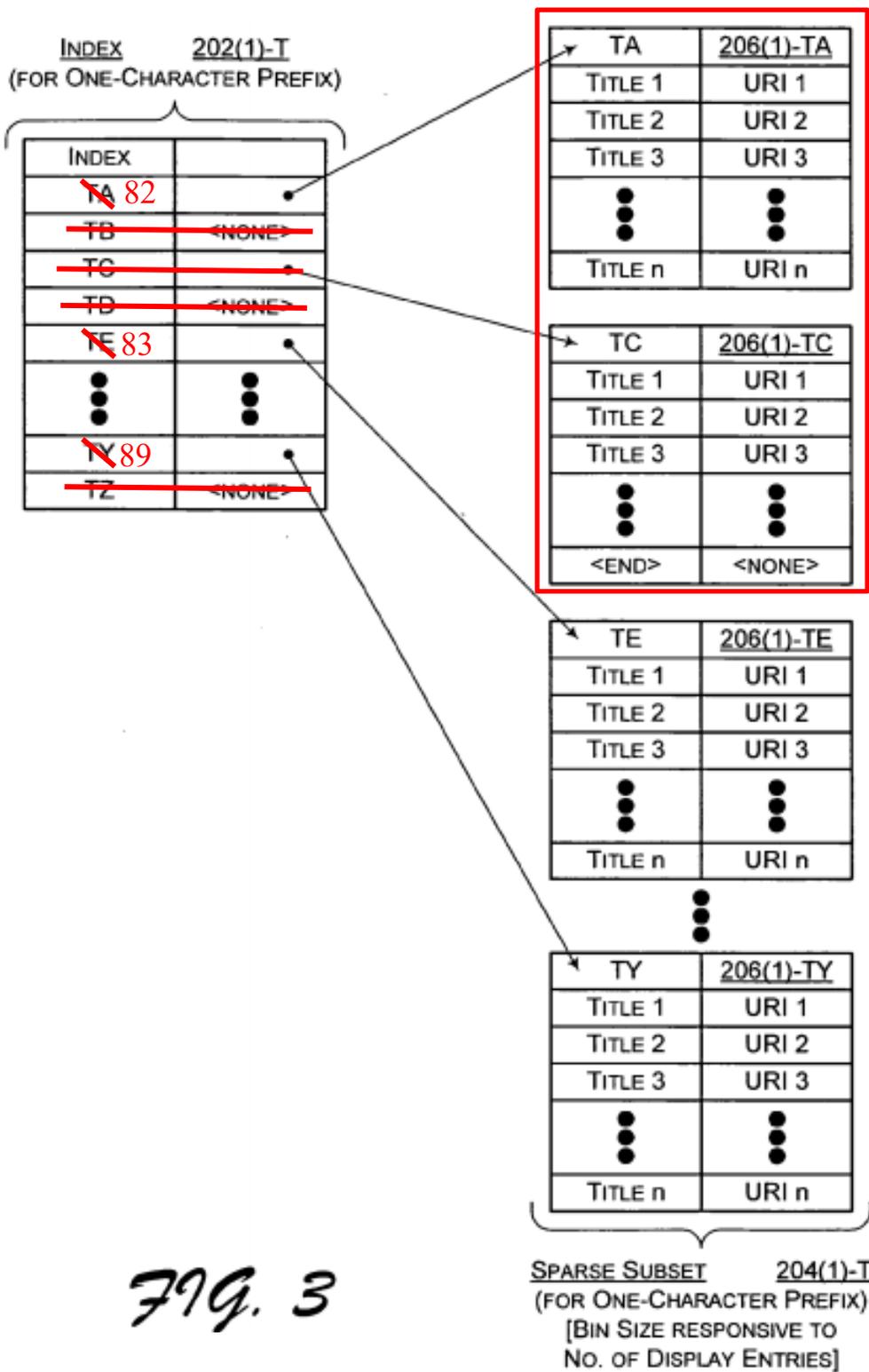
155. A POSA would have found it obvious to use Smith’s techniques to generate numeric indexes in the system of Zigmond in order to reduce the number of keystrokes required to find items when receiving input from overloaded keypads, as well as for other reasons. Ex. 1113, 1:36-65, 5:33-62; Section IX.A, *supra*. A POSA combining Smith with Zigmond would have an expectation of success because indexing was a well-known and predictable technique, because both Zigmond’s system and Smith’s system can search based on inputs from overloaded

keypads, and because Smith teaches how to convert alphanumeric indexes (like Zigmond's) to be numeric. Ex. 1112, ¶¶ [0025], [0037]; Ex. 1113, 1:27-30, 5:20-32, 6:6-22; Sections V.A, IX.A, *supra*.

156. The numeric indexes of the combination could be used in addition to, or as a substitute for, the alphanumeric indexes taught by Zigmond. A POSA would recognize, for example, that it would be desirable to store both alphanumeric and numeric indexes so that the search system is configured to receive inputs from devices with overloaded keypads (whereupon the numeric index would be used to find results) and from devices with full keypads/keyboards (whereupon the alphanumeric index would be used to find results). Ex. 1112, ¶¶ [0025], [0037]. As an alternative to separate indexes, both numeric and alphanumeric prefixes of possible queries could be stored together in combined indexes. Ex. 1113, 6:33-41. Otherwise, in a system that is only configured to receive input from devices with overloaded keypads, numeric indexes could be used instead of the alphanumeric indexes. A POSA also would understand that the combination of Zigmond with Smith could use only a single index (*e.g.*, by generating an index containing various prefixes mapped to items, as taught by Zigmond, where the index is a numeric index, as taught by Smith), since Smith doesn't require that the numeric index be translated from an alphanumeric index, but could be created from scratch to directly map the entries to the numbers. Ex. 1113, 5:63-6:14. Moreover, a POSA would make such

a combination with an expectation of success because Smith describes using a single numeric index storing items mapped to numeric strings of variable length, so a single index would accommodate all of the various prefixes disclosed by Zigmond. *See id.*, Fig. 5C. In other words, a single index could store all of the zero-character prefixes, one-character prefixes, two-character prefixes, etc. that are taught by Zigmond.

157. A POSA would have predictably applied Smith's teaching to Zigmond to generate numeric indexes 202 that, instead of or in addition to containing alphanumeric strings, would contain numeric strings representing unresolved keystrokes. Ex. 1113, 5:20-32. These strings would be directly mapped to the corresponding strings of unresolved keystrokes entered by the user. *See id.* I have modified Fig. 3 of Zigmond in red to show one obvious way that a POSA would have combined Zigmond and Smith to yield numeric indexes in the system of Zigmond:



799. 3

Ex. 1112, Fig. 3. (annotated)

158. As shown by my annotated Fig. 3, a POSA applying Smith's teaching of translating the alphanumeric index to a numeric index would have converted the alphanumeric index entries to be their numeric equivalents, such as "82," "83," etc. These entries would be stored in the index instead of or in addition to the equivalent alphanumeric entries "TA," "TB," "TC," "TD," "TE," "TF," "TG," etc.

159. As taught by Smith, the numeric index entries would be consolidated based on the numeric mapping such that different alphanumeric strings that map to the same numeric string are merged in the index. *See* Ex. 1113, Figs. 4A, 5C (illustrating that "bar" and "car" in the alphanumeric index both merge into their equivalent "227" in the numeric index). Thus, Zigmond's indexes, instead of having separate entries for "TA," "TB," or "TC," would have a single entry for "82" directly mapped to subset(s) of items for "TA," "TB," or "TC" as illustrated in my annotated Fig. 3. For the example modified index, the items for both "TA" and "TC" would be present in a single subset, as I illustrate in my annotated Fig. 3 by drawing a box around the bins for "TA" and "TC." Duplicate entries would not be needed in the numeric index, as I illustrate by crossing out rows of the alphanumeric index that would not be needed in the numeric index. Likewise, duplicates in the merged bins would not be needed, *e.g.*, if "Title 1" associated with "TA" was the same string as "Title 2" associated with "TC", the row for the latter would not be needed.

160. As described above, my annotated Figure 3 represents the predictable result of applying Smith's numeric indexing technique to an example index of Zigmond. A POSA would understand that this same technique would be applied to each of Zigmond's indexes in order to enable Zigmond's incremental search to work efficiently with unresolved keystroke entries from overloaded keypads.

161. The indexes of Zigmond combined with Smith meet the proposed construction of "directly mapped" because "each alphanumeric character of a search query prefix substring associated with an item" (*e.g.*, the characters "TA," "TB," or "TC" which are associated with items in a subset) "is matched with its corresponding numeric key equivalent on an overloaded keypad" (*e.g.*, the index maps "82" to the items associated with "TA," "TB," or "TC"). *See* Ex. 1112, ¶¶ [0034], [0039]-[0048]; Section VI.A, *supra*; ¶¶152-153, *supra*.

162. Similarly, the indexes meet the ITC's construction of "directly mapped" because the characters (*e.g.*, "TA," "TB," or "TC") are also "prefix substring[s]" associated with the items. *See* Ex. 1112, ¶¶ [0034], [0039]-[0048]; Section VI.A, *supra*; ¶¶152-153, *supra*. And the indexes meet Patent Owner's proposed construction because the characters (*e.g.*, "TA," "TB," or "TC") are "prefix substring[s] for at least one word in the information associated with an item" (*e.g.*, Zigmond's titles are information associated with item). *See* Ex. 1112, ¶¶ [0034], [0039]-[0048]; Section VI.A, *supra*; ¶¶152-153, *supra*.

163. Therefore, Zigmond in view of Smith teaches “providing access to an index of the items, the index having an association between subsets of the items and corresponding strings of one or more unresolved keystrokes for overloaded keys so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes for various search query prefix substrings.”

1[b]. “for at least one subset of items, determining which letters and numbers present in the information associated with and describing the indexed items of the subset caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset”

164. Zigmond and Smith together teach this limitation in conjunction with generating and/or accessing the modified numeric index. Additionally, Zigmond, Smith, and Payne together teach this limitation in conjunction with Payne’s highlighting feature. As I explain in detail below, combining Payne’s highlighting feature with the system of Zigmond/Smith also results in this step being performed.

165. Under the proposed construction of this step, the determined characters that “caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset” are the characters that “match a string of unresolved keystrokes directly mapped to the subset.” *See* Section VI.C, *supra*.

i) Patent Owner’s Interpretation of Limitation 1[b]

166. In a related ITC proceeding, Patent Owner’s expert advocated a broad interpretation of the “determining” step (limitation 1[b]) for infringement purposes:

The claim language recites determining which letters and numbers [in the title] caused the items [title] to be associated with a string of unresolved keystrokes. **What “caused” the association was the letters and numbers themselves**—this limitation simply goes to determining which of those letters and numbers.

Ex. 1115, ¶196, emphasis added.

167. Patent Owner’s expert thus argued that the determining is of “letters and numbers themselves,” which are “what ‘caused’ the association.” In other words, according to Patent Owner, limitation 1[b] does not require the determination to reference the direct mapping.

168. Patent Owner’s expert also stated, while arguing that this step finds written description support in the specification:

241. Therefore, as explained by the patentees, the fact that “Twelve Monkeys” is grouped with the subset of items associated with the string of unresolved overloaded keystrokes “866” because of the “T” in the word “Twelve” and the “Mo” in the word “Monkeys” is the determination that such letters caused “Twelve Monkeys” to be associated with the string of unresolved overloaded keys “866” and that determination is always present in the index.

Ex. 1116, ¶241.

169. Patent Owner’s expert thus opined that “the fact that [an item] is grouped with the subset of items associated with the string of unresolved overloaded keystrokes” is the claimed determination, which “is always present in the index.” In

other words, according to Patent Owner's expert, this step is satisfied as long as the index has subsets of items grouped with strings of unresolved keystrokes.

ii) Zigmond and Smith Teach Limitation 1[b] under Patent Owner's Interpretation

170. Zigmond and Smith teach generating and accessing a numeric index in which the subsets of items are associated with (directly mapped to) the numeric strings of unresolved keystrokes, as described above. *See* Section IX.C.1[a], *supra*. Generating and accessing such an index meets the implicit construction adopted by Patent Owner.

171. As discussed above for limitation 1[a], combining Zigmond and Smith would yield the following example index:

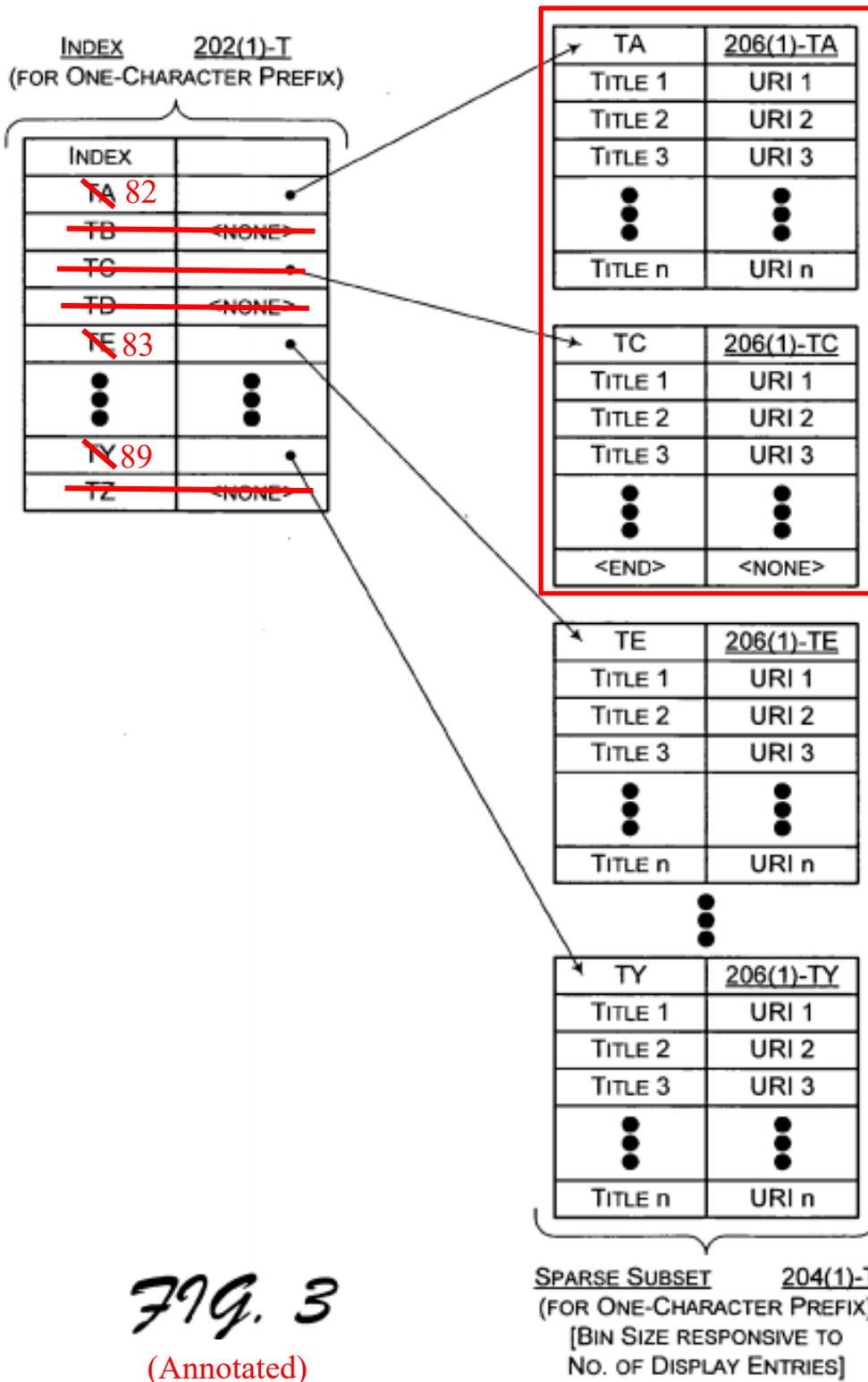


Fig. 3
(Annotated)

Ex. 1112, Fig. 3 (annotated)

172. This example index shows the result of a determination of alphanumeric characters (*e.g.*, the “TE” of the 206(1)-TE subset) of information associated with an item (the “TE” appears in each title of the 206(1)-TE subset) that match a string of unresolved keystrokes directly mapped to the subset (*e.g.*, each item of the 206(1)-TE subset is directly mapped to the numeric key equivalent “83”) under Patent Owner’s interpretation of limitation 1[b].

173. Under Patent Owner’s interpretation, the determination illustrated by this index would be performed both while generating the index (*i.e.*, the characters “TE” are determined so that matching items may be indexed in the “TE” subset that is mapped to the string “83”) and after receiving a search query (*i.e.*, when a user types in “83,” the “TE” subset is determined and accessed using the index) under Patent Owner’s interpretation. Determining that the “TE” subset matches the search query “83,” for example, would be determining the alphanumeric characters (*i.e.*, the “letters and numbers themselves,” to use the words of Patent Owner’s expert), which are what caused the mapping. *See* Ex. 1115, ¶196.

174. Furthermore, using the words of Patent Owner’s expert, “the fact that [an item with the letters “TE” in the title] is grouped with the subset of items associated with the string of unresolved overloaded keystrokes [“83”] because of the [“TE” in the words of the title] is the determination that such letters caused [the item with the letters “TE” in the title] to be associated with the string of unresolved

overloaded keys [“83”] and that determination is always present in the index.” *See* Ex. 1116, ¶241; Section IX.C.1[b].i, *supra*. In other words, this example index has subsets of items associated with (indeed, directly mapped to) strings of unresolved keystrokes. Therefore, under Patent Owner’s interpretation, the claimed determination is present in the index of Zigmond in view of Smith.

iii) Zigmond, Smith, and Payne Also Teach Limitation 1[b]

175. This step would also be performed, under any interpretation, by Zigmond and Smith in combination with Payne’s incremental highlighting feature. Payne teaches a method for highlighting search results in an incremental search system that uses overloaded keypads. Ex. 1109, Figs. 1, 3A-E, 3G, 7:35-58. For example, after entering first and second characters, “the first and second characters in the indexes are optionally highlighted to provide the visual feedback to the user how many characters have been entered.” *See id.*

176. Payne similarly teaches a mapping between unresolved keystrokes (which may be represented by numbers) and letters. Ex. 1109, 1:30-46. Payne also teaches that the information associated with each item may be “alphanumeric characters.” *Id.*, 3:56-4:20. Payne’s highlighted characters are the “letters and numbers themselves” under Patent Owner’s interpretation of limitation 1[b]. Thus, Payne also teaches Patent Owner’s interpretation of the “determining” because

Payne would determine the characters to highlight before highlighting them so that the highlighted characters represent the symbols entered by the user. Ex. 1109, 7:35-58, claim 25. Under Patent Owner's interpretation, these characters that represent the symbols entered by the user are "the letters and numbers themselves" that caused the direct mapping. *See* IX.C.1[b].i, *supra*.

177. A POSA would be motivated to combine Payne with Zigmond and Smith because Payne's highlighting method beneficially illustrates to the user both how many characters have been entered and how the search results match the unresolved keystrokes, as well as for other reasons. Ex. 1109, 2:47-48, 5:46-50, 7:13-15, 7:55-58, 10:46-48, claim 25; *see* Section IX.B, *supra*. A POSA combining Zigmond and Smith with Payne would have an expectation of success because highlighting characters that match a search query was a well-known technique and because Payne's system and the system of Zigmond/Smith both incrementally search based on inputs from overloaded keypads, so a POSA would have found it easy to adapt Payne's highlighting to the system of Zigmond and Smith. *See* Section IX.A, *supra*; Ex. 1112, Figs. 2, 3, ¶¶ [0018]-[0020], [0025], [0037], [0039]-[0048]; Ex. 1113, 1:36-65, 5:33-62; Ex. 1109, Figs. 1, 3A-3D, 1:28-61, 2:38-65, 6:50-8:57; *see* Section IX.B, *supra*.

178. In the combination of Payne with Zigmond and Smith, the characters would be highlighted so as to illustrate the characters that represent an entered

keystroke. Ex. 1109, claim 25. Limitation 1[b] is therefore met by Zigmond in view of Smith and Payne.

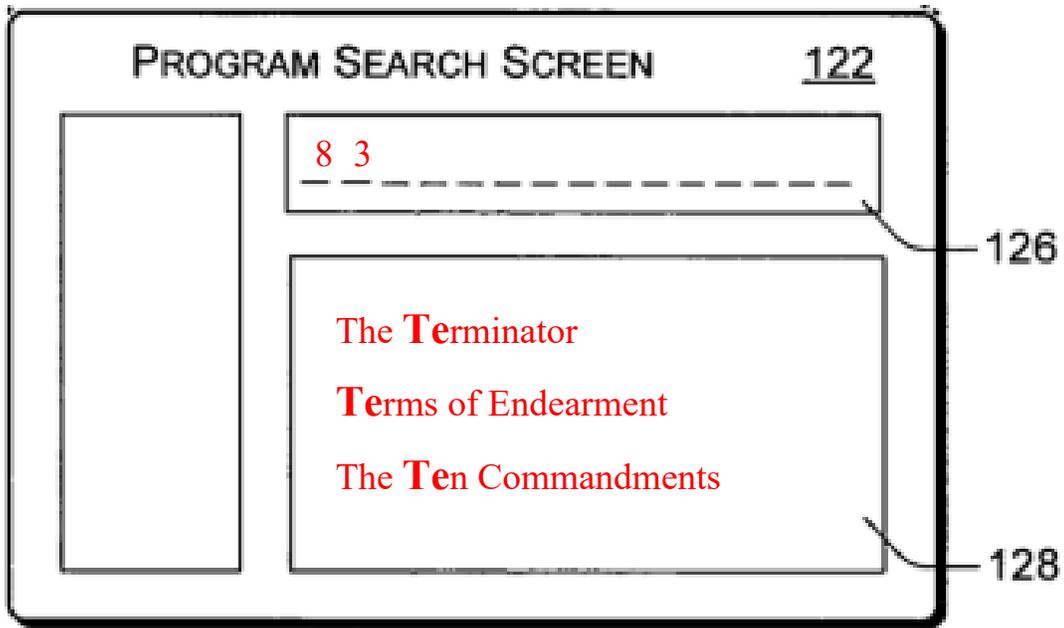
179. Additionally, when making the combination, a POSA would take into account Zigmond's teaching that **any word** of the titles or other information associated with each search result may be searched for and found. Ex. 1112, ¶ [0081]. Therefore, a POSA would combine Payne's highlighting feature with Zigmond and Smith so that the system enables searching for, finding, and highlighting characters from any word of the titles or other information. A POSA would thus use ordinary creativity and common sense to fit the references together like pieces of a puzzle.

180. This ordinary creativity and common sense would lead a POSA to recognize that if an input query matched the first word of Zigmond's title, then the characters that caused the first word of Zigmond's title to be match the query should be highlighted using Payne's method; if an input query matched a second word of the title, characters that caused that word to match the query should be highlighted, and so forth. In other words, a POSA would easily recognize that whichever characters caused the match with the input query should be highlighted using Payne's method. Doing otherwise would confuse the user and lead away from Payne's goals of showing how "each of highlighted characters represent[s] one of

the symbols that has been entered” and “so that the effectiveness of the retrieval or search process can be easily understood.” Ex. 1109, 10:46-48, claim 25.

181. A POSA would find it obvious to determine which word and/or characters of the title “caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset.” This would be an obvious way of determining and subsequently highlighting the appropriate letters and numbers to highlight in the combination, as described by Payne.

182. I illustrate an example search results screen in the system of Zigmond in view of Smith and Payne:



(As modified by Smith and Payne)

Fig. 1

183. As shown in my modified excerpt of Figure 1 of Zigmond, combining Zigmond with Smith would result in the input query being unresolved numeric characters corresponding to entries from an overloaded keypad. Ex. 1113, 5:33-42; *see* Section IX.A, *supra*. As illustrated, instead of receiving an alphanumeric query such as “TE,” the system of the combination would receive a numeric query such as “83” and would find results that are directly mapped to the numeric prefix “83.” These results would include items with first words and/or other words starting in “TE” (as well as other character combinations that map to “83”). Ex. 1112, Fig. 1, ¶ [0081].

184. A POSA would combine Payne with Zigmond and Smith using common sense so as to highlight the alphanumeric characters that caused the match with the input query, as is illustrated in the revised Figure 1 by bolding the characters “TE” in the search results regardless of which word they are in. Ex. 1112, ¶ [0081]; Ex. 1109, 10:46-48, claim 25. A POSA would recognize that an obvious way to determine these characters would be to determine which characters caused the association with the string of unresolved keystrokes in the direct mapping (*e.g.*, the characters “TE” that are directly mapped to the query “83” in the index). *See* Section IX.C.1[a], *supra*. In other words, the system of the combination would determine the characters that “match a string of unresolved keystrokes directly mapped to the subset,” thereby meeting Petitioner’s construction of the “caused” limitation. *See* Section VI.C, *supra*. A POSA would determine the characters that caused the match in the direct mapping for highlighting because these highlighting these characters would illustrate why the search results are directly mapped to the input. *See* Section VI.A, *supra*. Therefore, determining characters that caused the match with the search query would have been an obvious and convenient way to determine the characters to highlight in the system of the combination.

185. This type of highlighting would be well within the grasp of a POSA at the time of the invention. Both Payne and Zigmond in view of Smith teach mapping unresolved numeric characters to alphanumeric characters, so determining the

alphanumeric characters that caused the mapping with the unresolved numeric characters and highlighting them would be an obvious extension of existing highlighting techniques that were generally known in the art. *See, e.g.*, Section V.A, *supra*.

186. For all of these reasons, a POSA would find the above-recited step obvious over the combination of Zigmond, Smith, and Payne.

1[c]. “receiving from a user a search query for desired items composed of unresolved keystrokes, the search query comprising a prefix substring for at least one word in information associated with the desired item”

187. Zigmond and Smith, as combined above, teach this feature.

188. Zigmond describes receiving user input queries and responsively displaying subsets of programs prefetched from a server. Ex. 1112, ¶¶ [0031], [0034]-[0036]. Users enter the queries incrementally at the client, which forwards the queries to the server in order to perform a search using indexes 202. *Id.*, ¶¶ [0053]-[0056].

189. Zigmond’s incremental search queries are prefix substrings such as “TE,” which may be stored in an index mapping the substring to items with titles or other information associated with the items that match the prefix. Ex. 1112, Fig. 1, ¶ [0068]. Since Zigmond teaches that “the words and characters of program titles” are indexed, Zigmond’s index has been built to support a subsequent “search query

comprising a prefix substring for at least one word in information associated with the desired item” as claimed. Ex. 1112, ¶ [0039], [0056], [0081], [0082].

190. A POSA would have found it obvious to use Smith’s techniques to generate numeric indexes in the system of Zigmond in order to reduce the number of keystrokes required to find items when receiving input from overloaded keypads, as well as for other reasons. Ex. 1113, 1:36-65, 5:33-62; Section IX.A, *supra*. A POSA combining Smith with Zigmond would have an expectation of success because indexing was a well-known and predictable technique, because both Zigmond’s system and Smith’s system can search based on inputs from overloaded keypads, and because Smith teaches how to convert alphanumeric indexes (like Zigmond’s) to be numeric. Ex. 1112, ¶¶ [0025], [0037]; Ex. 1113, 1:27-30, 5:20-32, 6:6-22; Sections V.A, IX.A, *supra*.

191. In the system of Zigmond in view of Smith, as combined above, the prefix would be an unresolved numeric query (*i.e.*, the search query “composed of unresolved keystrokes”). *See* Ex. 1113, Fig. 5A, 5:33-42; Section IX.C.1[a], *supra*.

192. In the combination of Zigmond in view of Smith, the numeric index generated, *e.g.*, using Smith’s translation method, would also be generated prior to receiving a search query. This would necessarily be the case because the numeric index would be used to find search results based on the numeric query. Ex. 1113, Fig. 5A, 5:20-42. Therefore, in the system of the combination, the indexing would

occur before “receiving from a user a search query for desired items **composed of unresolved keystrokes.**”

1[d]. “in response to each unresolved keystroke, identifying and displaying the subsets of items, and information associated therewith, that are associated with the strings of one or more unresolved keystrokes received from the user based on the direct mapping of strings of unresolved keystrokes to subsets of items;”

193. Zigmond in view of Smith teaches this feature.

194. A POSA would have found it obvious to use Smith’s techniques to generate numeric indexes in the system of Zigmond in order to reduce the number of keystrokes required to find items when receiving input from overloaded keypads, as well as for other reasons. Ex. 1113, 1:36-65, 5:33-62; Section IX.A, *supra*. A POSA combining Smith with Zigmond would have an expectation of success because indexing was a well-known and predictable technique, because both Zigmond’s system and Smith’s system can search based on inputs from overloaded keypads, and because Smith teaches how to convert alphanumeric indexes (like Zigmond’s) to be numeric. Ex. 1112, ¶¶ [0025], [0037]; Ex. 1113, 1:27-30, 5:20-32, 6:6-22; Sections V.A, IX.A, *supra*.

195. A POSA combining Zigmond and Smith would keep Zigmond’s incremental search feature by translating each prefix-based index of Zigmond’s system to be an equivalent numerical index, as discussed above. *See* Section IX.C.1[a], *supra*.

196. Because the system of the combination is an incremental search system, it identifies and displays subsets of items “in response to each unresolved keystroke.” For example, after a user has entered a first keystroke (*e.g.*, alphanumeric “T,” which would be entered as the numeric equivalent “8” in the combination), the system displays the subset of items matching the entered prefix in the matching index. Ex. 1112, Fig. 4, ¶¶ [0065]-[0066]. When a user then inputs a second keystroke, the system then identifies and displays subsets of items matching the first and second keystrokes together (as the first and second character in a prefix string). *Id.*, ¶ [0068].

197. The items are displayed along with the “information associated therewith,” such as a title. For example, Zigmond displays a separate entry in the search results for each item and populates the entry with corresponding title information. *See* Ex. 1112, Fig. 4. Moreover, the presence of the URI in the index would indicate to a POSA that the displayed item is selectable. *See id.*, Fig. 3 (indicating URIs stored with each item in the index). Otherwise the URI would have no purpose. Therefore, Zigmond teaches displaying both items (the selectable portions of the interface that cause display of television content using a corresponding URI and contain title or other information) and information associated with the items (*e.g.*, the titles displayed within the selectable portion of the interface).

198. In the combination, the subsets are “associated with the strings of one or more unresolved keystrokes received from the user based on the direct mapping of strings of unresolved keystrokes to subsets of items.” Zigmond teaches indexes that associate each subset of items with strings of keystrokes from the user using a direct mapping. *See, e.g.*, Ex. 1112, Fig. 3. Moreover, as discussed above, Zigmond in view of Smith additionally includes numeric versions of those same indexes that use “strings of unresolved keystrokes.” *See* Section IX.C.1[a], *supra*.

199. When a search query is received, the index (which contains the direct mapping) is used to prefetch subsets of items, and a previously prefetched subset of items matching the current search query is displayed. Ex. 1112, ¶¶ [0035]-[0048], [0051]-[0053], [0059], [0060], [0066]. Therefore, the “identifying and displaying” of subsets of items is “based on the direct mapping.” Zigmond and Smith further teach the numeric index of the combination, which includes a “direct mapping of strings of unresolved keystrokes to subsets of items.” *See* Sections IX.A, IX.C.1[a], *supra*.

1[e]. “in response to each unresolved keystroke, as the identified items are displayed, highlighting the letters and numbers present in the one or more words in the information describing the identified items that were determined to have caused the displayed items to be associated with the strings of unresolved keystrokes that are directly mapped to the items so as to illustrate to the user how the unresolved keystrokes entered match the information associated with the displayed items”

200. This limitation is met by Payne’s highlighting feature in combination with Zigmond and Smith, as described above. *See* Sections IX.A, IX.B, IX.C.1[b].iii, *supra*.

201. Both the Zigmond and Smith combination and Payne teach an incremental (*i.e.*, “as the identified items are displayed” as claimed) search that updates a display “in response to each unresolved keystroke.” *See* Section IX.C.1[d], *supra*; Ex. 1109, 2:52-65, 6:45-7:65. Therefore, a POSA would understand that Payne’s incremental highlighting, combined with the incremental display of search results as described by Zigmond, would result in updating the “highlighting” “in response to each unresolved keystroke.”

202. Payne highlights alphanumeric characters (*i.e.*, “letters and numbers”) that are “present in the one or more words in said information describing the identified items” as claimed (*e.g.*, in names associated with each item of the search results). Ex. 1109, 3:60-4:20, 7:13-22, 7:55-58, Figs. 3B, 3D. Zigmond and Smith also describe the use of alphanumeric characters in search results. Ex. 1112, ¶ [0041]; Ex. 1113, 2:56-64. Therefore, a POSA would combine Payne with Zigmond

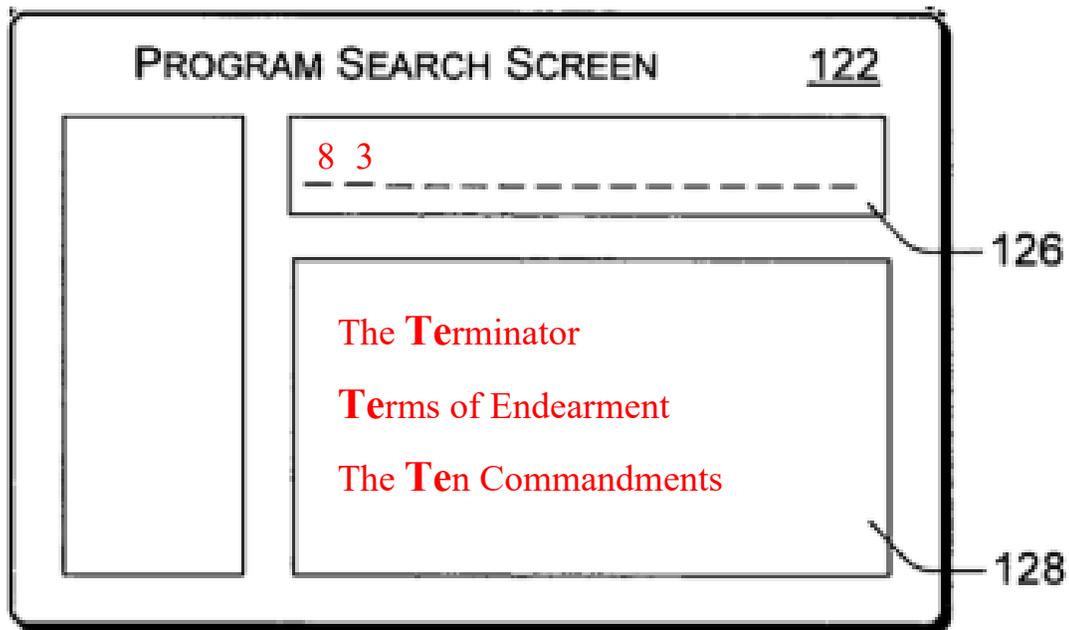
and Smith so that alphanumeric characters (*i.e.*, both letters and numbers) are highlighted in titles and other information associated with displayed items.

203. Payne further highlights characters “so as to illustrate to the user how the unresolved keystrokes entered match the information associated with the displayed items” as claimed. For example, Payne teaches that the characters are highlighted so that “each of [the] highlighted characters represent[s] one of the symbols that has been entered.” Ex. 1109, claim 25. A POSA would understand this to mean that the highlighting shows the mapping between the unresolved keystroke input characters and the displayed characters of the search results, as illustrated by Payne at Figs. 3B and 3D. *See also id.*, 7:13-22, 7:55-58.

204. A POSA would be motivated to combine Payne with Zigmond and Smith because Payne’s highlighting method beneficially illustrates to the user both how many characters have been entered and how the highlighted characters of search results matched the unresolved keystrokes, as well as for other reasons. Ex. 1109, 2:47-48, 5:46-50, 7:13-15, 7:55-58, 10:46-48, claim 25; *see* Section IX.B, *supra*. A POSA combining Zigmond and Smith with Payne would have an expectation of success because highlighting characters that match a search query was a well-known technique and because Payne’s system and the system of Zigmond/Smith both incrementally search based on inputs from overloaded keypads, so a POSA would have found it easy to adapt Payne’s highlighting to the system of Zigmond and

Smith. See Section IX.A, *supra*; Ex. 1112, Figs. 2, 3, ¶¶ [0018]-[0020], [0025], [0037], [0039]-[0048]; Ex. 1113, 1:36-65, 5:33-62; Ex. 1109, Figs. 1, 3A-3D, 1:28-61, 2:38-65, 6:50-8:57; *see* Section IX.B, *supra*.

205. An example display screen that would be displayed by the combination of Zigmond, Smith, and Payne is reproduced below:



(As modified by Smith and Payne)

Fig. 1

See Section IX.C.1[b], *supra*.

206. A POSA would combine Payne’s highlighting method with the system of Zigmond and Smith to highlight the alphanumeric characters “that were determined to have caused the displayed items to be associated with the strings of

unresolved keystrokes that are directly mapped to the items” as described for limitation 1[b] above. *See* IX.C.1[b], *supra*. It would have been obvious to determine the characters as described above for step 1[b] in order to highlight them, and then highlight the characters as claimed at step 1[e]. A POSA would use the determination of step 1[b] in order to avoid unnecessarily re-determining the same characters. Under BRI, these characters would be the characters that match the characters of the search query in the direct mapping, as described above. *See* IX.C.1[b], *supra*.

D. Dependent Claim 2

2. “The method of claim 1, wherein highlighting the letters and numbers comprises highlighting by coloring, bolding, italicizing, underlining, or changing to a different font, or some combination thereof”

207. Payne teaches highlighting and illustrates highlighting using bold letters on the example graphical user interfaces. *See* Ex. 1109, 7:13-16, 7:55-58, Figs. 3B, 3D, 3E, 3G. A POSA would recognize that bolding is just one of many options for highlighting alphanumeric symbols on a graphical user interface.

208. As described above, a POSA would have found it obvious to incorporate Payne’s highlighting method into the system of Zigmond in view of Smith. *See* Sections IX.B., IX.C.1[b], *supra*.

209. In view of Payne’s disclosure of using bold text to highlight characters, a POSA would have recognized that other methods of emphasizing text would have been equally obvious in order to implement the highlighting described by Payne. Therefore, a POSA would have found it obvious to use coloring, italicizing, underlining, changing the font, or some combination thereof, which a POSA would have recognized as known methods of emphasizing text. A POSA therefore would have recognized these other claimed techniques as known and obvious variants of bolding.

E. Dependent Claim 4

4. “The method of claim 1, wherein the search query is processed by a server system remote from said user”

210. Zigmond teaches that the client transmits a search request comprising prefix information. Ex. 1112, ¶¶ [0073]-[0074]. The server then performs a search of indexes using the prefix information as a query. *Id.*, ¶¶ [0075]-[0079]. A POSA would therefore conclude that Zigmond’s server processes the search query in order to find search results.

211. Zigmond further teaches that the server may be remote from the client device. Ex. 1112, ¶ [0033], [0037]. Since the user interacts with the client device, the server would be remote from the user as claimed. *See id.*, ¶¶ [0017], [0025]-[0027], [0034]-[0035].

F. Dependent Claim 5

5. “The method of claim 1, wherein the search query is processed by a device operated by said user”

212. Zigmond teaches this limitation in at least two ways, which I explain in detail below. First, Zigmond teaches that a client device 102 receives and processes the search query. Second, Zigmond teaches that an input device may receive the query and transmit it to the client device 102, the receiving and transmitting constituting a form of processing. Both the client device 102 and the input device are “a device operated by said user” because the user, by entering a search query, controls the operation of both devices.

213. Zigmond’s search query is received by a client device 102 that is controlled by a user. Ex. 1112, ¶¶ [0023], [0026]. A client search application 112 running on the client device 102 receives the search query and searches through a prefetched subset of items using the search query to cause the display of the matching prefetched items while requesting additional items to be prefetched. *Id.*, ¶¶ [0027], [0034]-[0036]. Zigmond thus teaches “wherein the search query is processed by a device operated by said user.”

214. Zigmond also teaches an input device that may be “a remote, a keypad, a touch pad/tablet, a keyboard, etc.” *Id.*, ¶ [0025]. A POSA would understand that the input device would necessarily process user input in order to transmit the user input to the client device 102. Since the user directly interfaces with the input device,

a POSA would also consider the input device to be “a device operated by said user.”
See also Ex. 1112 at claim 25.

215. Smith similarly teaches a client device controlled by a user. Ex. 1113 at FIG. 2, 3:12-23, 3:37-40, claim 20. Smith’s client device may execute searching operations as specified by instructions stored at the client device. *Id.* at 3:50-55. Smith further teaches performing searching in response to receiving a query. *Id.* at 5:33-42. A POSA would therefore understand that Smith therefore teaches processing a query by the client device in order to execute the searching operations.

216. Payne similarly teaches a portable device controller by a user. Ex. 1109 at 9:33-47, 9:58-67, claims 1, 26. The device executes a lookup process when the user enters a query. *Id.* at 10:9-15. A POSA would thus understand the portable device processes the query in order to execute the lookup process.

G. Dependent Claim 6

6. “The method of claim 5, wherein the device is a cell phone”

217. Zigmond teaches that the client device 102 may be a mobile phone. Ex. 1112, ¶ [0037]. A POSA would understand that a mobile phone is a “cell phone.”

H. Dependent Claim 8

8. “The method of claim 5, wherein the device is a remote control device for a television”

218. Zigmond teaches that an input device may be a “remote,” which a POSA would understand to be a remote control for a television in the context of

Zigmond's disclosure of a television-based client device 102 that includes an EPG. Ex. 1112, ¶¶ [0002]-[0005], [0022]-[0023], [0025]-[0028], [0037], [0082]-[0083]. Television remote controls are commonly used to enter text and select television content; this was stated in the '394 Patent as in the prior art. Ex. 1121 at 1:28-2:12, Fig. 1. Such remote controls are also used in the system of Zigmond. Ex. 1112, ¶ [0025]. Therefore, a POSA would conclude that Zigmond's "remote" device may be a "remote control device for a television."

I. Dependent Claim 9

9. "The method of claim 1, wherein at least some items of the set of items are television content items"

219. Zigmond teaches that the search system may be a television-based search system for finding television programs and that may be implemented by an EPG; the client "receives television content." Ex. 1112, ¶¶ [0002]-[0005], [0022]-[0023], [0026]-[0028], [0037], [0082]; Figs. 4, 5; claims 12, 19, 33, 38. A POSA would be aware that the purpose of EPGs is to browse, locate, and select television content. Therefore, a POSA would conclude that Zigmond's system may search for items that include television content items.

J. Dependent Claim 10

10. “The method of claim 1, wherein at least some items of the set of items are product items”

220. Zigmond teaches that the search system may search for television programs, and may be a television-based system. Ex. 1112, ¶¶ [0002]-[0005], [0022]-[0023], [0037]. A POSA would conclude that such television programs are digital “product items” provided by the television service. Zigmond also teaches other types of digital product items, such as game information, tips and cheats, and white pages listings. *Id.*, ¶ [0082], claims 19, 33.

221. Zigmond also teaches that the search system may search for “any elements of any data collection.” *Id.* A POSA would recognize that “any elements of any data collection” would include many types of product items, which were known to be searchable in data collections at the time of the alleged invention. For example, a POSA would recognize that such data collections would include physical products such as books, home goods, and/or other such products, which were well-known at the time of the alleged invention. A POSA would recognize that Zigmond’s system could be used to search and view and/or purchase such product items via the client-server data search system. For example, Zigmond teaches searching for game products and related information. *Id.*

222. Additionally, Smith teaches that the search system may index various products, such as “car repair,” “car rental,” “video rental,” “wine,” “champagne,”

and “bar items.” Ex. 1113 at 4:18-25. A POSA would find it obvious to index such items using the search system of Zigmond in view of Smith and Payne for the purpose of providing information about additional items that may be desired by the user. A POSA would find it obvious to incorporate these product items into the search system either in addition to, or in substitute for, the television content items disclosed by Zigmond, thus predictably yielding a search system that allows users to find such product items. Moreover, a POSA would have an expectation of success because Zigmond teaches that the indexes may contain any type of information. Ex. 1112, ¶ [0082].

K. Dependent Claim 11

11. “The method of claim 1, wherein identifying and displaying the subsets of items comprises identifying the subsets of items by reference to the index of the items”

223. Zigmond teaches that the search system uses indexes to prefetch items that match search queries, as described above at Section IX.C.1[d]. Zigmond’s server system searches an index based on the prefix information contained in the user search query. Ex. 1112, ¶¶ [0056]-[0057], [0061], [0063], [0068]-[0069], [0075], claims 12, 13, 32, 40. The index contains “bins” (*i.e.*, subsets) of items that are identified by matching the query to the corresponding bin. *Id.*, ¶¶ [0042]-[0044], [0046]-[0048], [0053]-[0054], [0065]. The server sends the bins corresponding to the prefix information to the client, which presents (thus, “identifying and

displaying” as claimed) the bins that match the user query. *Id.*, ¶¶ [0061], [0063], [0065]-[0066]. Therefore, the identification of subsets of items occurs “by reference to the index of the items” as claimed.

X. GROUND 2 – CLAIM 3 IS OBVIOUS OVER ZIGMOND IN VIEW OF SMITH AND PAYNE AND FURTHER IN VIEW OF SANDERS

A. Dependent Claim 3

4. “The method of claim 1, wherein the items of the subsets of items displayed are ordered when displayed such that items having single-word or multi-word term matches between the information associated with and describing those items and the unresolved keystrokes of the search query received from the user are displayed before items having single-word or multi-word abbreviation matches”

224. Zigmond, Smith, and Payne do not disclose the particular ordering scheme of claim 3.

225. A POSA would understand a “single-word term match” as meaning an item associated with a word that matches a query term, and a “multi-word term match” as being an item associated with multiple words that match multiple query terms. Ex. 1121 at 7:14-17, 7:65-67. A POSA would also understand a multi-word abbreviation match as referring to an item associated with multiple words matching an abbreviation in a query term. *See id.* at Fig. 6B, 7:9-46 (*e.g.*, abbreviation match 605 contains two words, “Twelve” and “Monkeys,” that match an abbreviation

query term “866,” where the “8” matches with the “T” in “Twelve” and the “66” matches with the “Mo” in “Monkeys”).

226. However, the '394 Patent does not distinguish between single-word and multi-word abbreviation matches. Instead, the '394 Patent describes a ranking in which single-word and multi-word term matches are displayed before multi-word abbreviation matches. Ex. 1121 at Figs. 5A, 5B, 6:24-28, 6:55-7:8, 7:14-17, 7:65-67. There is no disclosure of a single-word abbreviation match.

227. But a POSA would understand that single words are often associated with abbreviations, sometimes many. For example, the word “exhibit” may be abbreviated as “ex.” or “exh” while the word “avenue” is abbreviated as “ave.,” or “av.” or “aven.,” etc. Therefore, a single-word abbreviation could refer to an abbreviation created by shortening a single word. A POSA would understand common practice as associated with the U.S. Postal Service, which uses many abbreviations in addresses such as for types of streets; see https://pe.usps.com/text/pub28/28apc_002.htm.

228. Sanders teaches that query terms may be shortened using a stemming process in order to achieve more search results. Ex. 1110 at 6:42-61. For example, a query for “divine” may be stemmed to “divin” so that it matches related words such as “divinity,” “divination,” and so forth. *Id.* A POSA would understand that there are a variety of stemming methods and algorithms, and a variety of single word

abbreviation schemes. Stemming thus generates an abbreviation of a single query term and enables finding items matching the abbreviation, and a POSA would thus consider results found via stemming a query term to be single-word abbreviation matches.

229. Sanders further teaches reducing the ranking of search results that are found via stemming or some other transformation below the ranking of results that match an entire query term. Ex. 1110 at 6:49-57, 11:48-62. Sanders thus teaches ordering search results by displaying term matches before abbreviation matches. Sanders further teaches that search results may be returned and displayed asynchronously such that exact matches (*i.e.*, term matches) are displayed earlier in time than stemming matches (*i.e.*, abbreviation matches). *Id.* at 12:50-57. Sanders thus also teaches ordering term matches before abbreviation matches in a temporal sense.

230. This claim requires an ordering where “single-word **or** multi-word term matches” are displayed before “single-word **or** multi-word abbreviation matches.” The alternative language would indicate to a POSA that either single-word term matches or multi-word term matches should be ranked before either single-word abbreviation matches or multi-word abbreviation matches. Thus, for example, ranking a single-word term match before a single-word abbreviation match would satisfy the claim. A POSA would reach this conclusion due to the alternative

language and because not every search query will yield results including each of single-word term matches, multi-word term matches, single-word abbreviation matches, and multi-word abbreviation matches. *See* Ex. 1121 at Fig. 5A, 6:53-63 (showing and describing that a single-word query 501 may result in a single-word term match or a multi-word abbreviation match, and a multi-word query may result in a multi-word term match or a multi-word abbreviation match, but no query would result in all three types of match). Accordingly, under BRI, a POSA would interpret this claim as only requiring one or the other of each alternative phrase.

231. Sanders teaches “wherein said displayed items are ordered such that items having single-word . . . term matches (*i.e.*, items that match a single-word query before stemming) are displayed before items having single-word . . . abbreviation matches (*i.e.*, items that match a stemmed query)” as claimed; see ¶ 229, *supra*. Due to the alternative language in the claim, Sanders teaches the limitation of claim 3.

232. Sanders additionally teaches searching for items based on either single-word queries or multi-word queries. *See* Ex. 1110 at Fig. 5, 15:59-16:29. A POSA would therefore conclude that Sanders teaches single-word term matches and single-word abbreviation matches in conjunction with a single-word query, and multi-word term matches and multi-word abbreviation matches in conjunction with a multi-word query.

233. Sanders thus also teaches “wherein said displayed items are ordered such that items having . . . multi-word term matches are displayed before items having . . . multi-word abbreviation matches” as claimed when searching using a multi-word query, which likewise satisfies claim 3 due to the alternative language of the claim.

234. It would have been obvious to apply Sanders’s stemming and ranking techniques to the system of Zigmond, Smith, and Payne for the purpose of generating additional hits and ordering the additional hits appropriately, as disclosed by Sanders. *See* Ex. 1110 at 6:42-61, 11:52-62, 12:50-57. A POSA would have understood that the additional hits achieved via stemming may be desirable in some circumstances, but also may have a reduced chance of being relevant, as disclosed by Sanders. *See id.* Thus, a POSA would have been motivated to incorporate the stemming technique together with the reduced ranking technique in order to demote the additional hits below the exact matches. Such a combination would have been considered obvious by a POSA at the time of the invention, who would have been familiar with basic searching techniques such as stemming and ranking. *See id.* at 6:49-50 (describing the commonly-known Porter stemming algorithm). The stemming could have been used with some or all queries, as taught by Sanders. *Id.* at 6:59-61. For example, Sanders teaches optionally using stemming when a query appears in a list of rare words. *Id.*

235. Additionally, a POSA would have considered the combination of Sanders with Zigmond, Smith, and Payne to be nothing more than the combination of prior art elements (*i.e.*, Sanders's stemming and ranking techniques) according to well-known methods of modifying queries using a stemming algorithm (*e.g.*, the described Porter algorithm) and searching using ambiguous queries. Ex. 1110 at 6:42-57, 11:52-62. The combination would have yielded the predictable result of stemming the received query, searching on both the stemmed query and the original query, and reducing the ranking of the abbreviation matches found using the stemmed query below the term matches found using the original query. *See id.*

236. A POSA also would have recognized the combination as a mere application of Sanders's stemming and ranking techniques to the system of Zigmond in view of Smith and Payne, which was ready for the improvement because the system of Zigmond in view of Smith and Payne would not find as many results due to its lack of stemming. *See Ex. 1110 at 6:42-61.*

237. Furthermore, a POSA combining Sanders with Zigmond, Smith, and Payne would have a reasonable expectation of success because of the well-known nature of the information retrieval methods, including stemming and incremental searching. *See Section V.A, supra*; Ex. 1112, Abstract, ¶¶ [0031], [0035]-[0036]; Ex. 1109 at 2:52-65; Ex. 1110 at Fig. 5, 2:35-38, 6:42-61. Furthermore, because each of Zigmond, Payne, and Sanders are directed to incremental searching, it would

have been easy to adapt techniques from one system to another. Ex. 1112 at Abstract, ¶¶ [0031], [0035]-[0036]; Ex. 1109 at 2:52-65; Ex. 1110 at Fig. 5, 2:35-38.

238. A POSA would have also found it obvious for the search system of Zigmond, Smith, Payne, and Sanders to work with multiple-word queries. Searching based on queries comprising multiple words was known in the prior art, as disclosed by Smith and Sanders. Ex. 1113 at 1:57-61; Ex. 1110 at Fig. 5. A POSA thus would have found it obvious to search using multi-word queries in the system of Zigmond, Smith, Payne, and Sanders.

239. Additionally, modifying a standard stemming algorithm (*e.g.*, the Porter algorithm mentioned by Sanders) to work with overloaded keystrokes would have been a simple exercise for a POSA, much like putting pieces of a puzzle together, and would have required nothing more than ordinary creativity to convert the stemming algorithm from the alphanumeric character space to a numeric character space. Such a conversion is explained by Smith, which a POSA would understand could be applied in connection with stemming, since stemming is used to help with index construction, a focus of Smith. Therefore, a POSA would have found it obvious to apply the stemming technique to the overloaded search system of the prior art.

XI. GROUND 3 – CLAIM 7 IS OBVIOUS OVER ZIGMOND IN VIEW OF SMITH AND PAYNE AND FURTHER IN VIEW OF WEEREN

A. Dependent Claim 7

4. “The method of claim 5, wherein the device is a desk phone”

240. Zigmond, Smith, and Payne do not disclose that the device may be a desk phone.

241. Weeren teaches a system for retrieving information that would be usable by a wireless phone or a desk phone. Ex. 1125 at 5:3-22. The information retrieval services may allow retrieval of information stored in databases (*i.e.*, a search system). *Id.* at 3:7-21. In one example, a user may request and receive information about particular stocks. *Id.* at 14:57-15:16. A POSA would thus determine that Weeren provides a type of search system that provides requested information in response to a user search query.

242. Weeren explicitly teaches that a conventional telephone could benefit from accessing the disclosed services and interface. Ex. 1125 at 5:3-7, 3:6-15. A POSA thus would have recognized, as taught by Weeren, that a desk phone can be used as a client device just like a wireless phone, and that providing access to a search system on additional types of devices would desirably improve the utility of the search system by allowing greater customer access. Ex. 1125 at 5:3-22. A POSA would have been motivated to adapt the system of Zigmond, Smith, and Payne, which may use a wireless device as a client device, to also work with a desk phone

client device for the purpose of expanding the reach of the system. A POSA would recognize that a desk phone could have been used in addition to, or as a substitute for, the wireless phone client disclosed by Zigmond. *See* Ex. 1112, ¶ [0082]; Ex. 1125 at 5:3-22. This combination would yield the predictable result of accessing the search system via a desk phone client device. *Id.* Moreover, a POSA making this combination would have an expectation of success because Weeren teaches that desk phones were alternatives to mobile phones, and the combination would have merely required moving client software from the mobile phone to the desk phone. *See* Ex. 1125 at 5:3-22.

243. Therefore, a POSA would have concluded that claim 7 is obvious over the combination of Zigmond, Smith, and Payne, further in view of Weeren.

XII. SECONDARY FACTORS RELATED TO OBVIOUSNESS

244. I understand the need to consider objective evidence or secondary considerations that may impact the obviousness analysis. I am not aware of any such secondary considerations related to the subject matter of any of the claims of the '394 Patent discussed above that would affect my opinions regarding obviousness. Specifically, I am not aware of any evidence of commercial success, long-felt but unresolved need(s), failure(s) of others, copying, or industry praise relative to the subject matter of any of those claims. Of course, I may amend or otherwise revise my opinions herein, if necessary, in the event the owner of the '394 Patent proffers

evidence related to any secondary considerations that may impact the obviousness analyses I have conducted.

XIII. CONCLUSION

All of the statements made in this Declaration of my own knowledge are true. All statements made based on information and belief are believed to be true. Further, these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code.

Date: 11/11/2018

Signature: Edward A. Fox
Edward A. Fox

Appendix A

Claim Comparison Chart

The following table compares corresponding claims of the '394 Patent and the '011 Patent to illustrate their correspondence:

'394 Claims		'011 Claims	
1[Pre]	1. A method of processing unresolved keystroke entries by a user from a keypad with overloaded keys in which a given key is in fixed association with a number and at least one alphabetic character, the unresolved keystroke entries being directed at identifying an item from a set of items, each of the items being associated with information describing the item comprising one or more words, the method comprising:	1[Pre]	1. A method of processing unresolved keystroke entries by a user from a keypad with overloaded keys in which a given key is in fixed association with a number and at least one alphabetic character, said unresolved keystroke entries being directed at identifying an item from a set of items, each of said items being associated with information describing the item comprising one or more words, said method comprising:
1[a]	providing access to an index of the items, the index having an association between subsets of the items and corresponding strings of one or more unresolved keystrokes for overloaded keys so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes for various search query prefix substrings;	1[a]	indexing said items by associating subsets of said items with corresponding strings of one or more unresolved keystrokes for overloaded keys so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes for various search query prefix substrings;
1[b]	for at least one subset of items, determining which letters and numbers present in the information associated with and describing the indexed items of the subset caused the items to be	1[b]	for at least one subset of items, determining which letters and numbers present in the information associated with and describing the indexed items of said subset caused said items to be associated with the strings of

	associated with the strings of one or more unresolved keystrokes that directly mapped to the subset;		one or more unresolved keystrokes that are directly mapped to said subset;
1[c]	receiving from a user a search query for desired items composed of unresolved keystrokes, the search query comprising a prefix substring for at least one word in information associated with the desired item;	1[c]	subsequent to said indexing , receiving from a user a search query for desired items composed of unresolved keystrokes, said search query comprising a prefix substring for at least one word in information associated with the desired item;
1[d]	in response to each unresolved keystroke, identifying and displaying the subsets of items, and information associated therewith, that are associated with the strings of one or more unresolved keystrokes received from the user based on the direct mapping of strings of unresolved keystrokes to subsets of items; and	1[d]	in response to each unresolved keystroke, identifying and displaying the subsets of items, and information associated therewith, that are associated with the strings of one or more unresolved keystrokes received from the user based on the direct mapping of strings of unresolved keystrokes to subsets of items;
1[e]	in response to each unresolved keystroke, as the identified items are displayed, highlighting the letters and numbers present in the one or more words in the information describing the identified items that were determined to have caused the displayed items to be associated with the strings of unresolved keystrokes that are directly mapped to the items so as to illustrate to the user how the unresolved	1[e]	in response to each unresolved keystroke, as the identified items are displayed, highlighting the letters and numbers present in the one or more words in said information describing the identified items that were determined to have caused the displayed items to be associated with the strings of unresolved keystrokes that are directly mapped to said items so as to illustrate to the user how the unresolved keystrokes entered match the information

	keystrokes entered match the information associated with the displayed items.		associated with the displayed items; and
		1[f]	ordering the displayed items in accordance with one or more given criteria.
2	The method of claim 1, wherein highlighting the letters and numbers comprises highlighting by coloring, bolding, italicizing, underlining, or changing to a different font, or some combination thereof.	2	The method of claim 1 wherein said alphabetical and numeric symbols are highlighted by being colored, bolded, italicized, underlined, or changed to a different font, or some combination thereof.
3	The method of claim 1, wherein the items of the subsets of items displayed are ordered when displayed such that items having single-word or multi-word term matches between the information associated with and describing those items and the unresolved keystrokes of the search query received from the user are displayed before items having single-word or multi-word abbreviation matches.	4	The method of claim 1 wherein said displayed items are ordered such that items having single-word or multi-word term matches are displayed before items having single-word or multi-word abbreviation matches.
4	The method of claim 1, wherein the search query is processed by a server system remote from said user.	5	The method of claim 1 wherein said search query is processed by a server system remote from said user.
5	The method of claim 1, wherein the search query is processed by a device operated by said user.	6	The method of claim 1 wherein said search query is processed by a device operated by said user.

6	The method of claim 5, wherein the device is a cell phone.	8	The method of claim 6 wherein said device is a cell phone, desk phone, a PDA, or a remote control device for a television.
7	The method of claim 5, wherein the device is a desk phone.	8	The method of claim 6 wherein said device is a cell phone , desk phone, a PDA, or a remote control device for a television.
8	The method of claim 5, wherein the device is a remote control device for a television.	8	The method of claim 6 wherein said device is a cell phone, desk phone, a PDA, or a remote control device for a television.
9	The method of claim 1, wherein at least some items of the set of items are television content items.	7	The method of claim 1 wherein said items comprise television content items, or a product or service sought by the user.
10	The method of claim 1, wherein at least some items of the set of items are product items.	7	The method of claim 1 wherein said items comprise television content items, or a product or service sought by the user.
11	The method of claim 1, wherein identifying and displaying the subsets of items comprises identifying the subsets of items by reference to the index of the items.		

Appendix B

Exhibit List

- Ex. 1101: U.S. Patent No. 7,779,011 (“the ’011 Patent”)
- Ex. 1102: Portions of File Wrapper for U.S. Patent Application Number 11/312,908
- Ex. 1103: U.S. Provisional Application 60/716,101 (“the ’101 Provisional application”)
- Ex. 1104: Excerpts from *Modern Information Retrieval* (ACM Press Books, New York, 1999) (ISBN 0-201-39829-X)
- Ex. 1105: U.S. Patent No. 8,433,696 (“the ’696 Patent”)
- Ex. 1106: IPR2017-00715, Paper 33 (“the ’696 Final Written Decision”)
- Ex. 1107: U.S. Publication No. 2007/0027848 (“Howard”)
- Ex. 1108: U.S. Patent No. 6,011,554 (“King”)
- Ex. 1109: U.S. Patent No. 6,370,518 (“Payne”)
- Ex. 1110: U.S. Patent No. 7,885,963 (“Sanders”)
- Ex. 1111: U.S. Publication No. 2004/0133564 (“Gross”)
- Ex. 1112: U.S. Publication No. 2005/0256846 (“Zigmond”)
- Ex. 1113: U.S. Patent No. 6,529,903 (“Smith”)
- Ex. 1114: Declaration of Dr. Edward A. Fox
- Ex. 1115: Redacted Excerpt of the Expert Report of Alan Bovik in Related ITC Proceeding 337-TA-1103
- Ex. 1116: Redacted Excerpt of the Rebuttal Expert Report of Alan Bovik in Related ITC Proceeding 337-TA-1103
- Ex. 1117: *Markman* Order in Related ITC Proceeding 337-TA-1103

- Ex. 1118: *Markman* Hearing Transcript in Related ITC Proceeding 337-TA-1103
- Ex. 1119: Curriculum Vitae (“CV”) of Dr. Edward A. Fox
- Ex. 1120: “Alphanumeric” definition, Merriam-Webster Dictionary
- Ex. 1121: U.S. Patent No. 7,937,394 (“the ’394 Patent”)
- Ex. 1122: Portions of File Wrapper for U.S. Patent Application Number 12/848,432
- Ex. 1123: U.S. Publication No. 2007/0050337 (“Venkataraman”)
- Ex. 1124: U.S. Publication No. 2007/0156747 (“Samuelson”)
- Ex. 1125: U.S. Patent No. 6,501,956 (“Weeren”)
- Ex. 1126: U.S. Publication No. 2005/0278741 (“Robarts”)
- Ex. 1127: Excerpted Testimony of Dr. Alan Bovik in Related ITC Proceeding 337-TA-1103
- Ex. 1128: U.S. Provisional Application 60/711,866

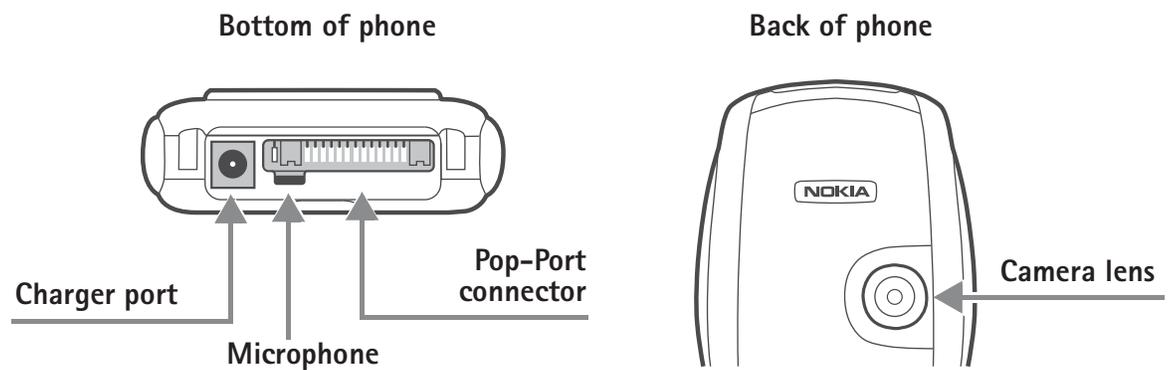
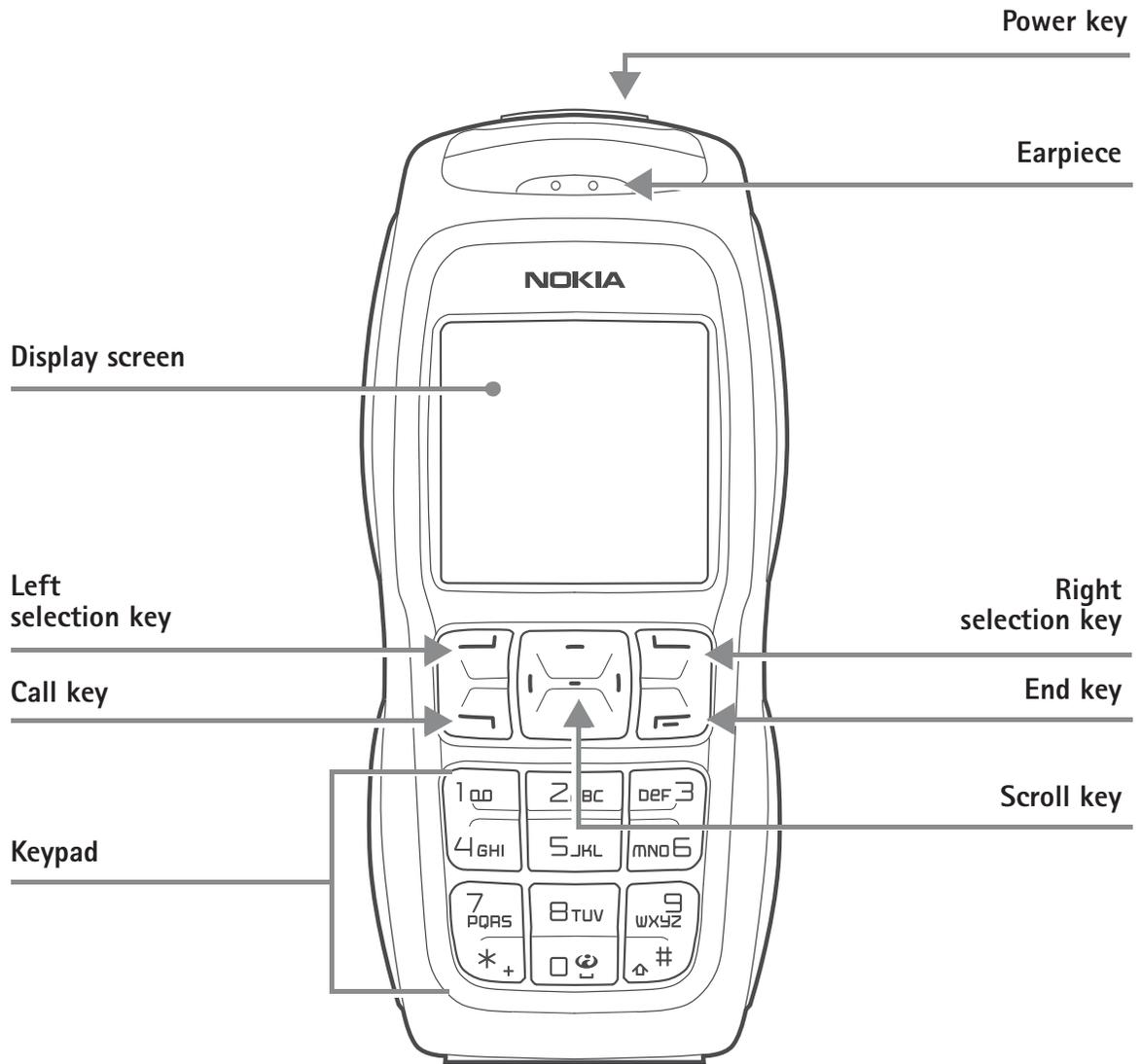
Appendix C

NOKIA
CONNECTING PEOPLE

User Guide



Nokia 3220 phone at a glance



• QUICK GUIDE

Action	Description
Make a call	Enter a phone number, and press the Call key.
Answer a call	Press the Call key, or select Answer .
Answer call during call	Press the Call key.
End a call	Press the End key.
Decline a call	Press the End key to send the call to voice mail.
Mute a call	Select Mute during a call.
Redial	Press the Talk key twice.
Adjust call volume	Press the Scroll left and Scroll right keys during a call.
Use in-call menu	Select Options during a call.
Save name and number	Enter a number. Select Options > Save . Enter a name. Select OK .
Use 1-touch dialing	Press and hold a key (2–8). You must assign a key to a number in the phone book.
Look up a name	Select Contacts > Find .
Check voice mail	Press and hold the 1 key (contact your service provider for details).
Write text messages	Select Menu > Messages > Text Messages > Create message . Write the message.
Send text messages	In the message entry screen, select Options > Send . Enter the recipient's phone number or search for it in contacts, and select OK . The message service is dependent on the service provider.
Read new message	If n message(s) received appears on the display, select Show , then the message you want to read.
Reply to a message	Select Options > Reply . Write a reply. Select Options > Send .
Press	Press a key briefly and release it.
Press and hold	Press a key, hold it for 2 to 3 seconds, and release it.

DECLARATION OF CONFORMITY

We, NOKIA CORPORATION declare under our sole responsibility that the products RH-37 and RH-49 are in conformity with the provisions of the following Council Directive:1999/5/EC.

A copy of the Declaration of Conformity can be found at http://www.nokia.com/phones/declaration_of_conformity/.

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LEGAL INFORMATION

Part No. 9232826, Issue No. 1

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Printed in Canada, September 2004

US Patent No 5818437, 5953541, 6011554, and other pending patents.

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Includes RSA BSAFE cryptographic or security protocol software from RSA Security.



Java is a trademark of Sun Microsystems, Inc.

The information in this user guide was written for the Nokia 3220 phone. Nokia operates a policy of ongoing development. Nokia reserves the right to make changes and improvements to any of the products described in this document without prior notice.

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EXPORT CONTROLS

This device may contain commodities, technology, or software subject to export laws and regulations from the U.S. and other countries. Diversion contrary to law is prohibited.

FCC/INDUSTRY CANADA NOTICE

Your device may cause TV or radio interference (for example, when using a telephone in close proximity to receiving equipment). The FCC or Industry Canada can require you to stop using your telephone if such interference cannot be eliminated. If you require assistance, contact your local service facility. This device complies with part 15 of the FCC rules. Operation is subject to the condition that this device does not cause harmful interference.

Manufactured or sold under one or more following US Patents.
Asterisk (*) indicates design patents pending.

RE 32,580	4558302	4868846	4945633	4969192	5001372
5101175	5151946	5173927	5212834	5230091	5241583
5311151	5317283	5331638	5335362	5353328	5371481
5378935	5384782	5396657	5400949	5416435	5442521
5446364	5479476	5526366	5553125	5557639	5565821
5570369	5581244	5600708	5625274	5677620	5692032
5729541	5760568	5794142	5802465	5809413	5818437
5827082	5839101	5844884	5845219	5870683	5884103
5889770	5907823	5912570	5914690	5914796	5917868
5920826	5953541	5956332	5956625	5956633	5966378
5977887	5987137	5991857	6006114	6011554	6011853
6014551	6014573	6026161	6035189	6038238	6043760
6047196	6049796	6050415	6055439	6060193	6069923
6072787	6081732	6084920	6084962	6094587	6097964
6105784	6112099	6115617	6119180	6121846	6128509
6138091	6140966	6144243	6144676	6148209	6151485
6151507	6163609	6164547	6167248	6185295	6188909
6249584	6259312	6266330	6272361	6282436	6292668
6295286	6311054	6314166	6324389	6324412	6347218
6363259	6370362	6370389	6377820	6381468	6392660
6400958	6453179	6463278	6470470	6487397	6522670
6198928	4969192	5266782	5390223	5444816	5487084
5640395	5664053	5699482	5701392	5722074	5754976
5805301	5835889	5857151	5859843	5862178	5898925
5930233	5946651	5960354	5960389	5963901	6005857
6011971	6031827	6118775	6128322	6137789	6167248
6170073	6178535	6195338	6199035	6240076	6266321
6285888	6356759	6377803	6430163	6438370	6456237

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NOTES

1 For your safety

Read these simple guidelines. Not following them may be dangerous or illegal. Read the complete user guide for further information.



SWITCH ON SAFELY

Do not switch the phone on when wireless phone use is prohibited or when it may cause interference or danger.



ROAD SAFETY COMES FIRST

Obey all local laws. Always keep your hands free to operate the vehicle while driving. Your first consideration while driving should be road safety.



INTERFERENCE

All wireless phones may be susceptible to interference, which could affect performance.



SWITCH OFF IN HOSPITALS

Follow any restrictions. Switch the phone off near medical equipment.



SWITCH OFF IN AIRCRAFT

Follow any restrictions. Wireless devices can cause interference in aircraft.



SWITCH OFF WHEN REFUELING

Don't use the phone at a refueling point. Don't use near fuel or chemicals.



SWITCH OFF NEAR BLASTING

Follow any restrictions. Don't use the phone where blasting is in progress.



USE SENSIBLY

Use only in the normal position as explained in the product documentation. Don't touch the antenna unnecessarily.



QUALIFIED SERVICE

Only qualified personnel may install or repair this product.



ENHANCEMENTS AND BATTERIES

Use only approved enhancements and batteries. Do not connect incompatible products.



WATER-RESISTANCE

Your phone is not water-resistant. Keep it dry.



BACKUP COPIES

Remember to make back-up copies or keep a written record of all important information stored in your phone.



CONNECTING TO OTHER DEVICES

When connecting to any other device, read its user guide for detailed safety instructions. Do not connect incompatible products.



EMERGENCY CALLS

Ensure the phone is switched on and in service. Press **End** as many times as needed to clear the display and return to the main screen. Enter the emergency number, then press **Call**. Give your location. Do not end the call until given permission to do so.

• About your device

The wireless device described in this guide comes in two models. The Nokia 3220 phone is approved for use on the EGSM 900 and GSM 1800 and 1900 networks. The Nokia 3220b phone is approved for use on the GSM 850, 1800 and 1900 networks. See "Find information about your phone" on page 5 to identify your specific phone model. Contact your service provider for more information about networks.

When using the features in this device, obey all laws and respect privacy and legitimate rights of others.



Warning: To use any features in this device, other than the alarm clock, the phone must be switched on. Do not switch the device on when wireless phone use may cause interference or danger.



Note: Your device and its enhancements may contain small parts. Keep them out of the reach of small children.

• Network Services

To use the phone you must have service from a wireless service provider. Many of the features in this device depend on features in the wireless network to function. These Network Services may not be available on all networks or you may have to make specific arrangements with your service provider before you can utilize Network Services. Your service provider may need to give you additional instructions for their use and explain what charges will apply. Some networks may have limitations that affect how you can use Network Services. For instance, some networks may not support all language-dependent characters and services.

Your service provider may have requested that certain features be disabled or not activated in your device. If so, they will not appear on your device menu. Contact your service provider for more information.

• Shared memory

The phone has three different memories. The following features in this device may share the first memory: contacts, text messages, SMS e-mail, voice tags, calendar, and notes. The second shared memory is used by multimedia messages, files stored in **Gallery**, and configuration settings. The third shared memory is used by Java games and applications. Using one or more of these features may reduce the memory available for the remaining features sharing the same memory. For example, saving many **Gallery** items may use all of the available memory in the second memory. Your device may display a message that the memory is full when you try to use a shared memory feature. In this case, delete some of the information or entries stored in the corresponding shared memory before continuing.

2 Welcome

Congratulations on your purchase of the Nokia 3220 mobile phone. Your phone provides many functions that are practical for daily use, such as a calendar, a clock, an alarm clock, and a built-in camera. The camera can be used for recording video clips and taking pictures that you can, for example, attach as wallpaper in the standby mode or as thumbnail pictures in **Contacts**. See "Camera" on page 40.

You can personalize your phone with cut-out covers and with themes. See "Create custom back cover" on page 12 and "Themes" on page 34. Also, a range of Nokia Xpress-on™ covers and Nokia Xpress-on grips are available for your phone. To change the covers and grips, see "Change the phone covers" on page 12 and "Change the grips" on page 11.

Other features on your phone are:

- Multimedia messaging. See "Multimedia messages (MMS) (network service)" on page 22.
- Instant messages, see "Instant messaging" on page 26.
- EDGE (enhanced data rates for GSM evolution), see "GPRS and EGPRS" on page 37.
- Java 2 Platform Micro Edition, J2ME™, see "Applications" on page 44.
- XHTML browser, see "Settings" on page 34.

• Access alternate formats

This user guide is available in alternate formats, contact Nokia at www.nokiaaccessibility.com or call 1-888-665-4228 for more information.

• Register your phone

Make sure to register your phone at www.warranty.nokiausa.com or 1-888-NOKIA-2U (1-888-665-4228) so that we can serve your needs better if you should need to call the center or have your phone repaired.

• Copyright protection

Copyright protections may prevent some images, ringing tones, and other content from being copied, modified, transferred, or forwarded.

• Contact Nokia

If you ever need to call Nokia Customer Care or your service provider, you will need to provide specific information about your phone (see "Find information about your phone" on page 5).

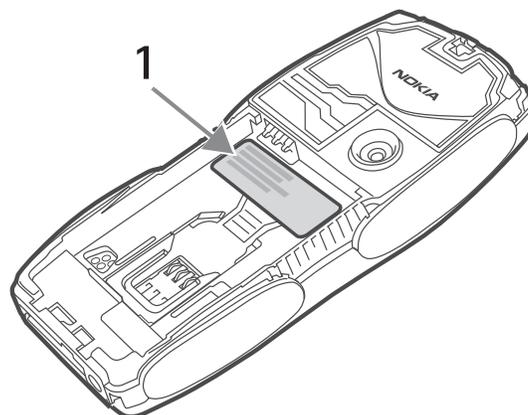
Whether you are calling about your phone or an enhancement, have the equipment with you when you call. If a Nokia representative asks a specific question about the enhancement, you will have it available for quick reference.

Nokia Customer Care Center, USA	Customer Care, Canada
<p>Nokia Mobile Phones 7725 Woodland Center Boulevard, Suite #150 Tampa, Florida 33614 Tel:1-888-NOKIA-2U (1-888-665-4228) Fax: 1-813-249-9619 For TTY users: 1-800-24-NOKIA (1-800-246-6542)</p>	<p>Nokia Products Ltd. 601 Westney Rd. South Ajax, Ontario L1S 4N7 Tel:1-905-427-1373 1-888-22-NOKIA (1-888-226-6542) Fax:1-905-619-4360 Web site: www.nokia.ca</p>

Find information about your phone

Information about your phone is provided on the phone label (1), which is on the back of the phone under the battery (see "Remove the back cover and battery" on page 7). The label contains the model and serial numbers, as well as the following:

- Phone type (such as RH-37 or RH-49)
- Phone model (such as Nokia 3220 or Nokia 3220b)
- International Mobile Equipment Identity (IMEI)
- FCC ID number



Contact your service provider

In many cases, the service provider will make available descriptions of its services and instructions for using features, such as:

- Voice mail and voice privacy
- Call waiting, call forwarding, and caller ID
- Messaging
- News and information services
- Selected Internet services

Service providers may differ in their support of features. Before you sign up with a service provider, make sure that the service provider supports the features that you need.

3 SIM card and battery

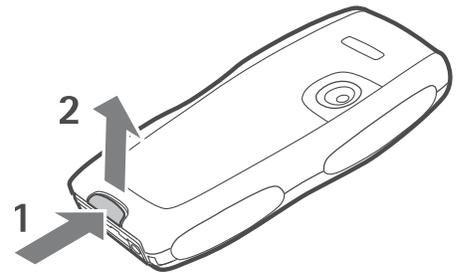
The SIM card and its contacts can easily be damaged by scratches or bending, so be careful when handling, inserting, or removing the card.

Keep all SIM cards out of the reach of small children. For availability and information on using SIM card services, contact your SIM card vendor. This may be the service provider or another vendor.

Always switch the device off and disconnect the charger before removing the battery.

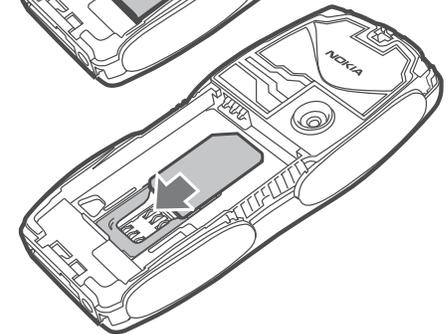
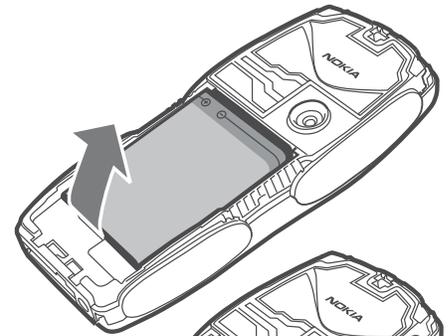
- **Remove the back cover and battery**

- 1 Push the back cover release button at the bottom of the phone (1) and gently pull the back cover away from the phone beginning at the bottom of the phone (2).
- 2 Remove the battery by lifting it as shown.

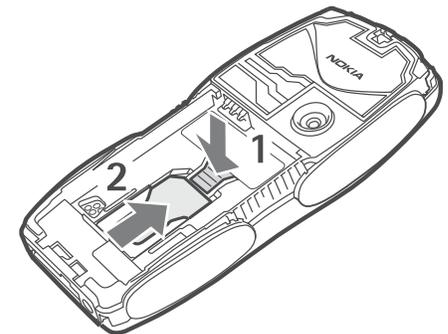


- **Insert the SIM card**

Insert the SIM card into the SIM card holder until it snaps into position. Make sure that the SIM card is properly inserted and that the gold-colored contact area on the card is facing downward.



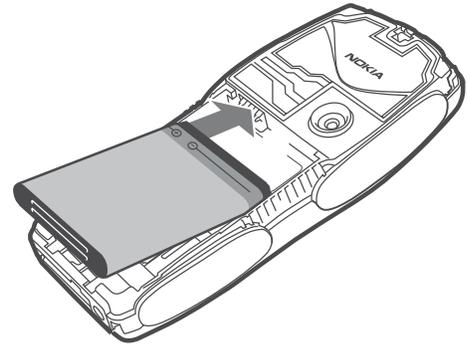
If you need to remove the SIM card, press the card release (1), and slide the SIM card toward the top of the phone (2).



• Replace the battery

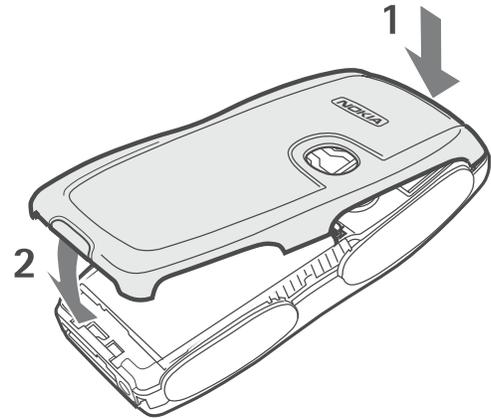
The SIM card must be installed *before* installing the battery.

Insert the battery so that the gold-colored contacts match up with those on the phone.



• Replace the back cover

Align the top of the back cover with the top of the phone (1), and press the bottom of the back cover to lock it (2).



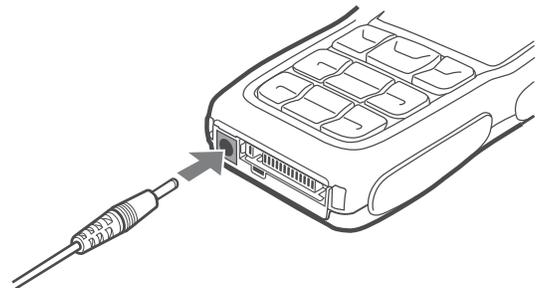
• Charge the battery



Warning: Use only batteries, chargers, and enhancements approved by Nokia for use with this particular model. The use of any other types may invalidate any approval or warranty, and may be dangerous.

Your phone is powered by a rechargeable battery. To charge the battery, do the following:

- 1 Plug the charger transformer into a standard ac outlet.
- 2 Insert the charger output plug into the charger port at the bottom end of the phone.



After a few seconds, the battery indicator in the display starts to scroll from bottom to top. If the battery is completely discharged, it may take a few minutes before the charging indicator appears on the display or any calls can be made.

You can use the phone while the charger is connected.

The BL-5B battery provides up to 3.5 hours of talk time and up to 14 days of standby time. Operation times are estimates and may vary depending on network conditions, charging, and phone use. Charging the battery with the ACP-12 charger takes approximately 1 hour and 20 minutes while the phone is in standby mode.

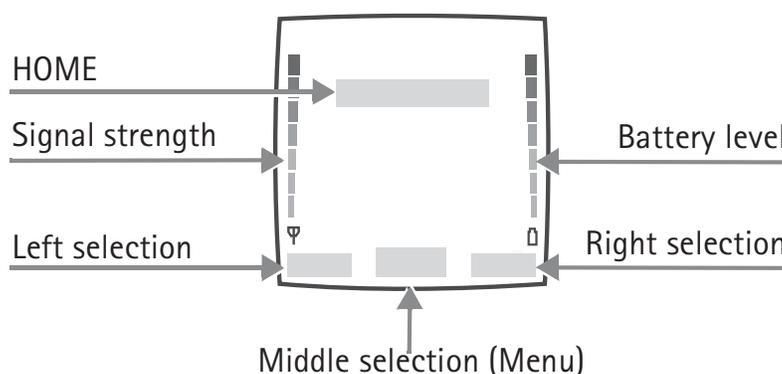
4 About your phone

• In-phone help

Many features have brief descriptions (help text) that can be viewed on the display. To view the help text, scroll to a feature, and wait for about 15 seconds. Select **More** to view all of the description (if necessary) or **Back** to exit. For instructions on how to turn the help text feature on and off, see "Phone settings" on page 36.

• Start screen (standby mode)

The start screen is home base and indicates that the phone is in the standby mode.



HOME—The name of your service provider may appear here.

Signal strength—A higher bar indicates a stronger network signal.

Battery level—A higher bar indicates more power in the battery.

Left selection—The **Left selection** key in the standby mode opens the **Go to** menu. See "Go to options" on page 35.

Middle selection—Press the middle of the scroll key to select the item displayed in the bottom center (middle selection area) of the display screen. For example, in the standby mode, pressing the middle of the scroll key opens the **Menu**. See "Phone menu" on page 19.

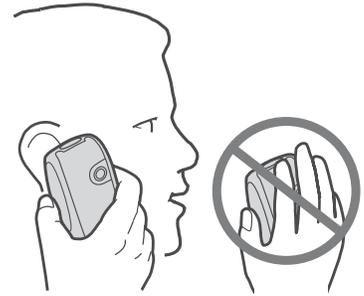
Right selection—The **Right selection** key in the standby mode opens either the **Contacts** menu (default), a service provider's home page, or a user-specified function. See "Personal shortcuts" on page 35.

• Antenna

Your device has an internal antenna.



Note: As with any other radio transmitting device, do not touch the antenna unnecessarily when the device is switched on. Contact with the antenna affects call quality and may cause the phone to operate at a higher power level than otherwise needed. Avoiding contact with the antenna area when operating the phone optimizes the antenna performance and the battery life.



• Indicators and icons

The following icons may be displayed in the standby mode:

Icon Indicates...



You have one or more text or picture messages. See "Text messages (SMS) (network service)" on page 20.



The phone has logged a missed call. See "Call log" on page 30.



Your phone is connected to the instant messaging service, and the availability status is online or offline, respectively. See "Instant messaging" on page 26.



You have received one or several instant messages, and you are connected to the instant messages service. See "Instant messaging" on page 26.



You have one or more multimedia messages. See "Multimedia messages (MMS) (network service)" on page 22.



You have one or more voice messages. See "Voice messages" on page 24.



Your phone keypad is locked. See "Lock the keypad (Keyguard)" on page 18.



Your phone is set to the **Silent** profile. See "Profiles" on page 34.



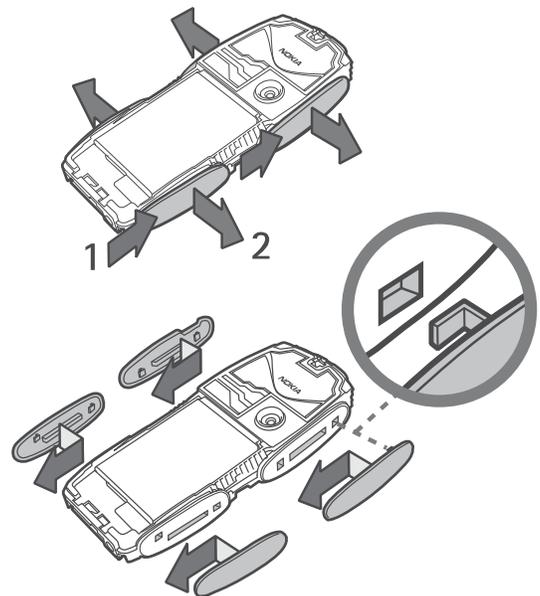
The alarm clock is set to **On**. See "Alarm clock" on page 42.

Icon Indicates...

-  The GPRS connection mode **Always online** is selected, and the GPRS service is available, or there is an active GPRS connection.
-  You have an incoming or outgoing call during a GPRS dial-up connection. GPRS is suspended.
-  Forward all voice calls. All calls are forwarded to another number. If you have two phone lines, the indicator for line 1 is  and for line 2 .
-  If you have two phone lines, this indicates that you are on the second phone line. See "Call settings" on page 36.
-  Calls are limited to a closed user group. See "Security settings" on page 39.
-  The timed profile is selected. See "Profiles" on page 34.
-  Integrated handsfree is active. See "Loudspeaker" on page 15.
-  A headset, handsfree, or Nokia Loopset enhancement is connected to the phone.
- or 
- 

• **Change the grips**

- 1 Remove the covers from the phone as described in "Change the phone covers" on page 12.
- 2 To remove the grips, slide them to the top of the phone (1), then remove the grip (2).
- 3 Replace the grips as shown.
- 4 Replace the covers of the phone as described in "Change the phone covers" on page 12.

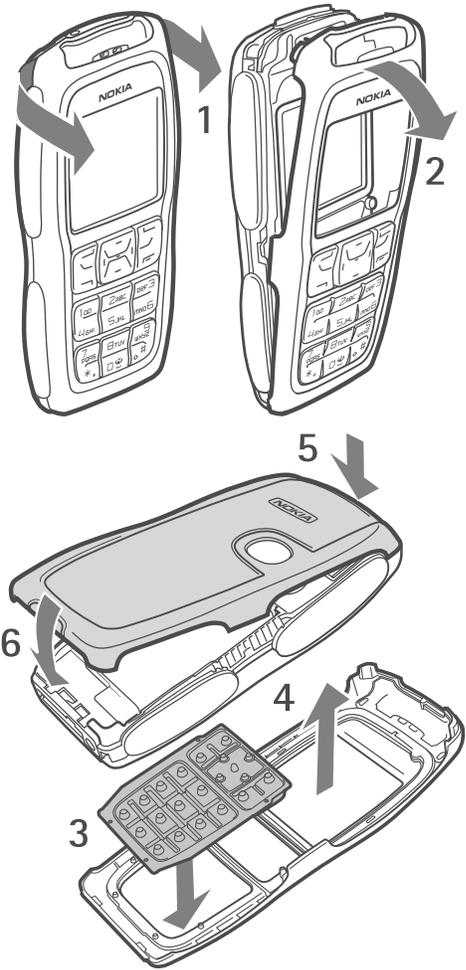


• Change the phone covers



Note: Before removing the cover, always switch off the power and disconnect the charger and any other device. Avoid touching electronic components while changing the covers. Always store and use the device with the covers attached.

- 1 Remove the back cover from the phone as described in "Remove the back cover and battery" on page 7.
- 2 Beginning at the top of the phone (1), gently pull the front cover away from the phone and detach it (2).
- 3 To remove the key mat from the front cover, take it out gently.
- 4 Place the key mat in the new front cover (3).
- 5 To replace the front cover, press it gently onto the phone until it snaps into position (4).
- 6 Align the top of the back cover with the top of the phone (5), and press the bottom of the back cover to lock it (6).



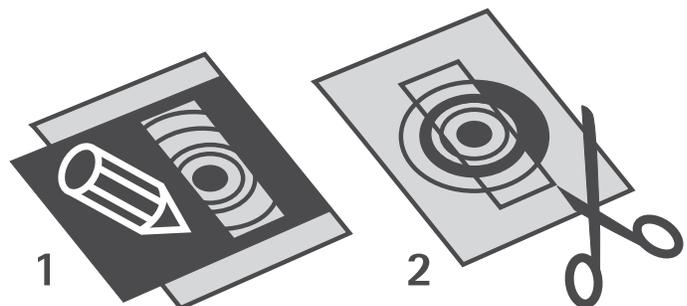
• Create custom back cover



Note: Use normal, plain paper as found in standard printers or use a photo print that is not thicker than 0.3 mm. To avoid affecting the antenna performance the material must not contain metal particles.

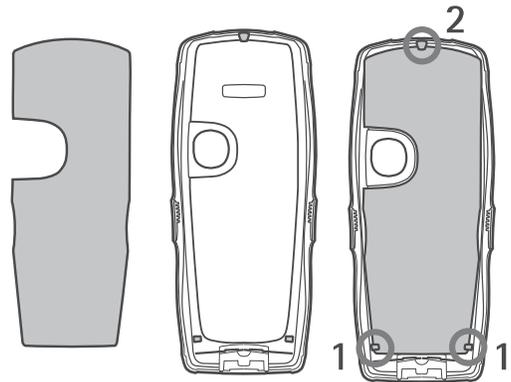
Use the plastic stencil to create a cut-out cover using your own design.

- 1 Place the stencil in the correct position and draw the outline (1).
- 2 Carefully cut out your new cover (2).



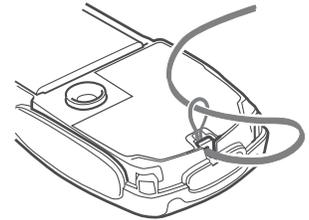
• Change cut-out cover

- 1 Remove the back cover from the phone as described in "Remove the back cover and battery" on page 7.
- 2 Remove the cut-out cover from the back cover.
- 3 To place the new cut-out cover into the back cover, slide the cut-out cover under the two guides at the bottom (1), then under the guide at the top (2).
- 4 Replace the back cover.



• Attach the wrist strap

Remove the back cover as described in "Remove the back cover and battery" on page 7 and thread the strap as shown in the picture. Tighten the strap, and replace the back cover.



5 Basic operations

• Switch the phone on or off

- 1 To turn your phone on or off, press and hold the **Power** key as shown.

If the phone displays **Insert SIM card** even though the SIM card is properly inserted, or **SIM card not supported**, contact your service provider.

- 2 If the phone asks for a PIN code, enter the PIN code (displayed as ****), and select **OK**.
- 3 If the phone asks for a security code, enter the security code, and select **OK**.



See "Access codes" on page 18 for more information.

• Set the time

Select **Menu > Settings > Time and date settings > Clock > Set the time**. Enter the time (in *hh:mm* format), and select **OK > am** or **pm**.

• Make and answer calls

Use the keypad—Enter the phone number (including the area code), and press the **Call** key. To delete a character to the left of the cursor, select **Clear**. To end the call or to cancel the call attempt, press the **End** key.

Use contacts—At the start screen, press the **Scroll down** key to view your contacts, scroll to the entry you want to call, and press the **Call** key to make the call.

Redial the last number—At the start screen, press the **Call** key twice.

Make an international call—Press * twice to enter the international prefix [a plus (+) sign] in place of the international access code. Then enter the country code, the area code without a leading zero (if necessary), and the phone number.

Answer or reject a call—Press the **Call** key to answer the call or the **End** key to reject the call. If **Forward if busy** is activated to your voice mailbox, the call is forwarded to your voice mail. If not, the call is rejected.

If you select **Silence**, only the ringing tone is muted. You can then answer or reject the incoming call.

Answer a call with the keypad locked—See "Lock the keypad (Keyguard)" on page 18.

1-touch dialing—See "1-touch dialing" on page 32.

Call waiting—See "Call settings" on page 36.

- **Adjust the earpiece volume**

To increase the volume of a call, press the **Right scroll** key. To decrease the volume of a call, press the **Left scroll** key. When adjusting the volume, a bar chart appears in the display indicating the volume level. See also **Automatic volume control** in "Call settings" on page 36.

You can only adjust the earpiece volume during an active call.

- **Loudspeaker**

You can use your phone as a loudspeaker during a call. Do not hold the phone to your ear during the loudspeaker operation as the volume may be very high.

To activate the loudspeaker, select **Options > Loudspeaker**. To deactivate the loudspeaker during a call, select **Options > Handset**.

6 Write text

You can use two methods for entering text and numbers:

- **Standard mode** () is the only way to enter names into **Contacts** and to rename caller groups.
- **Predictive text input** () is a quick and easy method for writing messages.

Press **#** to switch predictive text on or off and to use predictive text in various modes.

• Standard mode

Press a key once to insert the first letter on the key, twice for the second letter, etc. If you pause briefly, the last letter in the display is accepted and your phone awaits the next entry.

Select **Clear** to backspace the cursor and delete a character.

Select and hold **Clear** to backspace continuously and delete characters.

Press **0** to enter a space and accept a completed word.

Press **1** to enter a period (.).

Press ***** to display special characters. See "Enter punctuation and special characters" on page 17.

Press and hold **#** to switch between text and numeric entry. The icon  is displayed at the top of the screen when the phone is in numeric entry mode. Depending on which capitalization mode you have selected, , , or  is displayed when the phone is in text entry mode.

• Predictive text

Predictive text input allows you to write messages quickly using your keypad and the built-in phone dictionary. It is faster than using the standard multi-tap method. You can use predictive text to write a message and create a calendar note.

To activate predictive text at any text entry screen, select **Options > Predictive text** and a language.

How to use predictive text

- For each letter of the word that you want to spell, press the corresponding key on your keypad only *once*, even if the letter you want is not the first letter on the key. The phone "guesses" the word you are trying to spell.
- If a displayed word is not correct, press ***** to see other matches. To move forward through a list of matches, keep pressing *****. To return to the previous word in the list of matches, select **Previous**.

- Press **0** to accept the word, enter a space, and begin writing the next word.
- If **?** appears after a word, select **Spell** to add the word to the dictionary. See "Add words to the dictionary" on page 17.
- Press **1** to insert a period into your message.
- Press and hold ***** to display special characters. See "Enter punctuation and special characters" on page 17.

Compound words

Enter the first part of the word; to confirm it, press the **Scroll right** key.
Enter the last part of the word; to confirm it, press **0**.

Add words to the dictionary

If you encounter a word that predictive text does not recognize, a question mark (?) follows the word, and **Spell** appears in the lower left of the display.

Select **Spell**, enter your new word using the keypad, and select **Save**. The word is added to the dictionary and to the message that you are writing.

Keep these factors in mind when adding words:

- To accept and save new words to the dictionary, select **Save**, or press **0**, or delete the space between two words.
- Depending on the language and the length of the words, you may be able to add hundreds of words to the dictionary.
- When the dictionary is full, the most recent addition replaces the first.

• Enter punctuation and special characters

While at any text entry screen, press ***** to display special characters (press and hold ***** if predictive text is on) or press ***** twice to display the **Smiley** menu.

To navigate through the list of special characters, use the **Four-way scroll** key like a joystick. Once a character is highlighted, select **Insert** to insert the character into your message.

7 Phone security

• Lock the keypad (Keyguard)

You can lock the keypad to prevent accidental key presses. To answer a call with keyguard on, press the **Call** key. During the call, all features function as normal. When you end or reject a call, the keypad automatically relocks.

- To lock the keypad, select **Menu > ***.
- To unlock the keypad, select **Unlock > ***.

When the keypad is locked, calls may be possible to the official emergency number programmed into your phone. Enter the emergency number, and press the **Call** key.

• Automatic Keyguard

You can set your phone to lock the keys automatically after a time you specify. See "Phone settings" on page 36 to activate this feature.

• Access codes

The following access codes allow you to secure your phone from unauthorized use. To change access codes, see "Security settings" on page 39. Keep the new codes secret and in a safe place, separate from your phone.

Security code—This code, supplied with the phone, protects your phone against unauthorized use. The preset code is 12345.

PIN code—This code, supplied with the SIM card, protects the card against unauthorized use. Turn the **PIN code request** on so that the code is requested each time the phone is switched on. If you enter an incorrect PIN code three times in succession, the SIM card is blocked. You must enter the PUK code to unblock the SIM card and set a new PIN code.

PIN2 code—This code is supplied with some SIM cards and is required to access certain services, such as charging unit counters. If you enter an incorrect PIN2 code three times in succession, **PIN2 code blocked** appears in the display and you will be asked for the PUK2 code.

PUK and PUK2 codes—These unblocking codes may be supplied with the SIM card. For more information, contact your service provider.

Call restriction password (4 digits)—This password is needed when using **Call restrictions**. You can obtain the password from your service provider.

8 Phone menu

Phone features are accessed through the main menu of your phone. Use the menus and submenus to select or view items and customize phone features.



Note: Some service providers order the phones specially programmed for their network. This may mean that some features are not shown on the menu.

In the standby mode, press the middle of the scroll key to select **Menu**. The first menu item is displayed.

You can view the menu as a list or as a grid:

List view—List view is the default view for the main menu. Scroll up and down to view main menu selections one at a time.

Grid view—To switch between **List** and **Grid** view, see “Display settings” on page 35. In **Grid** view, scroll up, down, right, and left to navigate through the main menu icons.

In the **Grid** view, the icon for the selected menu is outlined, and the name of the menu appears at the top of the display.

As you scroll through the menus, the menu number appears in the upper right corner of the display.

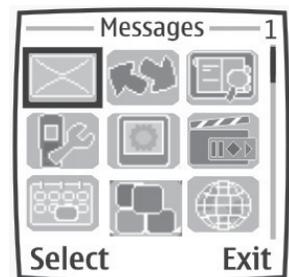
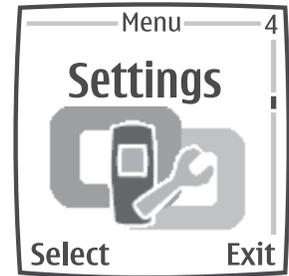
Below the menu number is a scroll bar with a tab. The tab moves up or down as you scroll through the menus, providing a visual representation of your current position in the menu structure.

Open a menu item—Scroll to it, and press the **Left selection** key.

Open a submenu—If the menu contains submenus, scroll to highlight the desired menu; then press the **Left selection** key.

Return to the previous menu—Select **Back** (press the **Right selection** key) to return to the previous menu or submenu.

Return to the start screen—Press the **End** key from any menu screen.



• Messages

The message services can only be used if they are supported by your network or your service provider.



To select the font size for reading and writing messages, select **Menu** > **Messages** > **Message settings** > **Other settings** > **Font size**.



Note: When sending messages, your phone may display the words **Message sent**. This is an indication that the message has been sent by your device to the message center number programmed into your device. This is not an indication that the message has been received at the intended destination. For more details about messaging services, check with your service provider.

Text messages (SMS) (network service)

Using the SMS (short message service), your phone can send and receive multipart messages, which consist of several ordinary text messages. Invoicing may be based on the number of ordinary messages that are required for a multipart message.

Before you can send a message, you need to save some message settings. See "text and SMS e-mail messages" on page 24.

You can also send and receive text messages that contain pictures. A picture message can be a multipart message.



Note: Only devices that offer picture message features can receive and display picture messages.

WRITE AND SEND MESSAGES

Your device supports the sending of text messages beyond the normal 160-character limit. If your message exceeds 160 characters, it will be sent as a series of two or more messages. The number of available characters and the current part number of a multipart message are shown on the top right of the display, for example 120/2. Note that using special (Unicode) characters such as ã, â, á, ì take up more space.

- 1 Select **Menu > Messages > Create message > Text message**.
- 2 Enter a message. See "Write text" on page 16. To insert text templates or a picture into the message, see "Templates" on page 21.
- 3 Select **Send**, or press the **Call** key to send the message.
The messages that you have sent will be saved in the **Sent items** folder if the setting **Save sent messages** is set to **Yes**. See "text and SMS e-mail messages" on page 24. Text messages are indicated with .
- 4 Enter the recipient's phone number, or search for the phone number in **Contacts**.
- 5 Select **OK** to send the message.

OPTIONS FOR SENDING A MESSAGE

After you have written a message, select **Options > Sending options** and one of the following:

Send to many—Send the message to several recipients.

Send as e-mail—Send a message as an SMS e-mail (network service).

Sending profile—Use a predefined message profile to send the message. To define a message profile, see "text and SMS e-mail messages" on page 24.

READ AND REPLY TO A MESSAGE OR E-MAIL

When you receive a message or an SMS e-mail, , the number of new messages, and **messages received** is shown. A blinking  indicates that the message memory is full. Before you can receive new messages, delete some of your old messages in the **Inbox** folder. If more than one message has been received, select the one that you want to read. An unread text message or SMS e-mail is indicated by .

- 1 Select **Show** to view the new message or **Exit** to view it later.

When you select **Options** while reading a message, some of the following options may be available: **Delete**, **Forward**, or **Edit** the message as a text message or an SMS e-mail; **Rename** the message you are reading or move it to another folder; **Copy to calendar** to copy text at the beginning of the message to your phone calendar as a reminder note for the current day; **Message details** to view, if available, the sender's name and phone number, the message center used, and the date and time of receipt; **Use detail** to extract numbers, e-mail addresses, and website addresses from the current message.

When reading a picture message, select **Save picture** to save the picture in the **Templates** folder.

- 2 Select **Reply** and the message type to reply to a message.

When replying to an SMS e-mail, confirm or edit the e-mail address and subject first. Then write your reply message.

- 3 To send the message to the displayed number, select **Send > OK**.

INBOX AND SENT ITEMS FOLDERS

The phone saves incoming text and multimedia messages in the **Inbox** folder. Sent text messages are saved in the **Sent items** folder.

TEMPLATES

Your phone includes text templates, indicated by , and picture templates, indicated by . To access the template list, select **Menu > Messages > Saved items > Text messages > Templates**.

SAVED ITEMS FOLDER AND MY FOLDERS

To organize your messages, you can move some of them to the **Saved items** folder or add new folders for your messages. While reading a message, select **Options > Move** and the new folder.

To add or delete a folder, select **Menu > Messages > Saved items > Text messages > My folders**. To add a folder if you have not saved any folder, select **Add**. Otherwise, select **Options > Add folder**. To delete a folder, scroll to the folder that you want to delete, and select **Options > Delete folder**.

Multimedia messages (MMS) (network service)



Note: Only devices that offer compatible multimedia message features can receive and display multimedia messages. Exercise caution when opening messages. Messages may contain malicious software or otherwise be harmful to your device or PC.

A multimedia message can contain text, sound, and a picture or a video clip. The phone supports multimedia messages that are up to 100 KB. If the message contains a picture, the phone scales it down to fit the display area.

The default setting to receive multimedia messages (**Allow multimedia reception**) is generally set to **Yes** or **In home network**. See "multimedia messages" on page 25.

Multimedia messaging supports the following formats:

- Picture: JPEG, GIF, WBMP, BMP, and PNG.
- Sound: scalable polyphonic MIDI (SP-MIDI), AMR audio, and monophonic ringing tones.
- Video clips in 3gp format with SubQCIF and QCIF resolution and AMR audio.

The phone does not necessarily support all variations of these file formats. If a received message contains any unsupported elements, they may be replaced with the file name and **Object format not supported**.

You are not able to receive any multimedia messages if you have a call in progress, a game, or another Java application running.

WRITE AND SEND A MESSAGE

To modify multimedia messaging settings, see "multimedia messages" on page 25. To check availability and subscribe to the multimedia messaging service, contact your service provider.

Copyright protections may prevent some images, ringing tones, and other content from being copied, modified, transferred, or forwarded.

1 Select **Menu > Messages > Create message > Multimedia msg.**

2 Enter a message. See "Write text" on page 16.

- To insert a file in the message, select **Options > Insert**, and the desired option from the gallery or **Calendar note** or **Business card**.

To move the text component to the top or bottom of the message, select **Options > Place text first** or **Place text last**.

- Your phone supports the sending and receiving of multimedia messages that contain several pages (slides). To insert a slide in the message, select **Options > Insert > Slide**. Each slide can contain text, one image, and one sound clip.

If the message contains several slides, to open the desired one, select **Options > Previous slide**, **Next slide**, or **Slide list**. To set the interval between the slides, select **Slide timing**.

- The following options may also be available: **Delete** (to delete an image, slide, or sound clip from the message), **Preview**, or **Save message**. In **More options** the following options may be available: **Insert contact**, **Insert number**, **Message details**, and **Edit subject**.
- 3 To send the message, select **Send**; or select **Options > Send to e-mail** or **Send to many**.
 - 4 Enter the recipient's phone number (or e-mail address), or search for it in **Contacts**.

While the multimedia message is being sent,  is displayed, and you can use other functions on the phone. If there is an interruption while the message is being sent, the phone tries to resend it a few times. If this fails, the message will remain in the **Outbox** folder, and you can try to resend it later.

The messages that you have sent will be saved in the **Sent items** folder if **Save sent messages** is set to **Yes**. See "multimedia messages" on page 25. Multimedia messages are indicated with .

READ AND REPLY TO A MESSAGE

When your phone receives a multimedia message,  and **Multimedia message received** are displayed. The appearance of a multimedia message may vary depending on the receiving device.

- 1 Select **Show** to view the message or **Exit** to view it later.
If more than one message has been received, select the one that you want to read. An unread multimedia message is indicated by .
- 2 Scroll to view the message.
Refer also to the options in **Gallery** (see "Gallery" on page 40).

MESSAGE FOLDERS

The phone saves the received multimedia messages in the **Inbox** folder. Multimedia messages that have not yet been sent are moved to the **Outbox** folder. The multimedia messages that you wish to send later can be saved in the **Saved items** folder. The multimedia messages that have been sent are saved in the **Sent items** folder of the **Multimedia msgs.** submenu if **Save sent messages** is set to **Yes**. See "multimedia messages" on page 25.

MESSAGE MEMORY FULL

When you have a new multimedia message waiting and the memory for the messages is full,  blinks, and **Multimedia memory full, view waiting msg.** is shown. To view the waiting message, select **Show**. To save the message, select **Options > Save message**. To delete old messages, first select the folder, then the old message to be deleted. To discard the waiting message, select **Exit > Yes**; if you select **No**, you can view the message.

Voice messages

The voice mailbox is a network service, and you may need to subscribe to it. For more information and for the voice mailbox number, contact your service provider.

Select **Menu > Messages > Voice messages** and one of the following:

- **Listen to voice messages** to call your voice mailbox.
- **Voice mailbox number** to enter, search for, or edit your voice mailbox number.

If supported by the network, the indicator  will show new voice messages. Select **Listen** to call your voice mailbox number.

Press and hold **1** to call your voice mailbox if you have the number set.

Info messages

With the info message network service you may be able to receive messages on various topics. For details, contact your service provider.

Service commands

Select **Menu > Messages > Service commands**. Enter and send service requests (also known as USSD commands), such as activation commands for network services, to your service provider.

Delete all messages from a folder

To delete all messages from a folder, select **Menu > Messages > Delete messages**. Select the folder from which you want to delete the messages, and select **OK** to confirm.

If the folder contains unread messages, the phone will ask whether you want to delete them.

Message settings

The message settings affect the sending, receiving, and viewing of messages.

TEXT AND SMS E-MAIL MESSAGES

- 1 Select **Menu > Messages > Message settings > Text messages > Sending profile**.
- 2 Select the message profile that you want to change, and update the following settings as you choose: **Message center number** (delivered by your service provider), **Messages sent via**, **Message validity**, **Default recipient number** (text messages) or **E-mail server** (SMS e-mail), **Delivery reports**, **Use GPRS**, **Reply via same center** (network service) and **Rename sending profile**.
- 3 Select **Back**.
- 4 Select **Save sent messages > Yes** to set the phone to save sent messages in the **Sent items** folder. If you select **No**, the sent messages are not saved.

MULTIMEDIA MESSAGES

Select **Menu > Messages > Message settings > Multimedia msgs.** and one of the following:

- **Save sent messages**—Select **Yes** to set the phone to save sent multimedia messages in the **Sent items** folder. If you select **No**, the sent messages are not saved.
- **Delivery reports**—Select **On** for the network to send delivery reports about your messages (network service).
- **Scale image down**—Select **Yes** to change the image size when you insert an image into a multimedia message.
- **Default slide timing**—Set the default time for slides in multimedia messages.
- **Allow multimedia reception**—Choose **No**, **Yes**, or **In home network** to use the multimedia service. If **Allow multimedia reception** is set to **Yes** or **In home network**, your operator or service provider may charge you for every message you receive. The default setting to receive multimedia messages is generally on.
- **Incoming multimedia messages**—Select **Retrieve** to set the phone to automatically get newly received multimedia messages or **Reject** if you do not wish to receive multimedia messages. This setting is not shown if **Allow multimedia reception** is set to **No**.
- **Configuration settings**—Select **Configuration** and the default service provider for retrieving multimedia messages. Select **Account** to see the accounts provided by the service provider. If more than one account is displayed choose the one that you want to use. You may receive the settings as a configuration message from the service provider. To enter the settings manually see "Configuration settings" on page 38.
- **Allow advertisements**—Select whether you want to allow your phone to receive advertisement messages. This setting is not shown if **Allow multimedia reception** is set to **No**.

OTHER SETTINGS

Select **Menu > Messages > Message settings > Other settings > Font size** to select the font size for reading and writing messages.

Message counter

To view how many messages you have sent and received, select **Menu > Messages > Message counter**. Select **Sent messages** or **Received messages**, or select **Clear counters** to clear the counters.

• Instant messaging

Take text messaging to the next level by experiencing instant messaging (IM) in a wireless environment. Engage in instant messaging with friends and family, regardless of the mobile system or platform they are using (like the Internet), as long as you all use the same IM service. Check with your wireless service provider for availability.

Before you can start using IM on your phone, you must first subscribe to your wireless service provider's text messaging service. GPRS network service is required to use instant messaging. You must also register with the IM service you want to use. See "Register with an IM service" on page 26 for more information.



Note: Depending on both your IM service provider and your wireless service provider, you may not have access to all of the features described in this guide.

Register with an IM service

Before you can use IM, you must register with an IM service to obtain an IM user name and password. You can obtain an IM user name and password by registering over the Internet (using your computer) with the IM service provider you have selected. During the registration process, you will have the opportunity to create the user name and password of your choice. For more information about signing up for IM services, contact your wireless service provider.

IM icons and menu items

Each IM service provider has its own unique interface, so the IM menu items, screen display text, and icons on your phone may appear differently for each IM service. If you have questions about the differences in the various IM service providers' screen text and icons, contact your wireless service provider for more information.

IM menus

OFFLINE

When you select **IM** from your phone menu, a list of available IM services is displayed. Select the desired IM service to access the IM offline menu options: **Login, Saved convers., and Settings**. Depending on the IM service provider you are using, these may not be the exact menu items displayed. See "IM icons and menu items" on page 26.

ONLINE

After you log into IM, the following IM online menu options appear: **Conversations, IM contacts, Add contact, Create group, Saved convers., IM availability, Settings, Blocked list, and Logout**. Depending on the IM service provider you are using, these may not be the exact menu items displayed. See "IM icons and menu items" on page 26.

Log in

- 1 Select **Menu > IM >** and the IM service you want to log into.
You must select the IM service every time you log in.
- 2 Select **Login**.
- 3 At the prompt, enter your user name if it is not already displayed, and select **OK**.
- 4 At the prompt, enter your password, and select **OK**.

Depending on your IM service, you may not need to enter your user name and password manually every time you log in.

After you have logged into IM the first time, you can choose to log in automatically or you can continue logging in manually. See the **Automatic login** option under "IM settings" on page 29.

Begin an IM session

You can send instant messages to anyone if you have the person's user name and you use the same IM service. As the conversation progresses, the most recent message appears at the top of the screen, causing the previous messages to move down one level (some IM services may do this in the opposite direction).

If you want to chat with a person, you must first add that person to **IM Contacts**. See "IM contacts" on page 28.

To begin an IM session with one contact:

- 1 From the **IM** online menu, select **IM contacts**.
- 2 Scroll to a contact who is online, and press **Select > Open**.
A conversation screen is opened, and the contact's name is displayed at the top.
- 3 Select **Write**, and enter a message. See "Write text" on page 16.
- 4 When you finish the message, select **Send**.

Begin a group chat

You can create your own private chat groups. The participants must be entered into **IM contacts**. See "IM contacts" on page 28.

- 1 From the **IM** online menu, select **Create group**.
- 2 Enter the group name (up to 10 characters), and select **OK**.
- 3 After your screen name appears, select **OK**.
The group chat screen is displayed.
- 4 To add group members, select **Options > Group members**.
- 5 Select the contact whom you want to invite to the group chat.
- 6 Enter the invitation text, and select **Send**.

Receive and reply to messages

If you have an active chat open and receive an instant message from the contact or group member with whom you are chatting, the new message is displayed on the conversation screen in the sequence in which they are received. Select **Write** to reply.

If you receive an instant message when you have the IM application open but do not have an active chat open, a screen appears showing you have a new instant message with the name of the sender. Select **Open** to open the conversation screen with that contact's new message displayed. To reply, select **Write**, enter a message, and select **Send**.

If you receive an instant message when you are logged in to the IM service but do not have the IM application open on your phone, a message is displayed telling you that a new IM message has been received. Select **Start** to open the IM application and view the new message.

Return to chat session

From the **IM** online menu, select **Conversations**. This list displays all IM conversations and group chats in which you are currently participating. To view a conversation or continue chatting, scroll to a group name or contact name, and press **Select**.

IM contacts

You can add the names of contacts with whom you interact frequently by instant messaging to the **IM contacts** list.

ADD A NEW CONTACT

To add a person to **IM Contacts** during an instant messaging session, select **Options > Add**.

To add a new contact from the IM online menu, select **Add contact**. Enter the contact's user name for the IM service, and select **OK**. Enter a nickname for the contact, and select **OK**. The contact is added to your **IM contacts** list.

To add a new contact from the IM contacts list, select any contact to open the IM contacts menu. Select **Add contact**, enter the contact's user name for the IM service, and select **OK**. Enter a nickname for the contact, and select **OK**. The contact is added to your **IM contacts** list.

REMOVE A CONTACT

From the **IM** online menu, select **IM contacts** and the contact you want to remove; then select **Remove contact > OK**.

BLOCK OR UNBLOCK CONTACTS

To block or unblock instant messages from a contact, select **IM Contacts** from the IM online menu, the contact name, and **Block contact** or **Unblock > OK**.

To view a list of the contacts you have blocked, select **Blocked list** from the IM online menu.

Save chat session

You can save a chat session while you have the conversation open. Select **Options > Save**, edit the name if desired, and select **Save**.

To view a saved chat session, go to the IM online menu, select **Saved convers.** and the desired conversation name to open it for viewing. While viewing the saved conversation, you can select **Delete** or **Options > Rename**.

Set your availability

You can determine if other users can tell whether you are available or not. From the IM online menu, select **IM Availability > Available for all, Available for contacts, or Appear offline**.

IM settings

You can customize your IM settings, depending upon the IM service you have selected. From the IM online menu, select **Settings** and one of the following:

Screen name—Enter a screen name (also called an alias or a nickname) that is 1–20 characters in length. This name is shown in front of the messages that you send to your contacts. It is also your default screen name when you join a group chat.

Automatic login—You can use automatic login after you have logged in at least once to an IM service with your user name and password. When you select **IM** from the phone main menu and then select the same IM service provider, you are then logged in automatically and do not have to enter your user name and password.

Sort contacts—Specify whether you want your IM contacts to be displayed **Alphabetically** or **By status**.

Status updates—Select **On** if you want your IM contacts list to be updated when a contact's availability changes. If you set this feature to **Off**, you can select **Refresh list** from the IM contacts menu to update your contacts' status manually.

Network—Modify network connection settings for the IM service.

Log off service

EXIT INSTANT MESSAGING

From the IM online menu, you can exit the IM application but still be connected to the IM service. Select **Back** until the IM online menu appears; then select **Exit**. If you open **IM** again, you do not need to log in again.

You can then receive instant messages and chat invitations from your contacts when using your phone for other purposes, such as playing a game. If you are connected to your IM service, but you have not used your IM application for some time, you may be automatically disconnected from the IM service. The next time you open the IM application, **Not connected** is displayed, and you are taken to the offline menu where you have to log in again.

LOG OUT OF INSTANT MESSAGING

To disconnect from the IM service, you must log out from the online menu. You will be taken to the IM service provider list, where you can exit the IM application or select an IM service and log in again.

From the IM online menu, select **Logout > OK**.

• Call log



The phone logs the phone numbers of missed, received, and dialed calls, and the approximate length of your calls. To log this information, the phone must be switched on and within the network's service area, and the network must support these functions.

To view recent call logs, select **Menu > Call log > Missed calls, Received calls, or Dialed numbers**.

When viewing a list, select **Options** to view the date and the time of the call, edit or delete the phone number from the list, save the number in **Contacts**, or send a message to the number.

Delete log contents

To delete recent call lists, select **Menu > Call log > Delete recent call lists > All, Missed, Received, or Dialed**.

Counters and timers for calls, data, and messages



Note: The actual invoice for calls and services from your service provider may vary, depending upon network features, rounding off for billing, taxes, and so forth.

Select **Menu > Call log > Call timers, GPRS data counter, or GPRS connection timer** for approximate information on your recent communications.

• Contacts



You can save names and phone numbers (contacts) in the phone memory and the SIM card memory.

- The phone memory may save names with numbers and text notes about each name. You can also save an image for a certain number of names.
- Names and numbers saved in the SIM card memory, are indicated by .

Contact settings

Select **Menu > Contacts > Settings > Memory in use, Contacts view, or Memory status**.

Add contact

Select **Menu > Contacts > Add new contact**. Enter the name and the phone number. When the name and number are saved, select **Done**.

Add numbers, text or an image

You can save different types of phone numbers, short text items, and an image for each name in the internal phone memory for contacts.

The first number saved is automatically set as the default number and is indicated with a frame around the number type indicator, for example . When you select a name from contacts to make a call, the default number is used unless you select another number.

- 1 Make sure that the memory in use is either **Phone** or **Phone and SIM**. See "Contact settings" on page 30.
- 2 Open your contacts list and scroll to the contact you want to modify.
- 3 Select **Details > Options** and one of the following:
 - Add number**—Select one of the number types, enter the number, and select **OK** to save it. To set the selected number as the default number, select **Set as default**.
 - Add detail**—Select one of the text types, enter the text (see "Write text" on page 16), and select **OK** to save it.
 - Add image**—When you select this option, **Gallery** is opened automatically so that you can choose the image. Open the image you want to add, and select **Options > Save to contacts**.
- 4 Select **Back > Exit** to return to the standby mode.

To change the number or text type, select **Change type** in the options list. You cannot change the type of an ID when it is in **IM contacts** or the **Subscribed names** list.

Search for a contact

Select **Menu > Contacts > Find**, or to find a contact name quickly, scroll down in the standby mode. You can enter the first characters of the name you are searching for in the pop-up window.

Contact options

The following options may be available in the **Contacts** menu:

- **Add new contact**
- **Delete**
- **Copy**—Copy names and phone numbers between the phone contact directory and the SIM card memory.
- **Settings**—Select how the names and numbers are displayed, and view the free and used memory capacity. See "Contact settings" on page 30.

- **1-touch dialing**—Assign a number to a 1-touch dialing key. To activate 1-touch dialing see "1-touch dialing" on page 32.
- **Info numbers**—Call the information numbers of your service provider if the numbers are included on your SIM card (network service).
- **Service numbers**—Call the service numbers of your service provider if the numbers are included on your SIM card (network service).
- **My numbers**—View the phone numbers assigned to your SIM card. Only shown, if the numbers are included on your SIM card.
- **Caller groups**—Arrange the names and phone numbers saved in the memory into caller groups with different ringing tones.

Edit or delete details

- 1 Search for the contact that you want to edit or delete, and select **Details**.
- 2 Scroll to the name, number, text item, or image that you want to edit or delete, and select **Options**.
- 3 Select **Edit name**, **Edit number**, **Edit detail**, **Change image**, **Delete number**, **Delete detail**, or **Delete image**.
 - You cannot edit or delete an ID when it is in **IM contacts** or the **Subscribed names** list.
 - Deleting an image attached to the contact does not delete it from **Gallery**.

Send and receive a business card

You can send and receive a person's contact information as a business card if you are using a compatible device. When you have received a business card, select **Show > Save** to save the business card in the phone memory. To discard the business card, select **Exit > Yes**.

To send a business card, do the following:

- 1 In **Contacts**, search for the name and phone number that you want to send.
- 2 Select **Details > Options > Send bus. card > Via text message** (network service) or **Via multimedia** (network service).
- 3 Select **Primary number** or **All details**.

1-touch dialing

To assign a number to a 1-touch dialing key:

- 1 Select **Menu > Contacts > 1-touch dialing**, and scroll to a key number.
- 2 Select **Assign**, or if a number has already been assigned to the key, select **Options > Change**.

- 3 Select **Find** and the name and number that you want to assign.
If the **1-touch dialing** function is off, the phone asks whether you want to activate it. See also **1-touch dialing** in "Call settings" on page 36.

To use 1-touch dialing, hold down the desired 1-touch dialing enter the standby mode.

Voice dialing

To make a phone call, say a voice tag that has been added to a phone number. Any spoken word, such as a person's name, can be a voice tag. You can add up to 10 voice tags.

Before using voice tags, note the following:

- Voice tags are not language-dependent. They are dependent on the speaker's voice.
- You must say the name exactly as you said it when you recorded it.
- Voice tags are sensitive to background noise. Record voice tags and use them in a quiet environment.
- Very short names are not accepted. Use long names and avoid similar names for different numbers.



Note: Using voice tags may be difficult in a noisy environment or during an emergency, so you should not rely solely upon voice dialing in all circumstances.

ADD AND MANAGE VOICE TAGS

Save or copy the contacts to which you want to add a voice tag in to phone memory. You can also add voice tags to the names in the SIM card. If you replace your SIM card with a new one, you must delete the old voice tags before you add new ones.

- 1 Scroll down in the standby mode to open your contact list.
- 2 Scroll to the contact to which you want to add a voice tag, and select **Details**.
- 3 Scroll to the phone number you want, and select **Options > Add voice tag**.
- 4 Select **Start**, and say clearly the words you want to record as a voice tag.
After recording, the phone plays the recorded tag.  appears after the phone number with a voice tag.

To check the voice tags, select **Menu > Contacts > Voice tags**. Scroll to the contact with the voice tag that you want, and press **Select** to see the options to listen to, delete, or change the recorded voice tag.

MAKE A CALL

In the standby mode, press and hold the **Right selection** key. A short tone is played, and **Speak now** is displayed. Say the voice tag clearly. The phone plays the recognized voice tag and dials the voice tag phone number after 1.5 seconds.

• Settings



Profiles

Use **Profiles** to adjust and customize ringing tones and sound tones for different events and environments. You can customize the profiles and activate a profile to use it. Available profiles are **Normal**, **Silent**, **Meeting**, **Outdoor**, **My profile 1**, and **My profile 2**.

Select **Menu > Settings > Profiles >** a profile, then:

- To activate the selected profile, select **Activate**.
- To personalize the profile, select **Customize**. Select the setting you want to change, and modify it.
- To set the profile to be active until a certain time up to 24 hours, select **Timed**, and set the time for the profile setting to end. When the time set for the profile expires, the previous profile that was not timed becomes active.

Themes

A theme is a package that may include a screen saver, a wallpaper image, a ringing tone, and a color scheme to customize your phone for different events and environments. Themes are stored in **Gallery**. To activate a theme, do the following:

- 1 Select **Menu > Settings > Themes > Select theme**.
The gallery is automatically opened so that you can locate a theme.
- 2 Open the **Themes** folder, scroll to a theme, and select **Options > Apply theme**.
See also to "Gallery" on page 40.

To download new themes, select **Menu > Settings > Themes > Theme downloads**. See "Download" on page 50.

Tone settings

To change the tone settings for the active profile, select **Menu > Settings > Tone settings**. Select and change **Incoming call alert**, **Ringing tone**, **Ringing volume**, **Vibrating alert**, **Message alert tone**, **Instant message alert tone**, **Keypad tones**, and **Warning tones**. You can find the same settings in the **Profiles** menu. See "Profiles" on page 34.

Select **Alert for** to set the phone to ring only upon calls from phone numbers that belong to a selected caller group. Scroll to the caller group you want, or select **All calls > Mark**.

Light settings

You can select different light sequences that follow the phone functions. Select **Menu > Settings > Light settings > Light sequences** to set the light effects on or off.

Personal shortcuts

With personal shortcuts you get quick access to frequently used phone functions.

RIGHT SELECTION KEY

Select **Menu > Settings > Personal shortcuts > Right selection key** and a phone function from the list to assign to the **Right selection key**. See "Start screen (standby mode)" on page 9. This menu is not shown in some operator variants.

GO TO OPTIONS

To assign phone functions from a predefined list to the **Go to** menu that is available, press the **Left selection key**.

Select **Menu > Settings > Personal shortcuts**. Press **Select 'Go to' options** to add functions to the shortcut list. Select **Organize 'Go to' options** to rearrange the functions on your personal shortcut list. See "Start screen (standby mode)" on page 9.

VOICE COMMANDS

You can activate certain phone functions by saying a voice command. Up to five functions can be selected for voice commands.

Select **Menu > Settings > Personal shortcuts > Voice commands**, the function folder that you want, scroll to the function to which you want to add a voice command, and select **Add**. A voice command is indicated with .

When you are using voice commands, the same guidelines apply in "Make a call" on page 33.

Display settings

Select **Menu > Settings > Display settings** and one of the following:

Wallpaper—Set your phone to display a background image, known as wallpaper, when the phone is in the standby mode.

Screen saver—Press **Select s. saver** to choose an animation or a still image as screen saver from **Gallery**. Select in **Time-out** the time after which the screen saver will be activated. Select **On** to activate the screen saver.

Independent of the screen saver settings, for power saving purposes, a digital clock view is activated when no phone function is used after a certain time.

Color schemes—Change the color in some display components, such as indicators, the signal bar, the battery bar, and the background image that appears when using a menu function.

Menu view—Set the way the phone displays the main menu.

Operator logo—Set your phone to display or hide the operator logo.

Time and date settings

Select **Menu > Settings > Time and date settings**, and one of the following:

Clock—Set the phone to show the clock in the standby mode, adjust the clock, and select time zone and format.

Date—Set the phone to show the date in the standby mode, set the date, and select the date format and separator.

Auto-update of date & time (network service)—Set the phone to automatically update the time and date according to the current time zone.

Call settings

Select **Menu > Settings > Call settings**, and one of the following:

Automatic volume control—Set the phone to automatically adjust the speaker volume according to the background noise.

Call forwarding (network service)—Forward your incoming calls. For details, contact your service provider.

Anykey answer—Select **On**; to answer an incoming call, briefly press any key except the **Power** key, the **End** key, or the **Right** and **Left selection** keys.

Automatic redial—Select **On**; your phone will make a maximum of 10 attempts to connect the call after an unsuccessful call attempt.

1-touch dialing—Select **On**; to dial the names and phone numbers assigned to the 1-touch dialing keys from **2** to **9**, press and hold the corresponding number key.

Call waiting—Select **Activate** for the network to notify you of an incoming call while you have a call in progress (network service).

Summary after call—Select **On**; the phone briefly displays the approximate duration and cost (network service) of the call after each call.

Send my caller ID (network service)—Select **Set by network, Yes**, or **No**.

Line for outgoing calls (network service)—Select phone line 1 or 2 to make calls. This option is shown only if supported by your SIM card.

Phone settings

Select **Menu > Settings > Phone settings**, and one of the following:

Phone language—Set the display language of your phone. If you select **Automatic**, the phone selects the language according to the information on the SIM card.

Automatic keyguard—Set the keypad of your phone to lock automatically after a preset time delay when the phone is in the standby mode and no function of the phone has been used. Select **On**, and set the time from 5 seconds to 60 minutes.

When the keyguard is on, calls still may be possible to the official emergency number. Enter the emergency number, and press the **Call** key.

Cell info display—Select **On** to receive information from the network, depending on the network cell used (network service).

Welcome note—Enter the note you would like to be shown briefly when the phone is switched on. To save the note, select **Save**.

Operator selection—Select **Automatic**; the phone automatically selects one of the cellular networks available in your area. Select **Manual**, and a network that has a roaming agreement with your service provider.

Confirm SIM service actions—See “SIM services” on page 53.

Help text activation—Select whether the phone shows the help texts.

Start-up tone—Select whether the phone plays a start-up tone when switched on.

Connectivity

You can define the settings for GPRS dial-up connections.

GPRS AND EGPRS

GPRS (general packet radio service) is a network service that allows mobile phones to be used for sending and receiving data over an Internet protocol (IP)-based network. GPRS is a data bearer that enables wireless access to data networks such as the Internet.

EGPRS (enhanced GPRS), also known as EDGE (enhanced data rates for global evolution), is similar to GPRS. EDGE is a radio interface modulation technique which increases GPRS data rates. For more information on the availability of EGPRS and data transfer speed, contact your service provider.

When you have selected **GPRS** as a data bearer, the phone uses EGPRS instead of GPRS if it is available in the network. You cannot select between EGPRS and GPRS in your phone, but for some applications, you may be able to select either **GPRS** or **GSM data** (CSD—circuit switched data) as the data bearer. The data bearer is part of the preferred access point and can be changed in **Configuration settings** (see “Configuration settings” on page 38).

The applications that may use GPRS are MMS, instant messaging, browsing sessions, remote SyncML, Java application downloading, and the PC dial-up (for example, Internet connections).

Before you can use GPRS technology, contact your service provider for availability of and subscription to the GPRS service, and save the GPRS settings for each of the applications used over GPRS.

GPRS CONNECTION

Select **Menu > Settings > Connectivity > GPRS > GPRS connection** and one of the following:

- **Always online**—Set the phone to automatically register to a GPRS network when you switch the phone on.
- **When needed**—Set the phone to establish GPRS registration and connection when an application using GPRS needs it and to close the connection when you end the application.

GPRS MODEM SETTINGS

You can connect the phone by a data cable connection to a compatible PC and use the phone as a modem to enable GPRS connectivity from the PC.

To define the settings for GPRS connections from your PC, select **Menu > Settings > Connectivity > GPRS > GPRS modem settings** and one of the following:

Active access point—Activate the access point that you want to use.

Edit active access point—Change the access point settings:

- **Alias for access point**—Enter a name for the activated access point, and select **OK**.
- **GPRS access point**—Enter the access point name (APN) to establish a connection to a GPRS network, and select **OK**. Contact your service provider for the APN.

You can also set the GPRS dial-up service settings (access point name) on your PC using the **Nokia Modem Options** software. See "PC Suite" on page 54. If you have set the settings both on your PC and on your phone, the PC settings will be used.

Enhancement settings

The enhancement settings menu is shown only if the phone is or has been connected to a compatible mobile enhancement, charger, or hands-free unit.

Select **Menu > Settings > Enhancement settings**. You can select an enhancement menu if the corresponding enhancement is or has been connected to the phone.

Configuration settings

Some of the network services need to have the correct configuration settings on your phone. Get the settings from a service provider as a configuration message, or enter your personal settings manually. Configuration settings from up to 10 different service providers can be stored in the phone and can be managed within this menu.

Select **Menu > Settings > Configuration settings**, and one of the following:

Default configuration settings—View the list of service providers stored on the phone (the default service provider is highlighted), and select another service provider as default. Scroll to a provider, and select **Details** to view the list with supported applications. To delete a service provider from the list, select **Options > Delete**.

Activate default in all applications—Set the applications to use the settings from the default service provider.

Preferred access point—Select another access point. Normally the access point from your service provider is to be used.

To enter, view, and edit the settings manually, select **Menu > Settings > Configuration settings > Personal configuration settings**. To add a new configuration, select **Add new** or **Options > Add new**. Choose one of the application types from the list and enter all the necessary settings. To activate the settings, select **Back > Options > Activate**.

To view or to edit the user-defined settings, select the application that you want to view, and select the setting to edit.

Security settings

When security features that restrict calls are in use (such as call restriction, closed user group, and fixed dialing) calls still may be possible to the official emergency number programmed into your device.

Select **Menu > Settings > Security settings**, and one of the following:

PIN code request—Set the phone to request your PIN code every time the phone is switched on. Some SIM cards do not allow the PIN code request to be turned off.

Call restrictions (network service)—Restrict incoming calls to and outgoing calls from your phone. A restriction password is required.

Fixed dialing—Restrict your outgoing calls to selected phone numbers if this function is supported by your SIM card.

Closed user group (network service)—Specify the group of people whom you can call and who can call you.

Security level—Select **Phone** for phone to request the security code whenever a new SIM card is inserted. Select **Memory** for the phone to request the security code when the SIM card memory is selected and you want to change the memory in use.

Access codes—Change the security code, PIN code, PIN2 code, or restriction password.

Restore factory settings

To reset some of the menu settings to their original values, select **Menu > Settings > Restore factory settings**.

• Operator menu

This menu lets you access a portal to services provided by your service provider. This menu is operator specific. The name and the icon depend on the operator. For more information, contact your service provider.

The operator can update this menu with a service message. For more information, refer to "Service inbox" on page 50.

• Gallery



In this menu, you can manage graphics, images, video clips, recordings, and tones. These files are arranged in folders.

Your phone supports a digital rights management (DRM) system to protect acquired content. A piece of content (for example a ringing tone) can be protected and associated with certain usage rules, such as the number of usage times and a certain usage period. The rules are defined in the activation key of the content, which can be delivered either together with the content or independently, depending on the service provider. You may be able to update these activation keys. Always check the delivery terms of any content and activation key before acquiring them, as they may be subject to a fee.

Copyright protections may prevent some images, ringing tones, and other content from being copied, modified, transferred, or forwarded.

1 Select **Menu > Gallery**.

A list of folders is displayed. **Images, Video clips, Themes, Graphics, Tones,** and **Recordings** are the default folders on the phone.

2 Scroll to a folder, and select **Open** to view a list of files in the folder or **Options** to choose from additional options.

3 After you open a folder, select the file that you want to view and **Open**.

If you select the **Themes** folder, scroll to a theme, and select **Open > View** to view the theme package. To choose it as your theme, select **Options > Apply theme**.

4 After you open a file, select **Options** to choose additional options.

• Media



Camera

You can take photos or record video clips with the built-in camera. The camera produces pictures in JPEG format and the video clips in 3GP format.

The Nokia 3220 device supports an image capture resolution of 640 x 480 pixels. The image resolution in these materials may appear different.

TAKE A PHOTO OR A VIDEO CLIP

Select **Menu > Media > Camera**. The live image appears on the display, and you can use the display as a viewfinder. Scroll left and right to change the camera mode: **Standard photo, Portrait photo,** or **Video,** or **Night mode** (if the lighting is dim for taking photos). If you want to add the photo to a name or a phone number saved in contacts, select **Portrait photo**.

Take a photo

Select **Capture**. A shutter sound is heard. The phone saves the photo in the **Images** folder of the **Gallery** menu.

If you want to send the photo as a multimedia message, select **Send**.

Select **Back** to take another photo, or select **Options** and select an option to rename or zoom the saved photo, set the contrast, see the details, set the photo as wallpaper, open the gallery, or delete the photo.

You can activate the self-timer of the camera for one picture at a time. To put the camera in photo mode, select **Options > Self-timer > Start**. After the timeout, the camera takes the photo. While the self-timer is running, a beeping sound is heard.

Record a video

To start recording a video clip, select **Record**. When you are recording a video clip, the remaining recording time is shown on the top of the display.

To pause the recording, select **Pause**. To resume the recording, select **Continue**. To stop the recording, select **Stop**. The phone saves the recording in the **Video clips** folder of the **Gallery** menu. To view the recorded video clip, select **Play**.

Select **Back** to start recording a new video clip. Select **Options** and an option to delete or rename the saved video clip, set the contrast, see the details, send it as a multimedia message, open the gallery, or mute/unmute the microphone.

CAMERA SETTINGS

Select **Menu > Media > Camera > Options**. Depending on the active camera mode, the following options may appear: **Change mode**, **Self-timer**, **Mute/Unmute**, **Open Gallery**, **Settings** (to adjust the camera settings), **Default mode**, **Image quality**, **Video clip length**, **Camera sounds**, **Self-timer lights**, and **Default title**.

Voice recorder

You can record pieces of speech, sound, or an active call for up to 5 minutes. For example, this is useful when recording a name and phone number for writing down later.

The recorder cannot be used when a data call or GPRS connection is active.

RECORD

- 1 Select **Menu > Media > Voice recorder**.
- 2 To start the recording, select **Record**. To start the recording during a call, select **Options > Record**.
While recording a call, all parties to the call will hear a faint beeping sound every 5 seconds approximately.
- 3 To end the recording, select **Stop**.
The recording is saved in the **Recordings** folder of the **Gallery** menu.
- 4 To listen to the latest recording, select **Play last recorded**.
- 5 To send the latest recording, select **Send last recorded**.

LIST OF RECORDINGS

Select **Menu > Media > Voice recorder > Recordings list**. The list of folders in the **Gallery** is shown. Open **Recordings** to see the list with recordings.

• Organizer



Alarm clock

You can set the phone to sound an alarm at a desired time.

Select **Menu > Organizer > Alarm clock**.

To set the alarm, select **Alarm time**, and enter the alarm time. To change the alarm time when the alarm time is set, select **On**. Select **Repeat alarm** to set the phone to alert you on selected days of the week.

Select **Alarm tone** and the default alarm tone. To customize the alarm tone, select one from the ringing tone list or from **Gallery**.

When the alarm time expires, the phone sounds an alert tone and flashes **Alarm!** and the current time on the display, even if the phone is switched off. Select **Stop** to stop the alarm. If you let the phone continue to sound the alarm for a minute or select **Snooze**, the alarm stops for about 10 minutes, then resumes.

If the alarm time is reached while the device is switched off, the device switches itself on and starts sounding the alarm tone. If you Select **Stop**, the device asks whether you want to activate the device for calls. Select **No** to switch off the device or **Yes** to make and receive calls. Do not select **Yes** when wireless phone use may cause interference or danger.

Calendar

Select **Menu > Organizer > Calendar**.

The current day is indicated by a frame. If there are any notes set for the day, the day is in bold type. To view the day notes, select **View**. To view a week, select **Options > Week view**. To view a single note, select **View**.

Other options for the calendar view may be options for creating a note; deleting, editing, moving, and repeating a note; copying a note to another day; or sending a note directly to another compatible phone as a note, text message, or a multimedia message.

In **Settings** you can set the date, time, time zone, date and time format, and the first day of the week. In the **Auto-delete** option you can set the phone to delete old notes automatically after a specified time.

To delete all notes in the calendar, select the month or week view and **Options > Delete all notes**.

MAKE A CALENDAR NOTE

Select **Menu > Organizer > Calendar**. Scroll to the date you want, and select **Options > Make a note**. Select one of the following note types:  **Meeting**,  **Call**,  **Birthday**,  **Memo**, or  **Reminder**.

CALENDAR NOTE ALARMS

The phone must be turned on to sound a calendar note alarm tone. If you want to set an alarm that will sound while the phone is turned off, see "Alarm clock" on page 42.

When the phone sounds an alarm for a calendar note, the phone beeps, and displays the note. To call a displayed number (when a call note  on the display), press the **Call** key. To stop the alarm and view the note, select **View**. Select **Snooze**, and the phone sounds an alarm again after 10 minutes. To stop the alarm without viewing the note, select **Exit**.

To-do list

You can save a note for a task that you have to do, select a priority level for the note, and mark it as done when you complete it. You can sort the notes by priority or by date.

Select **Menu > Organizer > To-do list**.

Select **Add note** to make a note. Enter the note, and select **Save**. Select the priority for the note. The phone automatically sets the deadline without an alarm for the note. To change the deadline, view the note, and select the deadline option.

When viewing a note, you can select **Options** to view and delete the selected note and delete all the notes that you have marked as done. You can sort the notes by priority or by deadline, send a note to another phone, save a note as a calendar note, or access the calendar. You can also select an option to edit the selected note, edit the deadline or priority for the note, or mark the note as done.

Notes

You can use this application for writing and sending notes to compatible devices by MMS.

Select **Menu > Organizer > Notes**. The phone will ask you to set the date and time if they have not already been set when you start to write a note. To add a note, select **Add note** or **Options > Make a note**. Enter the note, and select **Save**; or scroll to a note, and select **View** or **Options** to see the options for notes.

Synchronization

Synchronization allows you to save your calendar and contacts data on a remote Internet server (network service) or on a compatible PC. If you have saved data on the remote Internet server, you can synchronize your phone by starting the synchronization from your phone. You can also synchronize the data in the contacts list, calendar, and notes of your phone to correspond to the data of your compatible PC by starting the synchronization from your PC.

The contact data in your SIM card will not be synchronized.

SYNCHRONIZE FROM YOUR PHONE

Before synchronizing from your phone, you need to subscribe to a synchronization service and get the configuration settings from your service provider. For more information on availability and the synchronization service settings, contact your service provider.

To start the synchronization from your phone, do the following:

- 1 Activate the connection settings you need for the synchronization. See "Synchronization settings" on page 44.
- 2 Select **Menu > Organizer > Synchronization > Server sync > Data to be synchronized**, mark the data to be synchronized, and select **Done > Synchronize**.

The marked data of the active set will be synchronized after confirmation.

SYNCHRONIZATION SETTINGS

You may receive the synchronization settings for your phone as a configuration message from the service provider. For more information on availability and the synchronization service settings, contact your service provider. To enter the settings manually, see "Configuration settings" on page 38.

Select **Menu > Organizer > Synchronization > Server sync > Sync settings > Configuration**. Select the service provider whose settings you would like to activate. Select **Account** to see the accounts provided by the service provider. If more than one account is displayed, choose the one you want to use.

SYNCHRONIZE FROM YOUR COMPATIBLE PC

You must use a data cable to connect your phone to a PC to synchronize contacts, the calendar, and the notes from your PC. To view compatible data cables, see "Enhancements" on page 55. You also need the PC Suite software of your phone installed on the PC. Start the synchronization from the PC using PC Suite.

Verify that the phone is in the standby mode and that the time and date are set.

• Applications



Games and applications

Your phone software may include some games and Java applications specially designed for this Nokia phone.

LAUNCH A GAME OR AN APPLICATION

Select **Menu > Applications > Games > Select game or Collection > Select application**. Scroll to a game or an application and select **Open**.

GAME AND APPLICATION DOWNLOADS

Your phone supports J2ME Java applications. Make sure that the application is compatible with your phone before downloading it.

Select **Menu > Applications > Games > Game downloads** or **Collection > App. downloads**. The list of available bookmarks is shown. Select **More bookmarks** to access the list of bookmarks in the **Services** menu. See "Bookmarks" on page 50.

Select a bookmark to connect to the desired service. For the availability of different services, pricing, and tariffs, contact your service provider.



Important: Only install and use applications from sources that offer adequate security and protection against harmful software.

Note that downloaded applications may be saved in the **Games** menu instead of the **Applications** menu.

GAME SETTINGS

Select **Menu > Applications > Games > App. settings** to set sounds, lights, and shakes for games.

MEMORY STATUS FOR GAMES AND APPLICATIONS

To view the amount of memory available for game and application installations (third shared memory), select **Menu > Applications > Games** or **Collection > Memory**.

Calculator

The calculator in your phone adds, subtracts, multiplies, divides, calculates the square and the square root, and converts currency values.

- 1 Select **Menu > Applications > Extras > Calculator**.
- 2 When **0** is displayed on the screen, enter in the first number in the calculation. Press **#** for a decimal point.
- 3 Select **Options > Add, Subtract, Multiply, Divide, Square, Square root, or Change sign**.
- 4 Enter the second number.
- 5 To get the answer, select **Equals**.
- 6 To start a new calculation, press and hold **Clear**.

This calculator has a limited accuracy and rounding errors may occur, especially in long divisions.

PERFORM A CURRENCY CONVERSION

- 1 Select **Menu > Applications > Extras > Calculator**.
- 2 To save the exchange rate, select **Options > Exchange rate**.
- 3 Select either of the displayed options.
- 4 Enter the exchange rate, press **#** for a decimal point, and select **OK**. The exchange rate remains in the memory until you replace it with another one.
- 5 To perform the currency conversion, enter the amount to be converted, and select **Options > To home** or **To foreign**.

Countdown timer

Select **Menu > Applications > Extras > Countdown timer**. Enter the alarm time in hours, minutes, and seconds, and select **OK**. You can write your own text to be displayed when the time expires, and select **Start** to start the countdown timer.

To change the countdown time, select **Change time**, or to stop the timer, select **Stop timer**.

If the alarm time is reached when the phone is in the standby mode, the phone sounds a tone and flashes the note text if it is set; otherwise, it flashes the text **Countdown completed**.

To stop the alarm, press any key. If no key is pressed, the alarm automatically stops within 30 seconds. To stop the alarm and delete the note text, select **Exit**.

Stopwatch

You can use the stopwatch to measure time, take intermediate times, or take lap times.

TIME OBSERVATION AND TIME SPLITTING

Select **Menu > Applications > Extras > Stopwatch > Split timing**. Select **Start** to start the time observation. Select **Split** every time you want to take an intermediate time; the intermediate times are listed below the running time on the display. Select **Stop** to stop the time observation. To save the times, select **Save**. Select **Options** to start the time observation again or reset the times without saving.

LAP TIMES

Select **Menu > Applications > Extras > Stopwatch > Lap timing**. Select **Start** to start the time observation and **Lap** to take a lap time. Select **Stop** to stop the lap timing. To save the times, select **Save** and enter a name. Select **Options** to save or reset the lap times.

USE OTHER PHONE FEATURES WHILE TIMING

If you have already started the stopwatch and want to use other phone features while the stopwatch continues to run, press the **End** key to return to the standby mode. To return to the stopwatch, select **Menu > Applications > Extras > Stopwatch > Continue**.

Using the stopwatch or allowing it to run in the background when using other features increases the demand on battery power and reduces battery life.

VIEW AND DELETE TIMES

Select **Menu > Applications > Extras > Stopwatch**.

If the stopwatch is not reset, you can select **Show last time** to view the most recent measured time. Select **View times** to select from a list of names or final times of the time sets.

To delete the saved times, select **Delete times**. Select **Delete all > Yes** or **One by one**. Scroll to the times you want to delete, and select **Delete > Yes**.

Wallet

In **Wallet** you can save personal information such as credit card numbers and addresses. The data saved in the wallet can easily be retrieved to automatically fill in data fields when making purchases while browsing, as long as the service supports wallet functionality. You can also save access codes to mobile services that request a user name and password.

If you have tried to access or have accessed confidential information requiring passwords, empty the cache after each use. To empty the cache, see "Cache memory" on page 51.

SET WALLET CODE

The data in the wallet is protected with a wallet code that you can define when you access the wallet for the first time. At **Create wallet code**, enter the code, and select **OK** to confirm it. At **Verify wallet code**, enter the code again, and select **OK**.

DELETE WALLET CONTENT

If you want to delete all the content of the wallet along with the wallet code, enter ***#7370925538#** in the standby mode. You also need the phone security code (see "Access codes" on page 18).

USE THE WALLET

You can set up your personal information by using the wallet menu. To use the content of the wallet in a mobile service, access the wallet through the browser (see "Services" on page 48).

To use the wallet feature, select **Menu > Applications > Extras > Wallet**. Enter your wallet code, select **OK** and one of the following:

Wallet profiles—When you have saved your personal card details, you can combine them together into a wallet profile. You can use the profile to retrieve wallet data from different cards while browsing.

Cards—Use this option to create and save **Payment cards, Loyalty cards, Access cards, User info cards, or Address cards**. For availability of receiving card information as configuration settings, contact the card issuer or your service provider.

Tickets—Save notifications for e-tickets you have bought through a mobile service.

Receipts—Save mobile purchase receipts.

Personal notes—Save personal information, such as account numbers, passwords, codes, or notations. Personal notes are protected with the wallet PIN code. When viewing a note, select **Options** and **Send via text msg.** to copy the note as a text message; **Copy to calendar** to copy the note to the calendar as a memo; **Use detail** to extract numbers, e-mail addresses, and web addresses from a note; and **Delete** to delete the note you are viewing.

Settings—Use this option to change wallet settings.

• Services



Your phone has a browser that you can use to access various mobile Internet services.

Check the availability of these services, pricing, and tariffs with your service provider.

With the browser you can view the services that use wireless mark-up language (WML) or extensible hypertext mark-up language (XHTML) on their pages. Appearance may vary due to screen size. Note that you may not be able to view all the details of the Internet pages.

Access services

- 1 Save the service settings that are required to access the service that you want to use. See "Set up the phone to access a service" on page 48.
- 2 Make a connection to the given service. See "Connect to a service" on page 48.
- 3 Start browsing the pages of the service. See "Browse the pages of a service" on page 49.
- 4 When you are finished browsing, end the connection to the service. See "Disconnect from a service" on page 49.

Set up the phone to access a service

Your phone may already have some service settings stored. Additional settings may be received as a configuration message from the service provider that offers the service you want to use. For more information and for the appropriate settings, contact your service provider. See also "Configuration settings" on page 38.

Connect to a service

Make sure that the service settings of the service you want to use are activated. To activate the settings, select **Menu > Services > Settings > Configuration settings > Configuration** and the configuration setting you want to activate.

Connect to the service by one of the following methods:

- To open the homepage of the service provider, select **Menu > Services > Home**, or in the standby mode, press and hold **0**.
- To open a bookmark of the service, select **Menu > Services > Bookmarks** and a bookmark. If the bookmark does not work with the current active service settings, activate another set of service settings and try again.
- To access the last URL, select **Menu > Services > Last web addr**.
- Enter the address of the service, select **Menu > Services > Go to address**, enter the address of the service, and select **OK**.

Browse the pages of a service

After you have connected to the service, begin to browse its pages. The function of the phone keys may vary in different services. Follow the text guides on the phone display. For more information, contact your service provider.

If **GPRS** is selected as the data bearer,  is shown on the top left of the display during browsing. If you receive a call or a text message, or make a call during a GPRS connection,  will be shown on the top left of the display to indicate that the GPRS connection is suspended (on hold). After a call the phone tries to reconnect the GPRS connection. See also "GPRS and EGPRS" on page 37.

If you have tried to access or have accessed confidential information requiring passwords, empty the cache after each use. To empty the cache, see "Cache memory" on page 51.

USE THE PHONE KEYS WHILE BROWSING

- Use any of the scroll keys to browse through the page.
- To select a highlighted item, press the **Call** key, or select **Options** and the option to open the link.
- To enter letters and numbers, press the keys **1–9**. To enter special characters, press *****.

DIRECT CALLING

While browsing, you can make a voice call, send touch tones while a voice call is in progress, and save a name and a phone number from a page.

Disconnect from a service

To quit browsing and end the connection, select **Options > Quit**. When **Quit browsing?** is displayed, select **Yes**.

You can also disconnect by pressing the **End** key twice, or press and hold the **End** key.

Appearance settings for the browser

While browsing, select **Options > Other options > Appear. settings**, or in the standby mode, select **Menu > Services > Settings > Appearance settings** and one of the following:

Text wrapping—Select **On**, and the text continues on the next line. If you select **Off**, the text is abbreviated.

Font size—Select a font size.

Show images—Select **No**, and any pictures appearing on the page are not shown.

Alerts—Select **Alert for unsecure connection** and **Yes** to set the phone to alert when a secure connection changes to an insecure one during browsing. Select **Alert for unsecure items** and **Yes** to set the phone to alert when a secure page contains an insecure item. These alerts do not guarantee a secure connection. For more information, see "Browser security" on page 51.

Character encoding—Select the character set that the phone uses to show browser pages that do not include that information; or select whether to always use UTF-8 encoding when sending a Web address to a compatible phone.

Cookies

A cookie is data that a site saves in the cache memory of the browser (for example, your user information or your browsing preferences). Cookies are saved until you clear the cache memory. See "Cache memory" on page 51.

While browsing, select **Options > Other options > Security > Cookie settings**, or in the standby mode, select **Menu > Services > Settings > Security settings > Cookies**. Select **Allow** to allow cookies or **Reject** to prevent the phone from receiving them.

Bookmarks

You can save page addresses as bookmarks in the phone memory.

- 1 While browsing, select **Options > Bookmarks**, or in the standby mode, select **Menu > Services > Bookmarks**.
- 2 Scroll to the bookmark that you want to use, and select **Select** to make a connection to the page associated with the bookmark; or select **Options** to view the title and the address of the selected bookmark, edit or delete the selected bookmark, send it directly to another phone as a bookmark or text message, or create a new bookmark.

Your device may have some bookmarks loaded for sites not affiliated with Nokia. Nokia does not warrant or endorse these sites. If you choose to access them, you should take the same precautions for security or content as you would with any Internet site.

RECEIVE A BOOKMARK

When you receive a bookmark, **1 bookmark received** is displayed. Select **Show** to view the bookmark. To save the bookmark, select **Save**. Select **Options > View** to see the details or **Delete** to discard it.

Download

To download more tones, graphics, games, videos, themes, or applications to your phone (network service), select the type of download to receive.



Important: Only install applications from sources that offer adequate protection against harmful software.

For the availability of different services, pricing, and tariffs, contact your service provider.

Service inbox

The phone can receive service messages (pushed messages) from your service provider (network service). Service messages are, for example, notifications of news headlines, and they may contain a text message or an address of a service.

When you receive a service message in the standby mode, you have the following options:

- To access the message, select **Show**.
- To move the message to the **Service inbox**, select **Exit**.
- To access the message later, select **Menu > Services > Service inbox**.
- To access the message while browsing, select **Options > Other options > Service inbox**.
- To activate the browser and download marked content, select **Retrieve**.
- To display detailed information on a service notification, select **Options > Details**.
- To delete information on a service notification, select **Options > Delete**.

SERVICE INBOX SETTINGS

Select **Menu > Services > Settings > Service inbox settings** and one of the following:

Service messages—Select **On** or **Off** to set the phone to receive or not receive service messages.

Message filter—Select **On** to set the phone to receive service messages only from content authors approved by the service provider. To view the list of the approved content authors, select **Trusted channels**.

Automatic connection—If you set the phone to receive service messages and select **On**, the phone automatically activates the browser from the standby mode when the phone receives a service message. If you select **Off**, the phone activates the browser when it receives a service message, but only after you select **Retrieve**.

Cache memory

The information or services that you have accessed are stored in the cache of your phone. A cache is a buffer memory, which is used to store data temporarily. To empty the cache while browsing, select **Options > Other options > Clear the cache**; or in the standby mode, select **Menu > Services > Clear the cache**.

Browser security

Security features may be required for some services, such as banking services or online shopping. For such connections, you need security certificates and possibly a security module, which may be available on your SIM card. For more information, contact your service provider.

SECURITY MODULE

The security module can contain certificates as well as private and public keys. The purpose of the security module is to improve security services for applications requiring browser connection. It allows you to use a digital signature. The certificates are saved in the security module by the service provider. See also "Access codes" on page 18.

Select **Menu > Services > Settings > Security settings > Security module settings** and one of the following:

Security module details—Show the security module title, status, manufacturer, and serial number.

Module PIN request—Set the phone to request the module PIN when using services provided by the security module. Enter the code, and select **On**. To disable the module PIN request, select **Off**.

Change module PIN—Change the module PIN, if allowed by the security module. Enter the current module PIN code; then enter the new code twice.

Change signing PIN—Select the signing PIN that you want to change. Enter the current PIN code; then enter the new code twice.

CERTIFICATES

There are three kinds of certificates:

Server certificates—Used by the phone to create a connection with improved security to the content server. The phone receives the server certificate from the service provider before the connection is established, and its validity is checked using the authority certificates saved in the phone. Server certificates are not saved.

The security indicator  is displayed during a connection if the data transmission between the phone and the content server is encrypted.

The security icon does not indicate that the data transmission between the gateway and the content server (or place where the requested resource is stored) is secure. The service provider secures the data transmission between the gateway and the content server.

Authority certificates—Used by some services, such as banking services, for checking the validity of other certificates. Authority certificates can either be saved in the security module by the service provider, or they can be downloaded from the network if the service supports the use of authority certificates.

User certificates—Issued to users by a certifying authority. User certificates are required (for example, to create a digital signature). They associate the user with a specific private key in a security module.



Important: Even if the use of certificates makes the risks involved in remote connections and software installation considerably smaller, they must be used correctly in order to benefit from increased security. The existence of a certificate does not offer any protection by itself; the certificate manager must contain correct, authentic, or trusted certificates for increased security to be available. Certificates have a restricted lifetime. If **Expired certificate** or **Certificate not valid yet** are shown, even if the certificate should be valid, verify that the current date and time in your device are correct.

Before changing any certificate settings, you must make sure that you trust the owner of the certificate and that the certificate belongs to the listed owner.

DIGITAL SIGNATURE

You can make digital signatures with your phone if your SIM card has a security module. The signature can be traced back to you by the private key on the security module and the user certificate that was used to perform the signature. To use the digital signature, can be the same as signing your name to a paper bill, contract, or other document. See also "Security module" on page 51.

To make a digital signature, select a link on a page, such as the title of the book that you want to buy and its price. The text to sign (possibly including amount, date, etc.) will be shown.

Check that the header text is **Read** and that the digital signature icon  is shown.



Note: If the digital signature icon does not appear, there is a security breach, and you should not enter any personal data such as your signing PIN.

To sign the text, read all of the text first; then you can select **Sign**.

The text may not fit within a single screen. Therefore, make sure to scroll through and read all of the text before signing.

Select the user certificate you want to use. Enter the signing PIN, and select **OK**. The digital signature icon will disappear, and the service may display a confirmation of your purchase.

• SIM services



In addition to the functions available on the phone, your SIM card may provide services that you can access in this menu item, which is shown only if it is supported by your SIM card. The name and contents of the menu depend on the SIM card.

For availability, rates, and information on using SIM services, contact your SIM card vendor, for example, the service provider or other vendor.

Depending on the operator, you can set the phone to show you the confirmation messages sent between your phone and the network when you are using the SIM services. Select **Menu > Settings > Phone settings > Confirm SIM service actions > Yes**.

Note that accessing these services may involve sending messages or making a phone call for which you may be charged.

9 PC connectivity

You can access the Internet when you use a data cable to connect your phone to a compatible PC. You can use a variety of PC connectivity and data communications applications with your phone. For example, with PC Suite you can synchronize contacts, calendar, and notes between your phone and the compatible PC or a remote Internet server (network service).

You may find more information and downloadable files, including PC Suite, in the support area on the Nokia website www.nokia.com.

Copyright protections may prevent some images, ringing tones, and other content from being copied, modified, transferred, or forwarded.

● PC Suite

PC Suite allows you to transfer and synchronize information between your phone and your PC. With PC Suite, you can edit contacts in your phone, install J2ME Java applications (such as games and dictionaries) from a compatible PC to the phone, and backup and restore personal data between your phone and a compatible PC. To see the comprehensive features offered by PC Suite, you can download the application from the Nokia website www.nokia.com.

● GPRS, EGPRS, HSCSD, and CSD

You can use the following data services with your phone:

- GPRS (general packet radio service)
- EGPRS (enhanced GPRS) (See "GPRS and EGPRS" on page 37.)
- HSCSD (high speed circuit switched data)
- CSD (circuit switched data—or GSM data)

For availability and subscription to data services, contact your service provider.

Note that the use of HSCSD services consumes the battery faster than normal voice or data calls. You may need to connect the phone to a charger for the duration of the data transfer.

● Data communication applications

For information on using a data communication application, refer to the documentation provided with it.

Note that making or answering phone calls during a computer connection is not recommended because it might disrupt the operation.

For better performance during data calls, place the phone on a stationary surface with the keypad facing downward. Do not move the phone by holding it in your hand during a data call.

10 Reference information

• BATTERY INFORMATION

Charging and discharging

Your device is powered by a rechargeable battery. The full performance of a new battery is achieved only after two or three complete charge and discharge cycles. The battery can be charged and discharged hundreds of times but it will eventually wear out. When the talk and standby times are noticeably shorter than normal, buy a new battery. Use only Nokia approved batteries, and recharge your battery only with Nokia approved chargers designated for this device.

Unplug the charger from the electrical plug and the device when not in use. Do not leave the battery connected to a charger. Overcharging may shorten its lifetime. If left unused, a fully charged battery will lose its charge over time. Temperature extremes can affect the ability of your battery to charge.

Use the battery only for its intended purpose. Never use any charger or battery that is damaged.

Do not short-circuit the battery. Accidental short-circuiting can occur when a metallic object such as a coin, clip, or pen causes direct connection of the positive (+) and negative (-) terminals of the battery. (These look like metal strips on the battery.) This might happen, for example, when you carry a spare battery in your pocket or purse. Short-circuiting the terminals may damage the battery or the connecting object.

Leaving the battery in hot or cold places, such as in a closed car in summer or winter conditions, will reduce the capacity and lifetime of the battery. Always try to keep the battery between 59°F and 77°F (15°C and 25°C). A device with a hot or cold battery may not work temporarily, even when the battery is fully charged. Battery performance is particularly limited in temperatures well below freezing.

Do not dispose of batteries in a fire! Dispose of batteries according to local regulations. Please recycle when possible. Do not dispose as household waste.

• ENHANCEMENTS

A few practical rules about accessories and enhancements:

- Keep all accessories and enhancements out of the reach of small children.
- When you disconnect the power cord of any accessory or enhancement, grasp and pull the plug, not the cord.
- Check regularly that enhancements installed in a vehicle are mounted and are operating properly.
- Installation of any complex car enhancements must be made by qualified personnel only.

If you want to enhance phone functionality, a range of enhancements is available for you. You can select any of these items to help accommodate your specific communication needs. For availability of these and other enhancements, contact your dealer.



Audio

- Boom headset (HDB-4)
- Standard headset (HS-5)
- Fashion stereo headset (HS-3)
- Stereo headset (HDS-3)
- Retractable headset (HS-10)
- Inductive loopset (LPS-4)
- Wireless audio adapter (AD-5B)
- Radio headset (HS-2R)

Power

- Battery, 760 mAh, Li-ion (BL-5B)
- Chargers (ACP-12, ACP-9, ACP-8, and ACP-7)
- Retractable charger (AC-1)

Data

- Connectivity adapter cables (DKU-5)

Car

- Mobile chargers (LCH-12 and LCH-9)

Imaging

- Nokia observation camera
- Image viewer (SU-5)
- Image album (PD-1)
- Camera flash (PD-2)

Cover/carrying

- Xpress-on covers and style packs
- Wrist strap

● **CARE AND MAINTENANCE**

Your device is a product of superior design and craftsmanship and should be treated with care. The suggestions below will help you protect your warranty coverage and enjoy your device for many years.

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your device does get wet, remove the battery and allow the device to dry completely before replacing it.
- Do not use or store the device in dusty, dirty areas. Its moving parts and electronic components can be damaged.
- Do not store the device in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the device in cold areas. When the device returns to its normal temperature, moisture can form inside the device and damage electronic circuit boards.

- Do not attempt to open the device other than as instructed in this guide.
- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and fine mechanics.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device.
- Do not paint the device. Paint can clog the moving parts and prevent proper operation.
- Use a soft, clean, dry cloth to clean any lenses (such as camera, proximity sensor, and light sensor lenses).
- Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could damage the device and may violate regulations governing radio devices.

All of the above suggestions apply equally to your device, battery, charger, or any enhancement. If any device is not working properly, take it to the nearest authorized service facility for service.

• ADDITIONAL SAFETY INFORMATION

Operating environment

Remember to follow any special regulations in force in any area and always switch off your device when its use is prohibited or when it may cause interference or danger. Use the device only in its normal operating positions. This device meets RF exposure guidelines when used either in the normal use position against the ear or when positioned at least 7/8 inch (2.2 cm) away from the body. When a carry case, belt clip, or holder is used for body-worn operation, it should not contain metal and should position the device at least 7/8 inch (2.2 cm) away from your body.

In order to transmit data files or messages, this device requires a quality connection to the network. In some cases, transmission of data files or messages may be delayed until such a connection is available. Ensure the above separation distance instructions are followed until the transmission is completed.

Medical devices

Operation of any radio transmitting equipment, including wireless phones, may interfere with the functionality of inadequately protected medical devices. Consult a physician or the manufacturer of the medical device to determine if they are adequately shielded from external RF energy or if you have any questions. Switch off your phone in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

PACEMAKERS

Pacemaker manufacturers recommend that a minimum separation of 6 inches (15.3 cm) be maintained between a wireless phone and a pacemaker to avoid potential interference with the pacemaker. These recommendations are consistent with the independent research by and recommendations of Wireless Technology Research. To minimize the potential for interference, persons with pacemakers should

- Always keep the device more than 6 inches (15.3 cm) from their pacemaker when the device is switched on
- Not carry the device in a breast pocket
- Hold the device to the ear opposite the pacemaker

If you have any reason to suspect that interference is taking place, switch off your device immediately.

HEARING AID

Some digital wireless devices may interfere with some hearing aids. If interference occurs, consult your service provider.

Vehicles

RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles such as electronic fuel injection systems, electronic antiskid (antilock) braking systems, electronic speed control systems, air bag systems. For more information, check with the manufacturer or its representative of your vehicle or any equipment that has been added.

Only qualified personnel should service the device, or install the device in a vehicle. Faulty installation or service may be dangerous and may invalidate any warranty that may apply to the device. Check regularly that all wireless device equipment in your vehicle is mounted and operating properly. Do not store or carry flammable liquids, gases, or explosive materials in the same compartment as the device, its parts, or enhancements. For vehicles equipped with an air bag, remember that an air bags inflate with great force. Do not place objects, including installed or portable wireless equipment in the area over the air bag or in the air bag deployment area. If in-vehicle wireless equipment is improperly installed and the air bag inflates, serious injury could result.

Potentially explosive environments

Switch off your device when in any area with a potentially explosive atmosphere and obey all signs and instructions. Potentially explosive atmospheres include areas where you would normally be advised to turn off your vehicle engine. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death. Switch off the device at refuelling points such as near gas pumps at service stations. Observe restrictions on the use of radio equipment in fuel depots, storage, and distribution areas, chemical plants or where blasting operations

are in progress. Areas with a potentially explosive atmosphere are often but not always clearly marked. They include below deck on boats, chemical transfer or storage facilities, vehicles using liquefied petroleum gas (such as propane or butane), and areas where the air contains chemicals or particles such as grain, dust or metal powders.

FCC regulations prohibit using your wireless device while in the air. The use of wireless telephones in an aircraft may be dangerous to the operation of the aircraft, disrupt the wireless telephone network, and may be illegal.

Failure to observe these instructions may lead to suspension or denial of telephone services to the offender, legal action, or both.

EMERGENCY CALLS



Important: Wireless phones, including this phone, operate using radio signals, wireless networks, landline networks, and user-programmed functions. Because of this, connections in all conditions cannot be guaranteed. You should never rely solely on any wireless phone for essential communications like medical emergencies.

To make an emergency call:

- 1 If the phone is not on, switch it on. Check for adequate signal strength. Some networks may require that a valid SIM card is properly inserted in the phone.
- 2 Press the **End** key as many times as needed to clear the display and ready the phone for calls.
- 3 Key in the official emergency number for your present location. Emergency numbers vary by location.
- 4 Press the **Call** key.

If certain features are in use, you may first need to turn those features off before you can make an emergency call. Consult this guide or your service provider. When making an emergency call, give all the necessary information as accurately as possible. Your wireless phone may be the only means of communication at the scene of an accident. Do not end the call until given permission to do so.

CERTIFICATION INFORMATION (SAR)

THIS DEVICE MEETS THE GOVERNMENT'S REQUIREMENTS FOR EXPOSURE TO RADIO WAVES.

Your mobile device is a radio transmitter and receiver. It is designed and manufactured not to exceed the limits for exposure to radio frequency (RF) energy adopted by the governments of the USA through the Federal Communications Commission (FCC) and Canada through Industry Canada (IC). These limits establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure guidelines for mobile devices employ a unit of measurement known as the Specific Absorption Rate or SAR. The SAR limit adopted by the USA and Canada is 1.6 watts/kilogram (W/kg) averaged over one gram of tissue. The limit incorporates a substantial margin of safety to give additional protection for the public and to account for any variations in measurements. Tests for SAR are conducted using standard operating positions with the device transmitting at its highest certified power level in all tested frequency bands. The actual SAR level of an operating device can be well below the maximum value because the device is designed to use only the power required to reach the network. That amount changes depending on a number of factors such as how close you are to a network base station.

The highest SAR value reported to the FCC and IC for the Nokia 3220 phone when tested for use at the ear is 0.57 W/kg, and when properly worn on the body is 0.83 W/kg. The highest SAR value reported to the FCC and IC for the Nokia 3220b phone model when tested for use at the ear is 1.01 W/kg, and when properly worn on the body is 1.04 W/kg. SAR information on file with the FCC can be found under the Display Grant section of <http://www.fcc.gov/oet/fccid> after searching on FCC ID PPIRH-37 for the Nokia 3220 phone and on FCC ID PPIRH-49 for the Nokia 3220b phone. SAR values reported in other countries may vary depending on differences in reporting and testing requirements and the network band. Additional SAR information may be provided under product information at <http://www.nokia.com>.

• TECHNICAL INFORMATION

Feature	Specification
Dimensions	Width 44.2 mm Height 104.5 mm Depth 18.7 mm
Weight	86 g with BL-5B Li-Ion Battery
Wireless networks	Nokia 3220: EGSM 900 and GSM 1800 and 1900 networks Nokia 3220b: GSM 850, 1800, and 1900 networks
Size (volume)	70 cm ³
Frequency range (Tx)	GSM 850: 824–849 MHz (for RH-49) EGSM 900: 880–915 MHz (for RH-37) GSM 1800: 1710–1785 MHz (for RH-49 and RH-37) GSM 1900: 1850–1910 MHz (for RH-49 and RH-37)
Frequency range (Rx)	GSM 850: 869–894 MHz (for RH-49) EGSM 900: 925–960 MHz (for RH-37) GSM 1800: 1805–1865 MHz (for RH-49 and RH-37) GSM 1900: 1930–1990 MHz (for RH-49 and RH-37)
Tx output power	2 W (max)
Battery voltage	3.7 V dc
Number of channels	299
Memory size	16 MB flash memory, approximately 2 MB available to user
Operating temperature	Between 59°F and 77°F (15°C and 25°C).

• Nokia ONE-YEAR LIMITED WARRANTY

Nokia Inc. ("Nokia") warrants that this cellular phone ("Product") is free from defects in material and workmanship that result in Product failure during normal usage, according to the following terms and conditions:

- 1 The limited warranty for the Product extends for ONE (1) year beginning on the date of the purchase of the Product. This one year period is extended by each whole day that the Product is out of your possession for repair under this warranty.
- 2 The limited warranty extends only to the original purchaser ("Consumer") of the Product and is not assignable or transferable to any subsequent purchaser/end-user.
- 3 The limited warranty extends only to Consumers who purchase the Product in the United States of America.
- 4 During the limited warranty period, Nokia will repair, or replace, at Nokia's sole option, any defective parts, or any parts that will not properly operate for their intended use with new or refurbished replacement items if such repair or replacement is needed because of product malfunction or failure during normal usage. No charge will be made to the Consumer for any such parts. Nokia will also pay for the labor charges incurred by Nokia in repairing or replacing the defective parts. The limited warranty does not cover defects in appearance, cosmetic, decorative or structural items, including framing, and any non-operative parts. Nokia's limit of liability under the limited warranty shall be the actual cash value of the Product at the time the Consumer returns the Product for repair, determined by the price paid by the Consumer for the Product less a reasonable amount for usage. Nokia shall not be liable for any other losses or damages. These remedies are the Consumer's exclusive remedies for breach of warranty.
- 5 Upon request from Nokia, the Consumer must prove the date of the original purchase of the Product by a dated bill of sale or dated itemized receipt.
- 6 The Consumer shall bear the cost of shipping the Product to Nokia in Melbourne, Florida. Nokia shall bear the cost of shipping the Product back to the Consumer after the completion of service under this limited warranty.
- 7 The Consumer shall have no coverage or benefits under this limited warranty if any of the following conditions are applicable:
 - a) The Product has been subjected to abnormal use, abnormal conditions, improper storage, exposure to moisture or dampness, unauthorized modifications, unauthorized connections, unauthorized repair, misuse, neglect, abuse, accident, alteration, improper installation, or other acts which are not the fault of Nokia, including damage caused by shipping.

- b) The Product has been damaged from external causes such as collision with an object, or from fire, flooding, sand, dirt, windstorm, lightning, earthquake or damage from exposure to weather conditions, an Act of God, or battery leakage, theft, blown fuse, or improper use of any electrical source, damage caused by computer or internet viruses, bugs, worms, Trojan Horses, cancelbots or damage caused by the connection to other products not recommended for interconnection by Nokia.
 - c) Nokia was not advised in writing by the Consumer of the alleged defect or malfunction of the Product within fourteen (14) days after the expiration of the applicable limited warranty period.
 - d) The Product serial number plate or the enhancement data code has been removed, defaced or altered.
 - e) The defect or damage was caused by the defective function of the cellular system or by inadequate signal reception by the external antenna, or viruses or other software problems introduced into the Product.
- 8** Nokia does not warrant uninterrupted or error-free operation of the Product. If a problem develops during the limited warranty period, the Consumer shall take the following step-by-step procedure:
- a) The Consumer shall return the Product to the place of purchase for repair or replacement processing.
 - b) If "a" is not convenient because of distance (more than 50 miles) or for other good cause, the Consumer shall ship the Product prepaid and insured to:
Nokia Inc., Attn: Repair Department
795 West Nasa Blvd.
Melbourne, FL 32901
 - c) The Consumer shall include a return address, daytime phone number and/or fax number, complete description of the problem, proof of purchase and service agreement (if applicable). Expenses related to removing the Product from an installation are not covered under this limited warranty.
 - d) The Consumer will be billed for any parts or labor charges not covered by this limited warranty. The Consumer will be responsible for any expenses related to reinstallation of the Product.
 - e) Nokia will repair the Product under the limited warranty within 30 days after receipt of the Product. If Nokia cannot perform repairs covered under this limited warranty within 30 days, or after a reasonable number of attempts to repair the same defect, Nokia at its option, will provide a replacement Product or refund the purchase price of the Product less a reasonable amount for usage. In some states the Consumer may have the right to a loaner if the repair of the Product takes more than

ten (10) days. Please contact the Customer Service Center at Nokia at the telephone number listed at the end of this warranty if you need a loaner and the repair of the Product has taken or is estimated to take more than ten (10) days.

- f) If the Product is returned during the limited warranty period, but the problem with the Product is not covered under the terms and conditions of this limited warranty, the Consumer will be notified and given an estimate of the charges the Consumer must pay to have the Product repaired, with all shipping charges billed to the Consumer. If the estimate is refused, the Product will be returned freight collect. If the Product is returned after the expiration of the limited warranty period, Nokia's normal service policies shall apply and the Consumer will be responsible for all shipping charges.
- 9 You (the Consumer) understand that the product may consist of refurbished equipment that contains used components, some of which have been reprocessed. The used components comply with Product performance and reliability specifications.
- 10 ANY IMPLIED WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR USE, SHALL BE LIMITED TO THE DURATION OF THE FOREGOING LIMITED WRITTEN WARRANTY. OTHERWISE, THE FOREGOING LIMITED WARRANTY IS THE CONSUMER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. NOKIA SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF ANTICIPATED BENEFITS OR PROFITS, LOSS OF SAVINGS OR REVENUE, LOSS OF DATA, PUNITIVE DAMAGES, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT, COST OF CAPITAL, COST OF ANY SUBSTITUTE EQUIPMENT OR FACILITIES, DOWNTIME, THE CLAIMS OF ANY THIRD PARTIES, INCLUDING CUSTOMERS, AND INJURY TO PROPERTY, RESULTING FROM THE PURCHASE OR USE OF THE PRODUCT OR ARISING FROM BREACH OF THE WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL OR EQUITABLE THEORY, EVEN IF NOKIA KNEW OF THE LIKELIHOOD OF SUCH DAMAGES. NOKIA SHALL NOT BE LIABLE FOR DELAY IN RENDERING SERVICE UNDER THE LIMITED WARRANTY, OR LOSS OF USE DURING THE PERIOD THAT THE PRODUCT IS BEING REPAIRED.
- 11 Some states do not allow limitation of how long an implied warranty lasts, so the one year warranty limitation may not apply to you (the Consumer). Some states do not allow the exclusion or limitation of incidental and consequential damages, so certain of the above limitations or exclusions may not apply to you (the Consumer). This limited warranty gives the Consumer specific legal rights and the Consumer may also have other rights which vary from state to state.

- 12** Nokia neither assumes nor authorizes any authorized service center or any other person or entity to assume for it any other obligation or liability beyond that which is expressly provided for in this limited warranty including the provider or seller of any extended warranty or service agreement.
- 13** This is the entire warranty between Nokia and the Consumer, and supersedes all prior and contemporaneous agreements or understandings, oral or written, relating to the Product, and no representation, promise or condition not contained herein shall modify these terms.
- 14** This limited warranty allocates the risk of failure of the Product between the Consumer and Nokia. The allocation is recognized by the Consumer and is reflected in the purchase price.
- 15** Any action or lawsuit for breach of warranty must be commenced within eighteen (18) months following purchase of the Product.
- 16** Questions concerning this limited warranty may be directed to:
Nokia Inc.
Attn: Customer Service
7725 Woodland Center Blvd., Ste. 150
Tampa, FL 33614
Telephone: 1-888-NOKIA-2U (1-888-665-4228)
Facsimile: (813) 249-9619
TTY/TDD Users Only: 1-800-24-NOKIA (1-800-246-6542)
- 17** The limited warranty period for Nokia supplied attachments and accessories is specifically defined within their own warranty cards and packaging.

NOTES

Appendix A Message from the CTIA

(Cellular Telecommunications & Internet Association) to all users of mobile phones

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Safety is the most important call you will ever make.

A Guide to Safe and Responsible Wireless Phone Use

Tens of millions of people in the U.S. today take advantage of the unique combination of convenience, safety and value delivered by the wireless telephone. Quite simply, the wireless phone gives people the powerful ability to communicate by voice--almost anywhere, anytime--with the boss, with a client, with the kids, with emergency personnel or even with the police. Each year, Americans make billions of calls from their wireless phones, and the numbers are rapidly growing.

But an important responsibility accompanies those benefits, one that every wireless phone user must uphold. When driving a car, driving is your first responsibility. A wireless phone can be an invaluable tool, but good judgment must be exercised at all times while driving a motor vehicle--whether on the phone or not.

The basic lessons are ones we all learned as teenagers. Driving requires alertness, caution and courtesy. It requires a heavy dose of basic common sense---keep your head up, keep your eyes on the road, check your mirrors frequently and watch out for other drivers. It requires obeying all traffic signs and signals and staying within the speed limit. It means using seatbelts and requiring other passengers to do the same.

But with wireless phone use, driving safely means a little more. This brochure is a call to wireless phone users everywhere to make safety their first priority when behind the wheel of a car. Wireless telecommunications is keeping us in touch, simplifying our lives, protecting us in emergencies and providing opportunities to help others in need.

When it comes to the use of wireless phones, *safety is your most important call.*

Wireless Phone "Safety Tips"

Below are safety tips to follow while driving and using a wireless phone which should be easy to remember.

- 1 Get to know your wireless phone and its features such as speed dial and redial. Carefully read your instruction manual and learn to take advantage of valuable features most phones offer, including automatic redial and memory. Also, work to memorize the phone keypad so you can use the speed dial function without taking your attention off the road.
- 2 When available, use a hands free device. A number of hands free wireless phone accessories are readily available today. Whether you choose an installed mounted device for your wireless phone or a speaker phone accessory, take advantage of these devices if available to you.
- 3 Position your wireless phone within easy reach. Make sure you place your wireless phone within easy reach and where you can grab it without removing your eyes from the road. If you get an incoming call at an inconvenient time, if possible, let your voice mail answer it for you.

- 4 Suspend conversations during hazardous driving conditions or situations. Let the person you are speaking with know you are driving; if necessary, suspend the call in heavy traffic or hazardous weather conditions. Rain, sleet, snow and ice can be hazardous, but so is heavy traffic. As a driver, your first responsibility is to pay attention to the road.
- 5 Do not take notes or look up phone numbers while driving. If you are reading an address book or business card, or writing a "to do" list while driving a car, you are not watching where you are going. It's common sense. Don't get caught in a dangerous situation because you are reading or writing and not paying attention to the road or nearby vehicles.
- 6 Dial sensibly and assess the traffic; if possible, place calls when you are not moving or before pulling into traffic. Try to plan your calls before you begin your trip or attempt to coincide your calls with times you may be stopped at a stop sign, red light or otherwise stationary. But if you need to dial while driving, follow this simple tip--dial only a few numbers, check the road and your mirrors, then continue.
- 7 Do not engage in stressful or emotional conversations that may be distracting. Stressful or emotional conversations and driving do not mix--they are distracting and even dangerous when you are behind the wheel of a car. Make people you are talking with aware you are driving and if necessary, suspend conversations which have the potential to divert your attention from the road.
- 8 Use your wireless phone to call for help. Your wireless phone is one of the greatest tools you can own to protect yourself and your family in dangerous situations--with your phone at your side, help is only three numbers away. Dial 9-1-1 or other local emergency number in the case of fire, traffic accident, road hazard or medical emergency. Remember, it is a free call on your wireless phone!
- 9 Use your wireless phone to help others in emergencies. Your wireless phone provides you a perfect opportunity to be a "Good Samaritan" in your community. If you see an auto accident, crime in progress or other serious emergency where lives are in danger, call 9-1-1 or other local emergency number, as you would want others to do for you.
- 10 Call roadside assistance or a special wireless non-emergency assistance number when necessary. Certain situations you encounter while driving may require attention, but are not urgent enough to merit a call for emergency services. But you still can use your wireless phone to lend a hand. If you see a broken-down vehicle posing no serious hazard, a broken traffic signal, a minor traffic accident where no one appears injured or a vehicle you know to be stolen, call roadside assistance or other special non-emergency wireless number.

Careless, distracted individuals and people driving irresponsibly represent a hazard to everyone on the road. Since 1984, the Cellular Telecommunications Industry Association and the wireless industry have conducted educational outreach to inform wireless phone users of their responsibilities as safe drivers and good citizens. As we approach a new century, more and more of us will take advantage of the benefits of wireless telephones. And, as we take to the roads, we all have a responsibility to drive safely.

The wireless industry reminds you to use your phone safely when driving.

For more information, please call 1-888-901-SAFE.

For updates: <http://www.wow-com.com/consumer/issues/driving/articles.cfm?ID=85>

Appendix B Message from the FDA

(U.S. Food and Drug Administration) to all
users of mobile phones

©July 18, 2001 For updates: <http://www.fda.gov/cdrh/phones>

Consumer Update on Wireless Phones

U.S. Food and Drug Administration

1. Do wireless phones pose a health hazard?

The available scientific evidence does not show that any health problems are associated with using wireless phones. There is no proof, however, that wireless phones are absolutely safe. Wireless phones emit low levels of radiofrequency energy (RF) in the microwave range while being used. They also emit very low levels of RF when in the stand-by mode. Whereas high levels of RF can produce health effects (by heating tissue), exposure to low level RF that does not produce heating effects causes no known adverse health effects. Many studies of low level RF exposures have not found any biological effects. Some studies have suggested that some biological effects may occur, but such findings have not been confirmed by additional research. In some cases, other researchers have had difficulty in reproducing those studies, or in determining the reasons for inconsistent results.

2. What is FDA's role concerning the safety of wireless phones?

Under the law, FDA does not review the safety of radiation-emitting consumer products such as wireless phones before they can be sold, as it does with new drugs or medical devices. However, the agency has authority to take action if wireless phones are shown to emit radiofrequency energy (RF) at a level that is hazardous to the user. In such a case, FDA could require the manufacturers of wireless phones to notify users of the health hazard and to repair, replace or recall the phones so that the hazard no longer exists. Although the existing scientific data do not justify FDA regulatory actions, FDA has urged the wireless phone industry to take a number of steps, including the following:

- Support needed research into possible biological effects of RF of the type emitted by wireless phones;
- Design wireless phones in a way that minimizes any RF exposure to the user that is not necessary for device function; and
- Cooperate in providing users of wireless phones with the best possible information on possible effects of wireless phone use on human health.

FDA belongs to an interagency working group of the federal agencies that have responsibility for different aspects of RF safety to ensure coordinated efforts at the federal level. The following agencies belong to this working group:

- National Institute for Occupational Safety and Health
- Environmental Protection Agency
- Federal Communications Commission
- Occupational Safety and Health Administration
- National Telecommunications and Information Administration

The National Institutes of Health participates in some interagency working group activities, as well.

FDA shares regulatory responsibilities for wireless phones with the Federal Communications Commission (FCC). All phones that are sold in the United States must comply with FCC safety guidelines that limit RF exposure. FCC relies on FDA and other health agencies for safety questions about wireless phones. FCC also regulates the base stations that the wireless phone networks rely upon. While these base stations operate at higher power than do the wireless phones themselves, the RF exposures that people get from these base stations are typically thousands of times lower than those they can get from wireless phones. Base stations are thus not the subject of the safety questions discussed in this document.

3. What kinds of phones are the subject of this update?

The term wireless phone refers here to hand-held wireless phones with built-in antennas, often called cell mobile or PCS phones. These types of wireless phones can expose the user to measurable radiofrequency energy (RF) because of the short distance between the phone and the user's head. These RF exposures are limited by Federal Communications Commission safety guidelines that were developed with the advice of FDA and other federal health and safety agencies. When the phone is located at greater distances from the user, the exposure to RF is drastically lower because a person's RF exposure decreases rapidly with increasing distance from the source. The so-called cordless phones; which have a base unit connected to the telephone wiring in a house, typically operate at far lower power levels, and thus produce RF exposures far below the FCC safety limits.

4. What are the results of the research done already?

The research done thus far has produced conflicting results, and many studies have suffered from flaws in their research methods. Animal experiments investigating the effects of radiofrequency energy (RF) exposures characteristic of wireless phones have yielded conflicting results that often cannot be repeated in other laboratories. A few animal studies, however, have suggested that low levels of RF could accelerate the development of cancer in laboratory animals. However, many of the studies that showed increased tumor development used animals that had been genetically engineered or treated with cancer-causing chemicals so as to be pre-disposed to develop cancer in the absence of RF exposure. Other studies exposed the animals to RF for up to 22 hours per day. These conditions are not similar to the conditions under which people use wireless phones, so we don't know with certainty what the results of such studies mean for human health.

Three large epidemiology studies have been published since December 2000. Between them, the studies investigated any possible association between the use of wireless phones and primary brain cancer, glioma, meningioma, or acoustic neuroma, tumors of the brain or salivary gland, leukemia, or other cancers. None of the studies demonstrated the existence of any harmful

health effects from wireless phone RF exposures. However, none of the studies can answer questions about long-term exposures, since the average period of phone use in these studies was around three years.

5. What research is needed to decide whether RF exposure from wireless phones poses a health risk?

A combination of laboratory studies and epidemiological studies of people actually using wireless phones would provide some of the data that are needed. Lifetime animal exposure studies could be completed in a few years. However, very large numbers of animals would be needed to provide reliable proof of a cancer promoting effect if one exists. Epidemiological studies can provide data that is directly applicable to human populations, but 10 or more years follow-up may be needed to provide answers about some health effects, such as cancer. This is because the interval between the time of exposure to a cancer-causing agent and the time tumors develop - if they do - may be many, many years. The interpretation of epidemiological studies is hampered by difficulties in measuring actual RF exposure during day-to-day use of wireless phones. Many factors affect this measurement, such as the angle at which the phone is held, or which model of phone is used.

6. What is FDA doing to find out more about the possible health effects of wireless phone RF?

FDA is working with the U.S. National Toxicology Program and with groups of investigators around the world to ensure that high priority animal studies are conducted to address important questions about the effects of exposure to radiofrequency energy (RF).

FDA has been a leading participant in the World Health Organization International Electromagnetic Fields (EMF) Project since its inception in 1996. An influential result of this work has been the development of a detailed agenda of research needs that has driven the establishment of new research programs around the world. The Project has also helped develop a series of public information documents on EMF issues.

FDA and the Cellular Telecommunications & Internet Association (CTIA) have a formal Cooperative Research and Development Agreement (CRADA) to do research on wireless phone safety. FDA provides the scientific oversight, obtaining input from experts in government, industry, and academic organizations. CTIA-funded research is conducted through contracts to independent investigators. The initial research will include both laboratory studies and studies of wireless phone users. The CRADA will also include a broad assessment of additional research needs in the context of the latest research developments around the world.

7. How can I find out how much radiofrequency energy exposure I can get by using my wireless phone?

All phones sold in the United States must comply with Federal Communications Commission (FCC) guidelines that limit radiofrequency energy (RF) exposures. FCC established these guidelines in consultation with FDA and the other federal health and safety agencies. The FCC limit for RF exposure from wireless telephones is set at a Specific Absorption Rate (SAR) of 1.6 watts per kilogram (1.6 W/kg). The FCC limit is consistent with the safety standards developed by the Institute of Electrical and Electronic Engineering (IEEE) and the National Council on Radiation Protection and Measurement. The exposure limit takes into consideration the body's ability to remove heat from the tissues that absorb energy from the wireless phone and is set well below levels known to have effects.

Manufacturers of wireless phones must report the RF exposure level for each model of phone to the FCC. The FCC website (<http://www.fcc.gov/oet/rfsafety>) gives directions for locating the FCC identification number on your phone so you can find your phone's RF exposure level in the online listing.

8. What has FDA done to measure the radiofrequency energy coming from wireless phones?

The Institute of Electrical and Electronic Engineers (IEEE) is developing a technical standard for measuring the radiofrequency energy (RF) exposure from wireless phones and other wireless handsets with the participation and leadership of FDA scientists and engineers. The standard, Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques, sets forth the first consistent test methodology for measuring the rate at which RF is deposited in the heads of wireless phone users. The test method uses a tissue-simulating model of the human head. Standardized SAR test methodology is expected to greatly improve the consistency of measurements made at different laboratories on the same phone. SAR is the measurement of the amount of energy absorbed in tissue, either by the whole body or a small part of the body. It is measured in watts/kg (or milliwatts/g) of matter. This measurement is used to determine whether a wireless phone complies with safety guidelines.

9. What steps can I take to reduce my exposure to radiofrequency energy from my wireless phone?

If there is a risk from these products--and at this point we do not know that there is--it is probably very small. But if you are concerned about avoiding even potential risks, you can take a few simple steps to minimize your exposure to radiofrequency energy (RF). Since time is a key factor in how much exposure a person receives, reducing the amount of time spent using a wireless phone will reduce RF exposure.

If you must conduct extended conversations by wireless phone every day, you could place more distance between your body and the source of the RF, since the exposure level drops off dramatically with distance. For example, you could use a headset and carry the wireless phone away from your body or use a wireless phone connected to a remote antenna.

Again, the scientific data do not demonstrate that wireless phones are harmful. But if you are concerned about the RF exposure from these products, you can use measures like those described above to reduce your RF exposure from wireless phone use.

10. What about children using wireless phones?

The scientific evidence does not show a danger to users of wireless phones, including children and teenagers. If you want to take steps to lower exposure to radiofrequency energy (RF), the measures described above would apply to children and teenagers using wireless phones. Reducing the time of wireless phone use and increasing the distance between the user and the RF source will reduce RF exposure. Some groups sponsored by other national governments have advised that children be discouraged from using wireless phones at all. For example, the government in the United Kingdom distributed leaflets containing such a recommendation in December 2000. They noted that no evidence exists that using a wireless phone causes brain tumors or other ill effects. Their recommendation to limit wireless phone use by children was strictly precautionary; it was not based on scientific evidence that any health hazard exists.

11. What about wireless phone interference with medical equipment?

Radiofrequency energy (RF) from wireless phones can interact with some electronic devices. For this reason, FDA helped develop a detailed test method to measure electromagnetic interference (EMI) of implanted cardiac pacemakers and defibrillators from wireless telephones. This test method is now part of a standard sponsored by the Association for the Advancement of Medical Instrumentation (AAMI). The final draft, a joint effort by FDA, medical device manufacturers, and many other groups, was completed in late 2000. This standard will allow manufacturers to ensure that cardiac pacemakers and defibrillators are safe from wireless phone EMI. FDA has tested hearing aids for interference from handheld wireless phones and helped develop a voluntary standard sponsored by the Institute of Electrical and Electronic Engineers (IEEE). This standard specifies test methods and performance requirements for hearing aids and wireless phones so that no interference occurs when a person uses a compatible phone and a accompanied hearing aid at the same time. This standard was approved by the IEEE in 2000. FDA continues to monitor the use of wireless phones for possible interactions with other medical devices. Should harmful interference be found to occur, FDA will conduct testing to assess the interference and work to resolve the problem.

12. Where can I find additional information?

For additional information, please refer to the following resources:

- FDA web page on wireless phones
<http://www.fda.gov/cdrh/phones/index.html>
- Federal Communications Commission (FCC) RF Safety Program
<http://www.fcc.gov/oet/rfsafety>
- International Commission on Non-Ionizing Radiation Protection
<http://www.icnirp.de>
- World Health Organization (WHO) International EMF Project
<http://www.who.int/emf>
- National Radiological Protection Board (UK)
<http://www.nrpb.org.uk/>

July 18, 2001 For updates: <http://www.fda.gov/cdrh/phones>

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NOTES

Para obtener un manual del usuario en español favor de llamar o enviar un fax al teléfono 1-888-NOKIA-2U, fax 813-249-9619.

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