UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

YMAX CORPORATION,
Petitioner

v.

FOCAL IP, LLC,
Patent Owner

Inter Partes Review No.: Unassigned

U.S. Patent No. 7,764,777

DECLARATION OF TAL LAVIAN, PH.D. IN SUPPORT OF PETITION FOR INTER PARTES REVIEW OF PATENT NO. 7,764,777

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I, Tal Lavian, declare as follows:

1. I make this declaration based upon my own personal knowledge and, if called upon to testify, would testify competently to the matters contained herein.

2. I have been asked to provide technical assistance in connection with inter partes review of U.S. Patent No. 7,764,777 ("the '777 Patent").

3. This declaration is a statement of my opinions on issues related to the invalidity of claims 18, 21, 23, 25, 26, 28, 29, 30, 31, 37, 38, 41, and 45 of the '777 Patent.

I. Background and Qualifications

4. My qualifications are stated more fully in my curriculum vitae. Ex. 1016. Here I provide a brief summary of my qualifications.

5. I have more than 25 years of experience in the networking, telecommunications, Internet, and software fields. I received a Ph.D. in Computer Science from the University of California at Berkeley in 2006 and obtained a Master's of Science ("M.Sc.") degree in Electrical Engineering from Tel Aviv University, Israel, in 1996. In 1987, I obtained a Bachelor of Science ("B.Sc.") in Mathematics and Computer Science, also from Tel Aviv University.

6. I am currently employed by the University of California at Berkeley and was appointed as a lecturer and Industry Fellow in the Center of Entrepreneurship and Technology ("CET") as part of UC Berkeley College of Engineering. I have been with the University of California at Berkeley since 2000 where I served as Berkeley Industry Fellow, Lecturer, Visiting Scientist, Ph.D. Candidate, and Nortel's Scientist Liaison, where some positions and projects were done concurrently, and others, sequentially.

7. I have more than 25 years of experience as a scientist, educator and technologist. For eleven years from 1996 to 2007, I worked for Bay Networks and Nortel Networks. Bay Networks was in the business of making and selling computer network hardware and software. Nortel Networks acquired Bay Networks in 1998, and I continued to work at Nortel after the acquisition. Throughout my tenure at Bay and Nortel, I held positions including Principal Scientist, Principal Architect, Principal Engineer, Senior Software Engineer, and led the development and research involving a number of networking technologies. I led the efforts of Java technologies at Bay Networks and Nortel Networks. In addition, during 1999-2001, I served as the President of the Silicon Valley Java User Group with over 800 active members from many companies in the Silicon Valley. From 2008 to 2008, I worked as a communications consultant at Ixia,

where I researched and developed advanced network communications testing technologies.

8. Prior to that, from 1994 to 1995, I worked as a software engineer and team leader for Aptel Communications, designing and developing mobile wireless devices and network software products. These telecommunications cellular devices provided short messaging service (SMS) between base station and mobile devices. In addition, I developed a network protocols for the base stations and the mobile wireless devices. Furthermore, I developed a GPS-based application to track the quality of signals in urban areas between the mobile devices and the base stations. From 1990 to 1993, I worked as a software engineer and team leader at Scitex Ltd., where I developed system and network communications tools (mostly in C and C++). From 1987 to 1990, I worked as a software engineer and team leader at Shalev, where I developed real-time software and algorithms (mostly in C and C++). From 1983 to 1987, as a student, I worked as a software engineer on several part time projects.

9. I have extensive experience in telecommunications and network communications technologies, including routing and switching architectures and protocols including Multi-Protocol Label Switching Networks, Layer 2 and Layer 3 Virtual Private Networks, Voice over IP (VoIP), telephony systems, PSTN networks, circuit switching, and Pseudowire technologies.

10. Much of my work for Nortel Networks (mentioned above) involved the research and development of these technologies. For example, I wrote software for Bay Networks and Nortel Networks switches and routers, developed network technologies for the Accelar 8600 family of switches and routers, the OPTera 3500 SONET switches, the OPTera 5000 DWDM family, and the Alteon L4-7 switching product family. I wrote software for Java based device management including software interface to the device management and network management for the Accelar routing switch family network management system.

11. I am named as a co-inventor on more than 80 issued patents and I have co-authored more than 25 scientific publications, journal articles, and peer-reviewed papers. Furthermore, I am a Senior Member of the Institute of Electrical and Electronics Engineers ("IEEE").

12. I currently serve as a Principal Scientist at my company Telecomm Net Consulting Inc., where I develop network communication technologies and provide research and consulting in advanced technologies, mainly in computer networking and Internet technologies. In addition, I serve as a Co-Founder and Chief Technology Officer (CTO) of VisuMenu, Inc., where I design and develop architecture of visual IVR technologies for smartphones and wireless mobile devices in the area of network communications. The backend architecture implements a telephone Private Branch Exchange ("PBX") that makes Session

Initiation Protocol ("SIP") based Voice over Internet Protocol ("VoIP") telephone calls to other SIP trunks and telephone services, such as Public Switch Telephone Network ("PSTN"). The system is based on cloud networking and cloud computing utilizing Amazon Web Services. I have extensive experience with PBX, telecommunications systems, networking equipment, and call centers telephony systems. Additional details of my background are set forth in my curriculum vitae (*see* Ex. 1016), which provides a more complete description of my educational background and work experience.

II. Legal Understanding

13. My opinions are also informed by my understanding of the relevant law, although I am not a lawyer and do not intend to testify about legal issues. I understand that the patentability analysis is conducted on a claim-by-claim basis and that there are several possible reasons that a patent claim may be found to be unpatentable.

14. I understand that earlier publications and patents may act to render a patent unpatentable for one of two reasons: (1) anticipation, and (2) obviousness.

A. Anticipation

15. I understand that a single piece of prior art "anticipates" a claim if each and every element of the claim is disclosed in that prior art. I further

understand that, where a claim element is not explicitly disclosed in a prior art reference, the reference may nonetheless anticipate a claim if the missing claim element is necessarily present in the apparatus disclosed, or is a natural result of the method disclosed—that is, the missing element is "inherent" in what is disclosed.

B. Obviousness

16. Second, I understand that the prior art may render a patent claim "obvious." I understand that two or more pieces of prior art that each disclose fewer than all elements of a patent claim may nevertheless be combined to render a patent claim obvious if the combination of the prior art collectively discloses all elements of the claim and one of ordinary skill in the art at the time would have been motivated to combine the prior art. I understand that this motivation to combine need not be explicit in any of the prior art, but may be inferred from the knowledge of one of ordinary skill in the art at the time the patent was filed. I also understand that one of ordinary skill in the art is not an automaton, but is a person having ordinary creativity.

17. I further understand that one or more pieces of prior art that disclose fewer than all of the elements of a patent claim may render a patent claim obvious if including the missing element would have been obvious to one of skill in the art at the time of the alleged invention (that is, if the missing element represents only

an insubstantial difference over the prior art, or a reconfiguration of a known system).

18. I understand that the obviousness analysis must focus on the knowledge available to one of skill in the art at the time of the invention in order to avoid impermissible hindsight. I further understand that the obviousness inquiry assumes that the person having ordinary skill in the art would have knowledge of all relevant references available at the time of the invention.

III. Person Of Ordinary Skill In The Art

19. It is my opinion that a person of ordinary skill in the art with respect to the ’777 patent in 1999-2000 would have a bachelor’s degree in electrical engineering, computer science, or the equivalent thereof and approximately 2 years of professional experience within the field of telecommunications or network communications.

20. The ’777 patent concerns the basic architecture of the telephone network that has existed in the United States for many decades, as well as basic Internet technology that was well known by 1999-2000. These topics were covered in detail by that time in books, in publications by standards bodies, and by vendors that provided products and solutions in these areas. Because the technology involved in the ’777 patent involves well-known technologies and

functionalities, an engineer or computer scientist with approximately 2 years of experience in telecommunications would be well-versed in the concepts disclosed in the ’777 patent.

21. My opinions regarding the level of ordinary skill in the art are based on, among other things, my over 25 years of experience in the field of telecommunications, network communications, computer science and engineering, my understanding of the basic qualifications that would be relevant to an engineer or scientist tasked with investigating methods and systems in the relevant area, and my familiarity with the backgrounds of colleagues and co-workers, both past and present.

IV. Summary Of The ’777 Patent

A. Priority Date

22. The face of the ’777 Patent reflects a chain of patent applications dating back to May 4, 2000. I have been informed that in pending litigation against Petitioner YMax Corporation in which the ’777 patent is being asserted, the plaintiff asserting infringement has stated that the claims of the ’777 patent may be entitled to a priority date as early as June 1, 1999. For this declaration, I will assume that the ’777 Patent is entitled to the filing date of May 4, 2000, and that it may be entitled to an invention date as early as June 1, 1999.

B. Overview Of The Challenged Independent Claims

23. The ’777 Patent summarizes itself as relating to “a system for allowing a subscriber to select features of the subscriber’s telephone service and to various novel features that can be selected.” Ex. 1001 at 1:16-21.

24. There are three independent claims addressed in my declaration: claims 18, 37, and 45.

25. Claim 18 states the following (*see* Ex. 1001):

> A method for processing an incoming call from a switching facility on a communication network that comprises edge switches for routing calls to subscribers within a local geographic area and switching facilities for routing calls to edge switches, or other switching facilities local or in other geographic areas the method comprising the steps of:
>
> receiving a first call, which is intended for a specified recipient, at a controlling device in communication with the switching facility;
>
> identifying one or more control criteria previously associated with the specified recipient, wherein the one or more control criteria was entered via a web-based interface;

initiating a second call at the controlling device in accordance with the control criteria associated with the specified recipient; and

connecting the first and second calls at the controlling device after the second call is received by a communication device associated with the specified recipient.

26. Though it has a lot of words, Claim 18 essentially claims using a website to configure the call forwarding feature for calls received over the conventional telephone network (the PSTN) and a controlling device to effectuate the call forwarding. (Call forwarding is the feature that allows you to redirect a telephone call made to one phone number to another phone number, so that, for example, telephone calls made to your house phone are re-routed to your cell phone, or to your friend's house.)

27. Claim 37 is very similar to claim 18, except that when the call is forwarded, the claims requires use of a "packet-based connection" such as Voice over IP rather than the conventional telephone network (the PSTN).

28. Claim 45 is very similar to claim 18, except that instead of initiating a second call to a specified recipient, the original first call is routed to a "voicemail server."

29. As detailed below, these claimed methods were neither new nor nonobvious as of June 1, 1999, and the dependent claims addressed below add nothing new or nonobvious either, not even in combination with the limitations in the claims from which they depend.

30. Notably, the ’777 Patent itself admits that the primary elements of the patent claims are in the prior art.

31. For example, in the section of the specification entitled “Background,” the patent acknowledges that Call Forwarding is not just known but a “popular provision.” Ex. 1001 at 2:12-16.

32. The patent also admits that “[t]here are Voice Over Internet Protocol (VoiP) products emerging that provide better user interfaces and control…” Ex. 1001 at 2:46-49.

33. The patent further admits that “Voice mail systems” are already in use to “screen incoming, or inbound, calls.” Ex. 1001 at 1:25-29.

34. The patent asserts, however, that setting up features like call forwarding “typically require[s] access from the first or second party’s device [that is, from a telephone] and are extremely awkward to program.” The patent further

claims that in the past, setting up such features "required a subscriber to make the feature selection through the telephone business office. Central office workers would then implement the provisioning under request of the business office." Ex. 1001 at 1:46-48, 2:1-11.[1]

35. To address the alleged problems in the prior art, the '777 patent discloses allowing a user to select or modify features for their telephone service "by means of the world wide web." Ex. 1001 at 5:13-44 (emphasis added). This "allow[s] a subscriber to remotely control features…" Ex. 1001 at 2:53-55. The patent emphasizes that giving the user "[d]irect 3rd-party control means that the ability to provision the 3rd-party features is directly available to a subscriber, eliminating the need to go through the telephone company (telco) business office." Ex. 1001 at 3:19-22 (emphasis added).[2]

[1] Provisioning is a term of art in telecommunications that in this context refers to adding, modifying, or deleting a new service or feature for a user.

[2] Both the title of the patent ("Branch Calling and Caller ID Based Call Routing Telephone Features") and other parts of the specification focus on two telephony features: branch calling, and caller ID based call routing. None of the claims addressed in this declaration, however, contain limitations directed to either of those features.

36. Thus, in short, the specification asserts that the alleged invention is a system that allows users of the conventional telephone network (the PSTN) to **directly control telephone service features like call forwarding using a website**. *See also* Ex. 1001 at 1:18-21 (The '777 Patent discloses "This invention relates to telephone services and, in particular, to a system for allowing a subscriber to select features of the subscriber's telephone service.") (emphasis added); *Id.* at 5:13-16 ("FIG. 1 illustrates the preferred method for an authorized subscriber to modify the 3rd-party control criteria by means of the world wide web 22 (and web server 23) using an internet browser.")

37. However, as detailed below, not only was use of a website to configure telephone features an obvious thing to do by June 1999, but allowing telephone users to configure features such as call forwarding directly via use of a website was in fact already disclosed in the prior art.

V. State of the Art

38. As explained below, the technology claimed in the '777 patent was well known in the telecommunications field by June 1, 1999. The '777 patent concerns the basic architecture of the telephone network that has existed in the United States for many decades, as well as basic Internet technology that was well known by 1999-2000. These topics were covered in detail by that time in books, in

publications by standards bodies, and by vendors that provided products and solutions in these areas. Exhibits 1004 and 1019-1023 are just few examples of standard bodies publications and products at this time period.

A. THE PSTN / Circuit Switching Networks

39. The PSTN (public switched telephone network) is the world's collection of interconnected circuit-switching telephone networks.

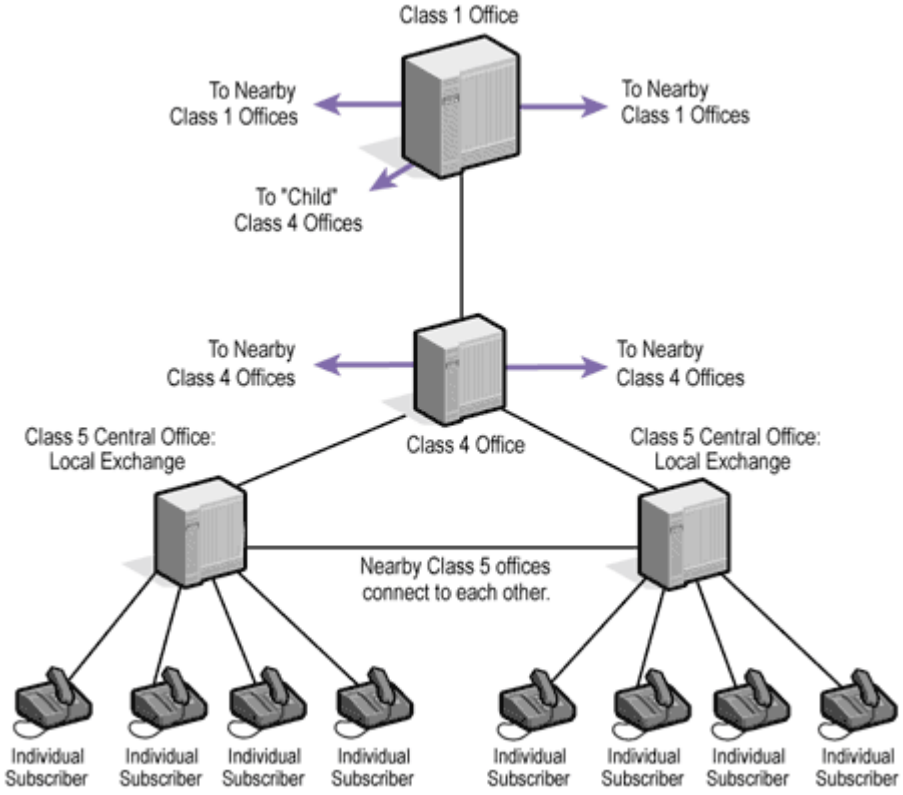
40. In the United States, the PSTN is the conventional telephone network, primarily built by AT&T when it was "the" telephone company in the United States. Telephone calls have been made over the PSTN in the United States for over a century.

41. In the United States, the PSTN is a countrywide network of switches connected to each other by wires. The wires and switches between them connect the telephone of a calling party to the telephone of the called party. Once a telephone call between two landline telephones is established, there is a continuous physical path of wires, linked by one or more switches, between the telephones at each end of the call that is dedicated solely to that call. This is the meaning of the term "circuit switching." The term refers to the switching of infrastructure from one dedicated use to another. The network focus is on circuit-based, or connection-oriented, systems designed for delivery of voice communications.

42. Even more specifically, the PSTN uses a hierarchy of switches.[3] This makes it possible to scale the telecommunications network to accommodate a large number of end users across the country. Traffic is managed between the various switching offices depending on the type of traffic that was to be connected: local traffic, long distance traffic, and international traffic.

43. The switches in the PSTN use a five-level hierarchy: edge or end (class 5), toll or tandem (class 4), primary (class 3), sectional (class 2) and regional (class 1). Landline phones in people's houses are generally connected to a geographically local class 5 switch (also called an edge switch, end switch, or central office switch). Tandem/Class 4 switches generally connect edge/class 5 switches together, although nearby class 5 switches can be connected directly. In the PSTN, class 2 and 3 switches are used infrequently, and class 4 switches can be connected to one another as well as by a class 1 switch. The basic architecture of the PSTN can therefore be illustrated by the following diagram:

[3] *See* Ex. 1012.



44. The PSTN switch hierarchy does not mandate physical separation. Switches from one or more adjacent classes (specifically edge and tandem) can be located together in the same physical facility. A combined class 4/class 5 switch is often called a "hybrid" switch.

45. When a telephone call is placed on the PSTN, the call typically travels from the caller's phone to the edge switch in the caller's local central office. Unless the recipient is in the same geographical area and directly connected to the same central office, the call is then typically routed to one or more tandem switches (in sequence), until it reaches the edge switch that is directly connected to

the recipient's phone, and finally to the recipient's phone. The switches use the telephone number dialed by the caller to know where to route the call. Thus, the network of switches enables the communication network to connect users either within or outside a local geographic area.

B. Signaling

46. In addition to carrying voice communications, the PSTN also carries signaling, which is information used to control the call. Signaling communicates information the network needs to operate, such as the signal sent to the local central office from a telephone when the handset is picked up that notifies the central office to send the telephone a dial tone, or the signal from the central office that tells a telephone to ring because there is an incoming call. The protocol that is used for signaling on the PSTN is called Signalling System 7, or SS7.[4]

47. The SS7 signaling protocol was first issued by CCITT (for Comite Consultatif International Telephonique et Telegraphique, now known as the ITU-T for Telecommunication Standardization Sector of the International telecommunications Union, the primary international body for cooperative telecommunications standards) in 1980 (and was revised in 1984, 1988, and 1992).

[4] Ex. 1017.

C. Packet-Switching Networks: the Internet and Voice over IP

48. Websites on the Internet were well known even to the general public by June 1, 1999. Mosaic - the first graphic web browser - was publicly released in September 1993. By June of 1999, there were over 3 million websites on the web, including Yahoo (launched in 1994), Amazon (launched in 1995), and eBay (launched in 1995). *See* Ex. 1010. Indeed, in 1996 – over two years prior to June 1, 1999 – eBay hosted over 250,000 auctions that received over one million bids. *See* Ex. 1013. And Leiner *et al*. explain in the February 1997 issue of Communications of the ACM, the Internet was already well established as a commercial platform:

> In the last few years, we have seen a new phase of commercialization. Originally, commercial efforts mainly comprised vendors providing the basic networking products and service providers offering connectivity and basic Internet services. ***The Internet has now become almost a "commodity" service, and much of the latest attention has been on the use of this global information infrastructure as support for other commercial services.***
>
> This activity has been accelerated by the widespread and rapid adoption of browsers and Web technology, giving users easy

> access to information linked around the globe. Products are available for finding, sending, and retrieving that information, and many of the latest developments seek to provide increasingly sophisticated information services on top of basic Internet data communications.

Ex. 1014 (emphasis added).

49. As explained above, the PSTN is a circuit-switched network, which requires a dedicated point-to-point connection during a phone call. In contrast, the Internet is a packet-switched network. There is no dedicated route between two computers that are communicating over the Internet. Rather, information to be transmitted through the Internet is broken down into small blocks called packets, each of which includes the address of the destination computer. Each packet may travel a different route through the connected parts of the Internet before arriving at the destination computer. The packets are then reassembled at the destination computer.

50. TCP/IP is a collection of protocols used for, among other things, sending information through the Internet. The "IP" stands for Internet Protocol.

51. **Voice over IP (VoIP).** VoIP is the transmission of voice that has been converted into digital packets of data using the Internet Protocol. VoIP

communications typically take place over the Internet, though they could use a private network.

52. As the ’777 patent admits, VoIP was invented and used before the alleged invention of the ’777 patent. *See* Ex. 1001 at 2:46-49 (“There are Voice Over Internet Protocol (VoiP) products emerging that provide better user interfaces and control but they do not take advantage and [*sic*] voice quality of the PSTN.”).

53. Indeed, a public domain VoIP application NetFone (later called Speak Freely) was released in 1991 by Autodesk. *See* Ex. 1018.

54. The first commercial Internet VoIP application, called Internet Phone, was released by Petitioner’s predecessor VocalTec Communications in February of 1995.

55. U.S. Patent No. 6,031,836 to Haserodt et al. ("Haserodt"), the application for which was filed in 1996, discloses not just Voice over IP telephony, and not just voice communications between a VoIP user and a PSTN user (using both a packet-switched network and a circuit-switched network), but also discloses use of a website to allow users to choose and configure telephony features, such as “redirection of incoming calls to another destination.” *See* Ex. 1015 at 1:10-17 (“It is known in the communications arts that voice calls can be carried by the Internet (or some other data transport network) between a pair of Internet phones or voice-enabled computers. It is also known that voice calls carried by the Internet can be

interfaced by a gateway to the telephone network so that an Internet phone or a voice-enabled computer connected to the Internet can engage in a voice call with a standard telephone connected to the telephone network."); *id.* at 2:33-50 ("Specifically according to another aspect of the invention, a method of accessing telephony features over the Internet by using the World Wide Web (WWW) comprises the following steps. A WWW browser of a client requests a WWW page that defines a telephony feature form from a WWW server via the Internet. The WWW server responds by providing the requested WWW page to the client via the Internet. The WWW browser indicates selection of an individual telephony feature by marking up the telephony feature form of the received WWW page, and the client sends the marked up WWW page via the Internet to an interpreter (e.g., to the WWW server). The interpreter interprets the marked up telephony feature form to determine the selected individual telephony feature. In response to the determination, a provider of the telephony features then provides the selected individual telephony feature. Thus, the conventional WWW browsers are used without modification to access telephony features via the Internet."); *id.* at 5:30-49.

VI. An Embodiment Of The '777 Patent

A. Summary of the '777 Patent

56. The '777 Patent discloses "a system for allowing a subscriber to select features of the subscriber's telephone service." Ex. 1001 at 1:18-21. In particular, the '777 Patent's specification discloses a "tandem access controller (TAC) 10" that is connected to a "PSTN tandem switch 16" of the "Public Switched Telephone Network (PSTN)." Ex 1001, 1:40-46; 4:32-46; Fig. 1. This configuration is seen in Figure 1:

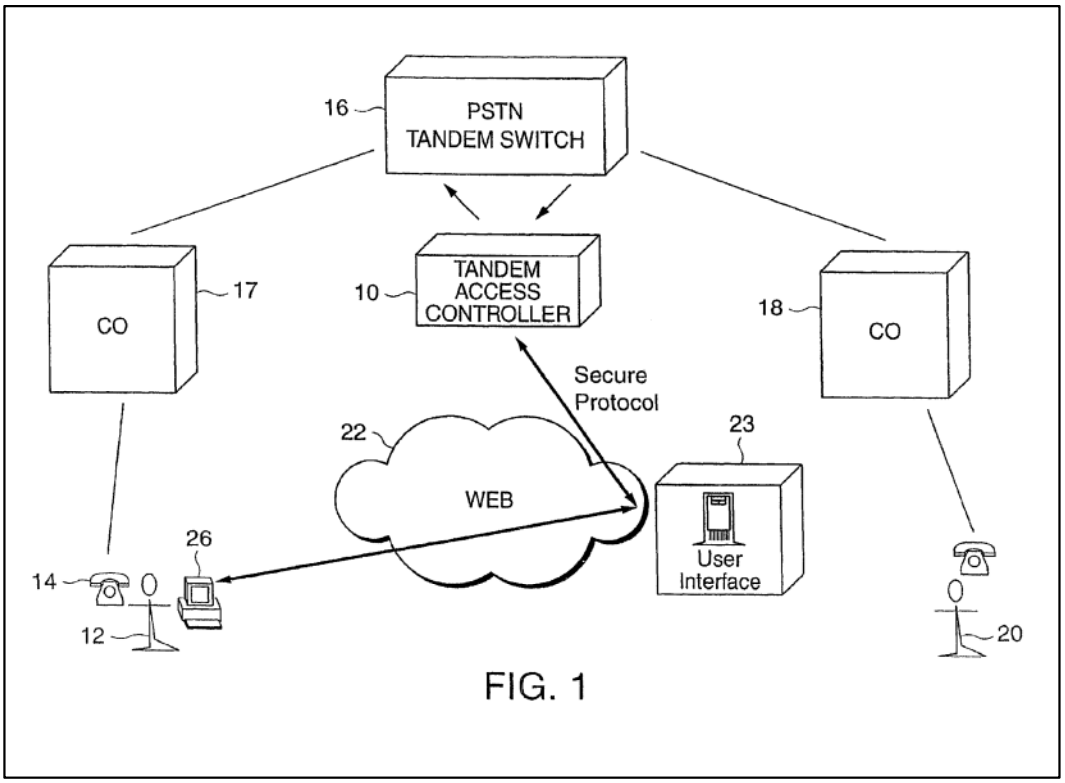


FIG. 1

57. This TAC 10 is accessible over the world wide web 22, allowing a subscriber 12 to select or modify "call control features" (such as "call forwarding")

to be used when the subscriber 12 is called. Ex. 1001 at 5:13-44. In operation, when a caller (item 20 in Figure 1) calls the subscriber 12 (using the "subscriber's public phone number"), the TAC receives the call from the PSTN's tandem switch. Ex. 1001 at 4:52-4:67. Using the "call control features," the TAC 10 determines a second phone number (such as the "subscriber's 'private' phone number"), and then places a second call to the second phone number. *Id*. When the second call is answered, the TAC 10 connects the first call to the second call, "thereby connecting the calling party 20 to the subscriber 12." *Id*.

VII. Claim Interpretation

58. I understand that, for purposes of the accompanying petition for Inter Partes Review of the '777 patent, the challenged claims must be given their broadest reasonable interpretations in light of the specification, to one of ordinary skill in telecommunications.

A. "switching facility"

59. Each of the challenged claims uses the phrase "switching facility," as in the preamble of claim 18:

> A method for processing an incoming call from a ***switching facility*** on a communication network that comprises edge

> switches for routing calls to subscribers within a local geographic area and switching facilities for routing calls to edge switches, or other switching facilities local or in other geographic area

60. The broadest reasonable interpretation of "switching facility" is "any switch in the communication network." The phrase "switching facility" does not appear in the specification. However, to one of ordinary skill in the art, all switches in a telecommunications network like the PSTN are a "switching facility." This is supported by the "authoritative source of definitions for terms used in the preparation of all telecommunication documentation" for "all Federal departments and agencies" in effect in 1999, the Federal Standard 1037C (Glossary of Telecommunications Terms) (Aug. 7, 1996), which defines "switching facility" and "switching center" as synonyms that broadly mean "a facility in which switches are used to interconnect communications circuits on a circuit-, message-, or packet-switching basis. Synonyms, in telephony, central office, switching exchange, switching facility. Deprecated synonym switch." Ex. 1008 at C-8 (footnote omitted). Notably, this definition does not refer to a particular class of switch; it is the generic, broad term for the location of communication switches of circuits, packets, or messages, and for short, the switches themselves. *See also* Ex.

1009 at 757 (defining "switching centers" to refer to all five classes of switches in the PSTN).

61. In light of the embodiments displayed in Figures 1 and 2 of the '777 patent in which a Tandem Access Controller is shown directly connected to a tandem switch (class 4) and not to the CO (central office, the location of a class 5 switch), and in light of the claim also separately referring to "edge switches," Patent Owner may argue that "switching facility" should be interpreted more narrowly to exclude central offices/ edge switches. That, however, is not the broadest reasonable interpretation. Nowhere in the specification did the inventors provide a definition of "switching facilities" that is narrower than the ordinary meaning to those of ordinary skill in the art, such as by defining it to mean "tandem switch," or to mean "all switches other than edge switches." Moreover, as Figures 1 and 2 illustrate, the applicant knew the specific term "tandem switch," which refers to a particular class of switch in the PSTN, but chose to use the broad, generic phrase "switching facility" in the claims. That indicates a choice of words to broaden the claim beyond the specific embodiments of Figures 1 and 2 involving the tandem switch to include a connection to any kind of switch in the PSTN.

62. In the applicant's February 22, 2010 response in the prosecution history of the '777 patent, the applicant argued that the then-pending claims were allowable over the Schwab prior art because:

> in Schwab, any 'features' that are applied to calls being routed are via an end office switch (also referred to as an edge switch or a central office (CO) switch). The end office switch connects calls from calling (telephone company subscribers) parties to called parties only within a local geographic area. Consistent with Newton's definition, on which the Examiner relies, Schwab's "end office switch" could arguably be considered to be "within" the PSTN. The PSTN is a configuration of switching facilities for routing calls from calling parties to called parties, comprising a plurality of end office switches (also referred to as central office switches or edge switches (e.g., a class 5 switch)) and a plurality of interconnected switching facilities (also referred to as tandem switches)…. Typically, a telephone call involves an originating end office switch, a plurality of tandem switches, and a terminating end office switch. Therefore in Schwab the application of "features" to call routing operations is restricted

> within the local geographic area of a particular end office switch (local to the calling party that originates the call).

Ex. 1007 at 93-94.

63. This argument to the examiner is notable for at least two reasons. First, it is a use ***by the patent applicant*** of the phrase "switching facilities" to include all switches of the PSTN, ***including edge switches***, confirming the broadest reasonable interpretation set forth above. *Id.* ("The PSTN is a configuration of ***switching facilities*** … ***comprising a plurality of end office switches*** (also referred to as central office switches or ***edge switches*** …) and …").

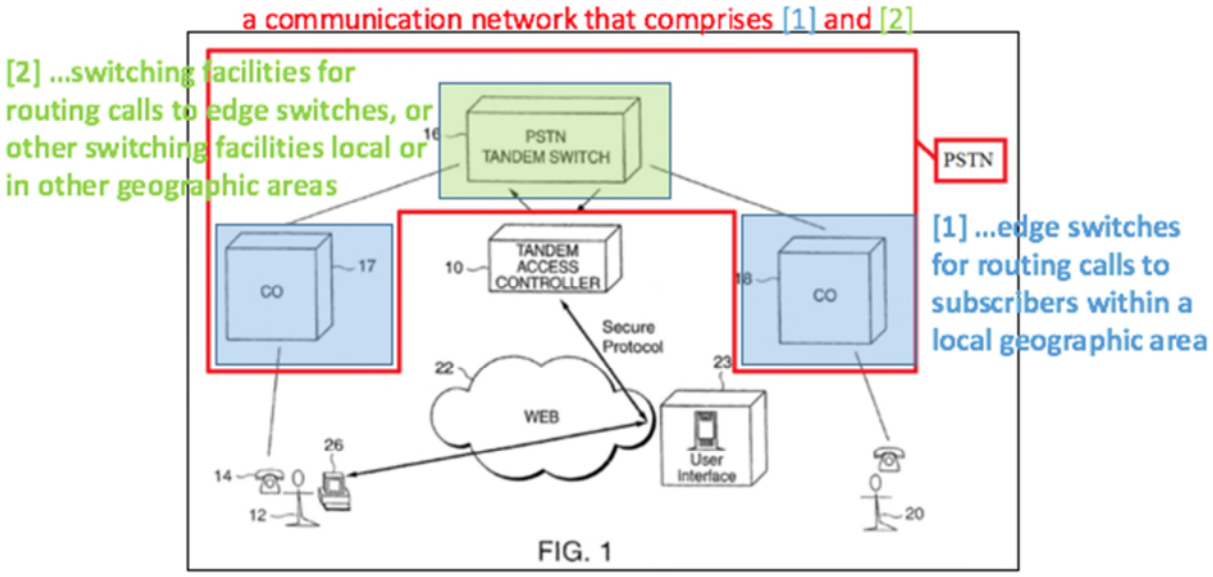
64. Second, the argument's conclusion that "the application of features in Schwab to call routing operations is restricted within the local geographic area of a particular end office switch (local to the calling party that originates the call)" appears incorrect. In Schwab, the originating call travels through the PSTN until the central office switch of the dialed telephone, whether or not that switch is "local to the calling party" (the party that originated the call). Furthermore, a subscriber using the system of Schwab to activate the "simultaneous call" feature results in phone calls to the subscriber's telephone number being routed to all the phone numbers that the subscriber has programmed into the system, such as, for example, "the subscriber's business and car telephones." *See* Ex. 1005 at 2:49-64. The routing of calls to the subscriber's location is accomplished by the "standard

telephone connections" to the "public switched telephone network" (PSTN). *Id.* at 5:44-48. Because the end office switch is capable of routing a call to any telephone number across the country, there is no reason to believe that the routing operations in Schwab are restricted within the local geographic area of either the calling party, as the applicant argued to the examiner, or even within the local geographic area of the called party.

B. "a communication network that comprises edge switches for routing calls to subscribers within a local geographic area and switching facilities for routing calls to edge switches, or other switching facilities local or in other geographic areas"

65. The broadest reasonable interpretation of the claim phrase "a communication network that comprises edge switches for routing calls to subscribers within a local geographic area and switching facilities for routing calls to edge switches, or other switching facilities local or in other geographic areas" is "a communication network that includes edge switches for routing calls to geographically local subscribers and switches for routing calls to edge switches or to other switches local or far, including the PSTN." Alternatively, for purposes of the accompanying petition, this claim phrase need only be interpreted broadly enough to encompass at least the PSTN.

66. As detailed above, the PSTN, which is the conventional nationwide telephone network, is a communication network that includes edge switches for routing calls to subscribers within the local geographic area of the edge switch. It also includes other switches that route calls to edge switches or to still other switches (which can be relatively local or in distant geographic areas). This is illustrated by the patent's Figure 1 (annotations added):



67. Notably, "switching facilities for routing calls to edge switches" is narrower than simply "switching facilities" (as the phrase appears the first time it is encountered in, for example, the preamble of claim 18). As noted above, the broadest reasonable interpretation of "switching facilities" is any switch in the

communication network. "Switching facilities for routing calls to edge switches" refers only to the particular switching facilities that route calls to edge switches.

C. "is coupled to"

68. The broadest reasonable interpretation of the phrase "is coupled to" in the limitation "the tandem access controller is coupled to … at least one of the switching facilities" is "connected directly or indirectly." Support for this interpretation can be found in the patent's specification at 3:23-34. The specification there sets forth two embodiments, both of which use what it calls a tandem access controller as the "call processing system." The specification states that in one embodiment, the tandem access controller is merely "connected to the PSTN" (*Id.* at 3:23-25), allowing for an indirect connection with any particular kind of PSTN switch such as a tandem switch. In contrast, the specification states that in the second embodiment, the tandem access controller is "connected internally to the PSTN in a local service area. The TAC provides features, selected by the subscriber, to all edge switches ***connected to*** the PSTN tandem switch. ***Connecting directly to the PSTN tandem switch*** (or embedding the system into the tandem switch) eliminates the signal degradation problems …" (*Id.* at 3:27-34). Notably, the features provided by the TAC (such as call forwarding) would be provided to all edge switches connected either directly or indirectly (such as through another tandem switch) to the tandem switch. Thus, "connected" (and its

synonym "coupled") is different from (and broader than) "connect[ed] directly." Indeed, the applicants then use the word "directly" in the phrase "Connecting directly to the PSTN tandem switch" when they are being specific about a direct connection.

69. This can also be seen in claim 124 of related U.S. Patent No. 8,457,113 (Ex. 1011). The claim there recites "A method as defined in claim 1 wherein the one or more web servers ***coupled*** to the call processing system are ***coupled through a data base***." (emphases added).

70. That "coupled" encompasses both direct and indirect coupling is also seen in the prosecution history of related U.S. Patent No. 6,529,596. There, the applicant differentiated between a connection and a direct connection by amending the claims to state "said TAC being directly connected to a PSTN tandem switch" in an attempt to overcome prior art. Ex. 1006 at 108.

D. "in communication with"

71. For the same reasons, the broadest reasonable interpretation of the similar phrase "in communication with" in the claim limitation "a controlling device in communication with the switching facility" is "in direct or indirect communication."

E. "a controlling device"

72. In addition, the broadest reasonable interpretation of "a controlling device" from that same limitation ("a controlling device in communication with the switching facility" is "in direct or indirect communication") is "a device that provides data causing the switching facility to act in a desired way." A telecommunications switch (like the PSTN tandem switch in Figure 1) determines where to route a telephone call based upon the telephone number provided to it. *See.* Ex. 1001 at 4:40-57. The '777 patent discloses that calls received by the TAC as a result of a calling party dialing the subscriber's "public phone number" are rerouted by "the TAC 10 … call[ing] the subscriber, as appropriate." *Id.* at 4:52-67. Thus, the controlling device (like the disclosed TAC) controls the switching facility by providing it with data, such as a telephone number, that causes it to act in a desired way, such as route a call to that telephone number.

F. "tandem access controller"

73. The claim phrase "tandem access controller" in claim 29 is not a known term of art in telecommunications. I have assumed for purposes of my analysis that the broadest reasonable construction of "tandem access controller" in light of the specification as set forth in the accompanying petition is correct and that the phrase means a "processor" (or a device with a processor).

G. Summary of Claim Interpretation

Claim Limitation	Broadest Reasonable Interpretation
"switching facility"	"any switch in the communication network"
"a communication network that comprises edge switches for routing calls to subscribers within a local geographic area and switching facilities for routing calls to edge switches, or other switching facilities local or in other geographic areas"	"a communication network that includes edge switches for routing calls to geographically local subscribers and switches for routing calls to edge switches or to other switches local or far, including the PSTN"; alternatively, the broadest reasonable interpretation encompasses at least the PSTN
"is coupled to"	"connected directly or indirectly"
"in communication with"	"in direct or indirect communication"
"a controlling device"	"a device that provides data causing the switching facility to act in a desired way"
"tandem access controller"	"processor" (or a device with a processor)

VIII. The Prior Art

A. Prior Art Considered

74. I have reviewed and considered the following documents:

- U.S. Patent No. 6,463,145 to O'Neal et al. ("O'Neal"); and
- U.S. Patent No. 6,381,323 to Schwab et al. ("Schwab").

B. O'Neal Anticipate Claims 18, 23, 25, 26, 29, 30, 31, 37, 38, 41, and 45

1. Summary of O'Neal

75. I have reviewed O'Neal, which is entitled "Computer-Implemented Call Forwarding Options and Methods Therefor in a Unified Messaging System." *See* Ex. 1003. I understand that this patent was filed on January 29, 1999, and was issued on October 8, 2002. *See id.* I understand that O'Neal qualifies as prior art to the '777 Patent under 35 U.S.C. § 102(e).

76. O'Neal discloses a system and method that allows a subscriber of a call forwarding service to configure call forwarding parameters using a website. More particularly, O'Neal discloses "unified messaging system 101" that is connected to the "public telephone network 129" – that is, the "PSTN." *Id.* at Fig 1, 9:10-119. The unified messaging system includes telephony server 126 that

receives calls made to a subscriber and "reroute[s]" the call "in accordance with a subscriber's communication option setting" by "forwarding" the call to the subscriber via an "alternate number." Ex. 1003 at 9:55-58; 11:40-51; 15:14-43.

77. The subscriber may use a "user computer 100" to access the unified messaging system through a website over a "data-centric network 102" such as the Internet. Ex. 1003 at 16:35-17:10; 5:41-60; Fig. 1.

78. This website access allows the subscriber to "review and/or modify [their] communication options." Ex. 1003 at 16:36-64; 7:45-8:22; Fig. 1. For example, with regard to call forwarding, the subscriber is "able to check whether it is enabled, verify the forwarding number, select a number from a preprogrammed list, add a new number to a preprogrammed list, or enter a temporary number." Ex. 1003 at 5:62-6:9.

79. After the subscriber modifies a communication option, the modified communication option is "employed to handle subsequent" telephone calls. Ex. 1003 at 7:57-65; 9:4-9.

80. When a caller calls the subscriber, the call is routed over the PSTN (telephony-centric network 129) and received by the telephony server of the unified messaging system. Ex. 1003 at 8:41-62; 9:20-30; 15:14-43; 17:11-49; Fig. 1. The telephony server then uses the subscriber's communication option settings to "decide how to handle the message." Ex. 1003 at 8:41-9:9. If the subscriber has

enabled "call forwarding," the "telephony server receives the forwarding number from the database server and initiates an outgoing call (step 706) to the forwarding number on another port (e.g., one of the outgoing lines as seen in FIG. 2)." If "the call is accepted" by the subscriber, the telephony server completes the call by "connect[ing] the port of the incoming call with the port of the outgoing call." Ex. 1003 at 17:11-49; 11:40-51; Figs. 1, 3-4, and 7. In this manner, the telephony server may route the call back through the PSTN to the subscriber "in accordance with a subscriber's communication option setting." Ex. 1003 at 8:41-62; 9:20-30; 9:55-58; 11:40-51; 15:14-43; 17:11-49; Fig. 1.

81. O'Neal further discloses that the subscriber could be using a computer "enable[d] [with] digital/Internet telephony." Digital/Internet telephony is Voice over IP. In such a case, the telephony server can re-route the call to the subscriber through the Internet using Voice over IP (rather than the PSTN) "in accordance with a subscriber's communication option setting." Ex. 1003 at 9:55-58; 18:19-23; 19:1-8; Fig. 1.

82. In my opinion, O'Neal discloses every element of claims 18, 23, 25, 26, 29, 30, 31, 37, 38, 41, and 45 of the '777 Patent.

2. Claim 18

[18a] A method for processing an incoming call from a switching facility on a communication network that comprises edge switches for routing calls to

subscribers within a local geographic area and switching facilities for routing calls to edge switches, or other switching facilities local or in other geographic areas, the method comprising the steps of:

83. O'Neal discloses a "unified messaging system" that processes calls made to subscribers of the unified messaging system's service, "rerout[ing]" the call "in accordance with a subscriber's communication option setting", such as by "forwarding" the call to the subscriber via an "alternate number." Ex. 1003 at Fig. 1, 9:55-58, 11:40-51, 15:14-43. In O'Neal, incoming calls come from the "Public Telephone Network," *i.e.*, the "Public Service Telephone Network (PSTN)." *See* Ex. 1003 at 9:10-19, Fig. 1. More precisely, the incoming call comes from a switch of the public telephone network. This is inherent. *See* Ex. 1007 at 94 ("The ***PSTN is a configuration of switching facilities*** for routing calls from calling parties to called parties, comprising a plurality of end office switches (also referred to as central office switches or edge switches (e.g., a class 5 switch)) and a plurality of interconnected switching facilities (also referred to as tandem switches).") (emphasis added) Connections with the public telephone network over which telephone calls leave the network are connections with one of the network's switches. One of ordinary skill in the art would understand that the connection between the unified messaging system and the public telephone

network illustrated by arrows 128 in Figure 1 is a connection with a switch of the network.

84. Because the PSTN is a "communication network that comprises edge switches for routing calls to subscribers within a local geographic area and switching facilities for routing calls to edge switches, or other switching facilities local or in other geographic areas," O'Neal discloses all elements of the preamble's communication network as interpreted above. *See* Ex. 1003 at 8:41-62, 9:20-30, 15:14-43, Fig. 1.

[18b] receiving a first call, which is intended for a specified recipient, at a controlling device in communication with the switching facility;

85. An incoming call intended for the subscriber is received by the unified messaging system's telephony server 126. Ex. 1003 at 8:41-62; 9:20-30; 15:14-43; Fig. 1.

86. The unified messaging system is a controlling device that is in at least indirect communication with the switching facility. As reflected by the arrows labeled 128 in Figure 1, the unified messaging system is in communication with a switching facility of the communications network (the Public Telephone Network). *See* Ex. 1003 at Fig. 1, 9:26-30 ("Telephone link 128 represents the telephone communications channels for transmitting and receiving telephone signals between unified messaging system 101 and telephony-centric network 129.") Because the

PSTN is disclosed as an example of network 129 (Ex. 1003 at 9:10-19), and because communications with the PSTN are more specifically made with one of the PSTN's switches, one of ordinary skill in the art would understand O'Neal to disclose that the telephone signals are transmitted between unified messaging system 101 and a switching facility of the telephony-centric network 129.

87. Notably, even if the phrase "switching facility" were to be (incorrectly) interpreted so as to exclude edge switches and/or to be only tandem switches, O'Neal still discloses at least indirect communication between the unified messaging system and a tandem switch of the PSTN. As the applicants admitted during the prosecution of the '777 Patent's application, "[t]ypically, a telephone call involves an originating end office switch, a plurality of tandem switches, and a terminating end office switch." Ex. 1007 at 94. Thus, when the unified messaging system's telephony server initiates an outgoing call to a forwarded number on the PSTN (Ex. 1003 at 11:26-50, Fig. 7 items 706 and 708; 17:29-34), it is in at least indirect communication with one or more tandem switches as the call and related signalling is transmitted from the telephony server "via an outgoing telephone line" through the switches of the PSTN. *Id.*

[18c] identifying one or more control criteria previously associated with the specified recipient,

88. In O'Neal, a subscriber has one or more "communication options" that are stored by the unified messaging system in a "subscriber communication profile database." Ex. 1003 at 7:45-65. Examples of such communication options include "call forwarding", "'follow me' service", or "alternate number service." Ex. 1003 at 2:44-64, 11:13-12:65, Figs. 3-4. These communication options provide criteria for controlling the routing of telephone calls and thus are control criteria.

89. The "properly authorized … communication option settings" are "previously associated" because they are used to route "subsequent" calls. Ex. 1003 at 7:57-65. More specifically, a subscriber "review[s] and/or modif[ies] [their] communication options" using a website provided by web server 122 of the unified messaging system. Ex. 1003 at 16:36-64, 7:45-8:22, Fig. 1. This allows the subscriber to change their communication options, such as by "enter[ing] a temporary number" to be used for call forwarding. Ex. 1003 at 5:62-6:9, Figs. 3-4. "Properly authorized changes to the communication option settings will be reflected in the communication option settings stored in the subscriber communication profile database and employed to handle subsequent messages (whether incoming or outgoing)." Ex. 1003 at 7:57-65.

90. The communication options (that is, control criteria) are identified by the unified messaging system when a call is received. For example, when a call to a subscriber is received by the telephony server 126 of the UMS 101, the telephony

server 126 translates the "telephone signals" of the call into "digital data", and "employs the digital data to decide how to handle the [call] using the communication option settings obtained from the subscriber communication profile database." Ex. 1003 at 8:41-9:9, 13:10-15.

91. For example, the communication option settings for a subscriber may indicate that the "call forwarding" option is enabled, and that calls to the subscriber should be forwarded to a particular number, such as "1234567890". Ex. 1003 at Fig. 3 (especially items 304 and 306). When this occurs, "the telephony server receives the forwarding number from the database server and initiates an outgoing call (step 706) to the forwarding number on another port (e.g., one of the outgoing lines as seen in FIG. 2). … If the outgoing call is successfully connected to the telephony server (step 708), the telephony server then connects the port of the incoming call with the port of the outgoing call (step 710) to complete the end-to-end connection (step 712)." Ex. 1003 at 17:11-49; 11:40-51; Figs. 1, 3-4, and 7. In this example, receiving the "call forwarding" number from the database server is a disclosure of the claimed "identifying one or more criteria."

[18d] wherein the one or more control criteria was entered via a web-based interface;

92. O'Neal discloses that the communication options (the control criteria) are entered via a web-based interface. Specifically, the unified messaging system

has a website served by a web server that allows subscribers to "review and/or modify [their] communication options." Ex. 1003 at 16:36-64, 7:45-8:22, Fig. 1 (item 122). The subscriber "access[es] the unified messaging system ***web site***, using a unified messaging system ***web address***." *Id*. (emphases added). This "web site request connects to the web server 122 via data link 104 and network interface system 105" and the "web server 122 serves up a login page using, for example, ASP-active server pages (step 604)." *Id.* If the subscriber is authenticated ("through a password procedure"), "the subscriber may then be presented with a graphical menu of the communication options (step 610) that allows the subscriber to … review and/or modify the communication options via user computer 100 (step 612)." *Id*. The website allows subscribers to choose from several different communication options for routing calls, such as "call forwarding", "'follow me' service", or "alternate number service." Ex. 1003 at 11:13-12:65, Figs. 3-4. Furthermore, with regard to the "call forwarding" option, the subscriber "is able to check whether it is enabled, verify the forwarding number, select a number from a preprogrammed list, add a new number to a preprogrammed list, or enter a temporary number." *Id.* at 5:62-6:9.

93. Thus, the communication options (control criteria) are entered via a web-based interface.

[18e] initiating a second call at the controlling device in accordance with the control criteria associated with the specified recipient; and

94. O'Neal discloses that the communication option settings (control criteria) for a subscriber may indicate that the "call forwarding" option is enabled, and that calls to the subscriber should be forwarded to a particular number, such as "1234567890". Ex. 1003 at Fig. 3. When this occurs, "the telephony server receives the forwarding number from the database server and initiates an outgoing call (step 706) to the forwarding number on another port (e.g., one of the outgoing lines as seen in FIG. 2)." Ex. 1003 at 17:11-49, 11:40-51, Figs. 1, 3-4, and 7. The initiation of the outgoing call discloses "initiating a second call at the controlling device in accordance with the control criteria associated with the specified recipient."

[18f] connecting the first and second calls at the controlling device after the second call is received by a communication device associated with the specified recipient.

95. Continuing the call forwarding example discussed just above, O'Neal discloses further that "[i]f the outgoing call [*i.e.*, the second call] is successfully connected to the telephony server (step 708), the telephony server then connects the port of the incoming call [*i.e.*, the first call] with the port of the outgoing call (step 710) to complete the end-to-end connection (step 712)." Ex. 1003 at 17:29-

42 (emphasis added). This completion of the end-to-end connection by the telephony server of the unified messaging system discloses "connecting the first and second calls at the controlling device after the second call is received by a communication device associated with the specified recipient."

3. Claim 23

A method as defined in claim 18, wherein the controlling device utilizes a programmed processor utilizing packet switching.

96. The unified messaging system 101 of O'Neal is the controlling device. O'Neal discloses that the unified messaging system, which includes web server 122, communicates over the internet (Ex. 1003 at Fig. 1 item 102, 7:6-14). As admitted in the '777 Patent, the Internet is a packet-switched network. Ex. 1001 at 6:32-33 ("Internet is a term of art by which we mean an interconnection of packet switched networks.")

97. Furthermore, a web server is a computer that contains a processor and that is programmed. Thus, a web server inherently discloses a programmed processor, and O'Neal's disclosure of a unified messaging system that includes a web server with the ability to communicate over the Internet is disclosure of a "controlling device [that] utilizes a programmed processor utilizing packet switching."

4. Claim 25

A method as defined in claim 18, wherein at least one of the first and second calls is facilitated via a VoIP connection.

98. O'Neal discloses that the telephony server 126 of the unified messaging system initiates an outgoing call (*i.e.*, the second call) to the forwarding number of a subscriber. Ex. 1003 at 11:40-45; 17:29-34. O'Neal further discloses that its "call forwarding option" can be used by subscribers with "any computer that is configured to function as a phone set, i.e., a computer equipped with a speaker, microphone, and appropriate software to enable digital/Internet telephony." Ex. 1003 at 19:1-8. Such "digital/Internet telephone" ***is*** the claimed VoIP / Voice over IP; VoIP is the sending of digitized audio in packets over an IP network such as the Internet. Thus, O'Neal discloses in connection with its call forwarding system that the "second call" (the call made by the unified messaging system to the subscriber's chosen call forwarding number) can be made on a "VoIP connection" as claimed in claim 25.

99. In addition, O'Neal also explains that "[t]he unified messaging system [101] allows messages [including telephone calls] to be received, stored, retrieved, and/or ***forwarded without regard to the communication devices and/or networks employed for the transmission of the messages***." Ex. 1003 at 18:18-22; 13:12-13 (emphasis added). As such, when the subscriber "modif[ies]" his "communication

option settings" so that his computer with "Internet telephony" capabilities is set as the telephone number to which his calls are forwarded, the UMS 101 initiates a second call to the subscriber over the data-centric network 102, which is a VoIP connection as claimed.

5. Claim 26

A method as defined in claim 18, wherein at least either of the first call or the second call is routed within the communication network.

100. In O'Neal, the initial call to the subscriber (the "first call") is routed over the telephony-centric network 129 and received by the telephony server 126 of the unified messaging system. Ex. 1003 at 8:41-62, 9:20-30, 15:14-43, Fig. 1. As explained above, the telephony-centric network 129 is the "communication network."

6. Claim 29

A method as defined in claim 18, wherein the controlling device is configured as a tandem access controller.

101. As noted above, I have assumed for purposes of my analysis that "tandem access controller" is a processor (or a device with a processor). O'Neal discloses that the unified messaging system, which is the controlling device, includes various server computers (e.g., "telephony server 126", "database server

120", etc.). Ex. 1003 at 7:45-51 ("At the heart of the unified message system are a set of servers which are coupled to exchange data and are connected to firewall 112 and the public telephone network. Typically, a server represents a computer that processes data for use by other data-consumer devices (such as other servers, computers or any of the communication devices through a proper interface circuit)"); 7:51-65; 8:41-62; Fig. 1. Because server computers includes processors, the disclosed "controlling device" includes microprocessors.

102. Notably, even if "tandem access controller" were interpreted more narrowly so as to require a connection to the PSTN, or even a connection to tandem switch, as explained above in connection with claim element 18b, the telephony server of the unified messaging system is connected to the PSTN, and is at least indirectly connected to a tandem switch of the PSTN.

7. Claim 30

A method as defined in claim 29, wherein the tandem access controller is coupled to and operates in conjunction with at least one of the switching facilities located within the communication network.

103. Figure 1 of O'Neal illustrates that the unified messaging system (the claimed "tandem access controller") is coupled to the telephony-centric network 129. Ex. 1003 at Fig. 1. This telephony-centric network 129 is the "PSTN" (Ex. 1003 at 9:10-19). As explained above, the unified messaging system is connected

to the PSTN, providing at least an indirect coupling to at least one switching facility of the PSTN. Thus, O'Neal discloses at least an indirect connection between the unified messaging system and a switching facility located within the communication network (the PSTN).

104. Additionally, O'Neal discloses that the unified messaging system operates in conjunction with at least one of the switching facilities located within the communication network. In particular, O'Neal discloses that calls made to the subscriber is routed over the telephony-centric network 129 to the unified messaging system 101, and that the unified messaging system can route the call back over the telephony-centric network 129 "in accordance with a subscriber's communication option setting". Ex. 1003, 8:41-62; 9:20-30; 11:40-51; 15:14-43; 17:11-49; Fig. 1. By routing the call back over the telephony-centric network 129 to the subscriber, the unified messaging system is operating in conjunction with the switches (the edge switches and other switching facilities including tandem switches) positioned between the unified messaging system and the subscriber. When the unified messaging system "initiates an outgoing call … to the forwarding number" of the subscriber (Ex. 1003 at 17:11-49), that causes edge switches and tandem switches in the PSTN to use that forwarding number to route the outgoing call through the telephony-centric network 129 to the subscriber. Thus, the unified messaging system operates in conjunction with the switching

facilities of the telephony-centric network 129 to route calls to the subscriber, disclosing the limitation of claim 30.

8. Claim 31

A method as defined in claim 18, wherein both the first and second calls are routed within the communication network.

105. In O'Neal, the incoming call for the subscriber (the "first call") is routed over the telephony-centric network 129 and received by telephony server 126. Ex. 1003 at 8:41-62, 9:20-30, 15:14-43, Fig. 1. The outgoing call made by the telephony server to the subscriber's forwarding number is routed to the subscriber back over the telephony-centric network 129 "in accordance with a subscriber's communication option setting." Ex. 1003 at 8:41-62, 9:20-30, 11:40-51, 15:14-43, 17:11-49, Fig. 1. Thus, both the first call and the second call are routed through the telephony-centric network 129, which is "the communication network."

9. Claim 37

[37a] A method for processing an incoming call from a switching facility on a communication network that comprises edge switches for routing calls within a local geographic area and switching facilities for routing calls to other geographic areas,

106. Claim 37 is essentially the same as claim 18, with the additional requirement of Voice over IP communication as in dependent claim 25. Claim element 37a is essentially the same as element 18a addressed above.

[37b] the method comprising the steps of: receiving a first call, at a controlling device in communication with the switching facility; which is intended for a specified recipient;

107. This claim element is essentially the same as element 18b addressed above.

[37c] identifying one or more control criteria previously associated with the specified recipient,

108. This claim element is essentially the same as element 18c addressed above.

[37d] wherein the one or more control criteria are entered via a web-based interface;

109. This claim element is essentially the same as element 18d addressed above.

[37e] initiating a second call at the controlling device via a packet-based connection in accordance with the control criteria associated with the specified recipient; and

110. This claim element is addressed above in connection with claim element 18e and claim 25.

[37f] connecting the first and second calls at the controlling device after the second call is received by a communication device associated with the specified recipient.

111. This claim element is essentially the same as element 18f addressed above.

10. Claim 38

38. A method as defined in claim 37, wherein the specified recipient uses a communication device in communication with the controlling device via a web interface by which the specified recipient can view the status of calls or features designations.

112. In O'Neal, the subscriber uses "user computer 100" (Ex. 1003 at 16:36-64), which is a "communication device", to "***review*** and/or modify [their] communication options" using the unified messaging system's "web server 122." Ex. 1003 at 16:36-64 (emphases added); *see also id.* at 14:26-30, 14:66-15:5, 7:45-8:22, Fig. 1. The communication options that can be reviewed and modified are those associated with telecommunications features such as call forwarding and

'follow me', and are thus the claimed "features designations." Ex. 1003 at 11:13-12:65, Figs. 3-4.

113. Thus, O'Neal discloses that the subscriber can use a communication device in communication with the unified messaging system (the "controlling device") via a web interface by which the subscriber (the "specified recipient") can view features designations.

11. Claim 41

41. A method as defined in claim 37, wherein the packet-based connection includes a VOIP connection.

114. As explained in connection with claim 37 (and claim 25), O'Neal explains that the subscriber can use "any computer that is configured to function as a phone set, i.e., a computer equipped with a speaker, microphone, and appropriate software to enable digital/Internet telephony)." Ex. 1003 at 19:1-8 (emphasis added). "Internet telephony" is the packet-based telephony "VOIP" (Voice over Internet Protocol).

12. Claim 45

[45a] A method for processing an incoming call from a switching facility on a communication network that comprises edge switches for routing calls within a

local geographic area and switching facilities for routing calls to other geographic areas,

115. Claim 45 is essentially the same as claim 18, with the additional requirement of a phone call being routed to voicemail. Claim element 45a is essentially the same as element 18a addressed above.

[45b] the method comprising the steps of: receiving a first call, which is intended for a specified recipient, at a controlling device in communication with the switching facility;

116. Claim element 45b is essentially the same as element 18b addressed above.

[45c] identifying one or more control criteria previously associated with the specified recipient,

117. Claim element 45c is essentially the same as element 18c addressed above.

[45d] wherein the one or more control criteria are entered via a web-based interface; and

118. Claim element 45d is essentially the same as element 18d addressed above.

[45e] routing the first call from the controlling device to a voicemail server in accordance with the control criteria associated with the specified recipient.

119. As explained in connection with claim elements 18c and 18e, the communication option settings (e.g., control criteria) for a subscriber may indicate that the "call forwarding" option is enabled, and that calls to the subscriber should be forwarded to a particular number, such as "1234567890". Ex. 1003 at Fig. 3. If the subscriber chooses not to activate call forwarding, then "the call may then be forwarded to the subscriber's voice mail box":

> If the call forwarding option is not enabled and the caller does not choose other methods discussed below to try to contact the subscriber, ***the call may then be forwarded to the subscriber's voice mail box*** as well.

Ex. 1003 at 11:47-51 (emphasis added).

120. Similarly, O'Neal discloses that "[w]hile in a meeting, however, one may wish to temporarily divert the voice calls to a voice mail box or forwards it to another person for handling. To stay in touch, these communication options may need to be changed many times during the course of the day and/or each time one arrives at a new location." Ex. 1003 at 18:34-39.

121. O'Neal further explains that "[o]utgoing voice-mail messages are handled by voice mail server 208, which is coupled to another one of the 48 telephone lines of the T1 link as shown." Ex. 1003 at 10:4-19; Fig. 2.

122. Thus, when the subscriber chooses his communications option setting such that call forwarding is off, incoming calls will be routed by the unified messaging system to a voicemail server, disclosing this claim element.

C. Claims 21, 25, 28, and 37 Are Obvious Over O'Neal

1. Claim 21

A method as defined in claim 18, wherein the controlling device is implemented using a distributed architecture spanning at least two locations.

123. Claim 21 does not require any particular "distributed architecture," and does not specify what makes for two different "locations." Notably, the specification provides no explanations with regard to this claim element either.

124. Regardless, by June 1, 1999, using a distributed architecture for components in a network – whether a computer network or a telecommunications – was a well-known design option. Indeed, the PSTN telecommunications network, created many decades before 1999, is implemented using a distributed architecture spanning many locations. There are many paths – many combinations of phone

lines and switches, where the switches are at many different locations – that can form a circuit between two given subscriber's telephones.

125. Likewise, using a distributed architecture for computer and telecommunications hardware in a network was a well-known technique by June 1, 1999 to reduce the risk of a network failure caused by a disaster at a particular location, such as a power outage or fire.

126. Thus, it would have been obvious to one of ordinary skill in the art of telecommunications by June 1, 1999 to implement the system and method disclosed in O'Neal as discussed above in connection with claim 18 using a distributed architecture spanning at least two locations. *See also* Ex. 1003 at 6:10-24 (explaining and incorporating by reference co-pending application entitled "SYSTEM DISTRIBUTED OVER A LARGE GEOGRAPHICAL AREA" and explaining that "[a]lthough the present invention may be implemented on any unified messaging system, reference may be made to the above-mentioned co-pending patent applications for details pertaining to preferable unified messaging systems on which the present invention may be implemented.")

2. Claim 25

A method as defined in claim 18, wherein at least one of the first and second calls is facilitated via a VoIP connection.

127. As is discussed above with regard to Claim 25, O'Neal discloses in connection with its call forwarding system that the "second call" (the call made by the unified messaging system to the subscriber's chosen call forwarding number) can be made on a VoIP connection as claimed in claim 25. However, to the extent that it is argued that O'Neal does not expressly disclose claim 25's limitation "wherein at least one of the first and second calls is facilitated via a VoIP connection", claim 25 is obvious in light of O'Neal. Even the '777 Patent admits that Voice over IP networks and the ability to communicate over such networks were well known prior to the '777 Patent. Ex. 1001 at 2:46-49 (discussing prior art "Voice Over Internet Protocol (VoiP) products"). Furthermore, O'Neal also discloses a VoIP network when it explains that a subscriber can use a computer "enable[d] [with] digital/Internet telephony" to make VoIP telephone calls. Ex. 1003 at 19:1-8. Such "digital/Internet telephone" ***is*** the claimed VoIP.

128. It would have been obvious to one of ordinary skill in the art to modify O'Neal so that the "second call" (the call made by the unified messaging system to the subscriber's chosen call forwarding number) is made on a "VoIP connection," thereby disclosing the limitation of claim 25. Such a modification would have been known to one of ordinary skill in the art to improve the system of O'Neal because it would allow subscribers to have their calls forwarded to their IP telephone devices (such as a computer "enable[d] [with] digital/Internet telephony"

(Ex. 1003 at 19:1-8)). Such a modification would allow the subscriber to receive phone calls "***without regard to the communication devices and/or networks employed for the transmission of the messages***," an explicitly stated goal of O'Neal. Ex. 1003 at 18:18-22; 13:12-13 (emphasis added).

129. This modification would also lead to predictable results. Specifically, such a modification would allow a subscriber to set up the UMS 101 to forward their calls to the subscriber's IP device, and would further allow the subscriber to communicate with the caller using their IP device.

130. Also, such a modification would merely involve modifying the UMS 101 so that the outgoing call made by the UMS 101 to the subscriber (*e.g.*, Ex. 1003 at 17:11-49) could be made over the data-centric network 102 (the "Internet") to the subscriber's IP device. This modification would be well within the skill of a person of ordinary skill in the art. In fact, the simplicity of this modification is confirmed by the fact that the UMS 101 of O'Neal can already communicate with the subscriber's IP device (*i.e.*, the subscriber's computer "enable[d] [with] digital/Internet telephony") over the data-centric network 102. Ex. 1003 at 19:1-8; Fig. 1.

131. Therefore, in my opinion, it would have been obvious to one of ordinary skill in the art to modify O'Neal so that the “second call” (the call made by the unified messaging system to the subscriber’s chosen call forwarding

number) could be made on a "VoIP connection," thereby disclosing the limitation of claim 25.

3. Claim 28

A method as defined in claim 18, wherein the controlling device is located within a local service area corresponding to the specified recipient.

132. O'Neal discloses that data-centric network 102, to which both the subscriber's computer 100 and the unified messaging system 101 (the controlling device, as explained above in connection with claim 18) is connected, can be a Local Area Network (LAN). Ex. 1003 at 7:6-11; Fig 1. As their name suggests, Local Area Networks are networks that are local, close in geographic proximity, typically within one building or a group of buildings that are close together. If the subscriber's computer and the unified messaging system are connected to the same LAN, then the unified messaging system is within a local service area corresponding to the subscriber.

133. Even without the LAN disclosure, the unified messaging system in O'Neal would work if it were located in the same room as the subscriber, or if it were located further away. The location of the system in relation to the subscriber is not material. It would have been obvious to one of ordinary skill in the art that the disclosed unified messaging system could be located in the same local service

area as the subscriber, such as in the subscriber's office building or in his home.

4. Claim 37

134. As is discussed above with regard to Claim 37 (*supra* [37a]-[37f]), O'Neal discloses each of the limitations of Claim 37. However, to the extent that it is argued that O'Neal does not expressly disclose "***initiating a second call at the controlling device via a packet-based connection in accordance with the control criteria associated with the specified recipient***" of Claim 37, it would have been obvious to modify O'Neal to disclose these limitations, as is discussed above with regard to Claim 25.

D. Schwab Anticipates Claims 18, 26, 29, 30, 31, and 45.

1. Summary of Schwab

135. I have reviewed Schwab, which is entitled "Call Programming Apparatus." *See* Ex. 1005. I understand that this patent was filed on February 16, 1999, and was issued on April 30, 2002. *See id.* I understand that Schwab qualifies as prior art to the '777 Patent under 35 U.S.C. § 102(e).

136. Schwab discloses a "platform 18" that "allows subscribers to program a schedule of how their incoming calls should be routed based upon each subscriber's programmed profile." Ex. 1005 at 1:5-10, 1:36-39, 4:8-25, Fig. 1.

When a calling party calls the subscriber using the subscriber's "personal access service ('PAS') telephone number," the call is routed to the platform. The platform will then forward the call in accordance with the "subscriber's profile." Ex. 1005 at 4:32-5:4, 25:36-29:33.

137. In Schwab, a subscriber may choose from various "options to process incoming calls." Ex. 1005 at 4:32-53. One option is the "simultaneous ring option where all of the phone numbers selected by the subscriber will ring at the same time until one of the phone numbers is answered." Ex. 1005 at 4:43-5:4; 25:36-26:57. A subscriber may select these options using "other input media … such as the web." Ex. 1005 at 4:28-31, 6:19-21.

138. In operation, when a calling party 10 calls the subscriber using the subscriber's "personal access service ('PAS') telephone number" the call is routed to the platform 18 over the "public switched telephone network" (PSTN) 14:

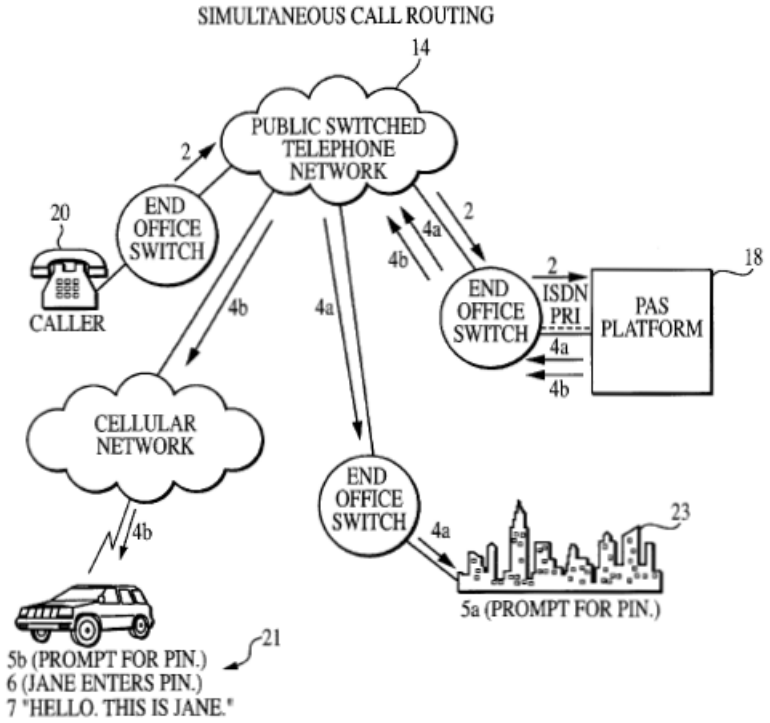


FIG. 2

Ex. 1005 at Fig. 2, 4:32-5:4; 25:36-29:33. The platform 18 will then retrieve the subscriber's profile and "determine[] that simultaneous routing has been selected and both the subscriber's business and car telephones 21 and 23 respectively should be rung simultaneously." *Id.* The platform 18 will then "initiate[] calls simultaneously to the subscriber's business and car telephones," and these calls are routed back through the PSTN 14 to their destination. Ex. 1005 at 4:32-5:4, 5:44-48, 25:36-29:33, Figs. 2, 4, and 54-57. When the subscriber answers the call at "the phone in her car," for example, the subscriber may be "prompt[ed] for a PIN entry." Ex. 1005 at 4:43-5:4; 5:44-48; 25:36-26:57; Figs. 4 and 54-57. The

subscriber may then "enter her PIN" causing "the call to be completed to the subscriber's car." *Id.*

2. Claim 18

[18a] A method for processing an incoming call from a switching facility on a communication network that comprises edge switches for routing calls to subscribers within a local geographic area and switching facilities for routing calls to edge switches, or other switching facilities local or in other geographic areas

139. Schwab discloses a method "that allows subscribers to program a schedule of how their incoming calls should be routed based upon each subscriber's programmed profile." Ex. 1005 at 1:5-10, 1:36-39, 4:8-25, Fig. 1.

140. The incoming call comes from a switching facility of the PSTN, such as an end office switch of "public switched telephone network 14" as illustrated in Figure 2; *see also* Ex. 1005 at 4:8-18; Figs. 1-3. Notably, although Figure 2 makes it look like the End Office Switches are separate from the Public Switched Telephone Network, the end office switches are class 5 switches that are in fact part of the PSTN. It is likely they are drawn separately from the PSTN "cloud" in the figure to make the connections from the end office switches to the items outside the PSTN clearer.

141. The PSTN is a communication network that meets all the requirements of the preamble, as is admitted in the '777 Patent itself: "The Public Switched Telephone Network (PSTN) consists of a plurality of edge switches connected to telephones on one side and to a network of tandem switches [which route calls to edge switches] on the other." Ex. 1001 at 1:40-46; *see also* Ex. 1007 at 94 ("The ***PSTN is a configuration of switching facilities*** for routing calls from calling parties to called parties, comprising a plurality of end office switches (also referred to as central office switches or edge switches (e.g., a class 5 switch)) and a plurality of interconnected switching facilities (also referred to as tandem switches).") (emphasis added)

142. Schwab also discloses that the platform 18 can be connected to the "IXCs facility point of the presence (POP)" rather than end office switches. *See* Ex. 1005 at 5:65-6:4. An IXC, which stands for Interexchange Carrier (*see* Ex. 1005 at 5:65-66), meets the Patent Owner's own definition of a switching facility because it is an "intercarrier connection point." *See* Ex. 1007 at 94 n.1. As such, the IXC of Schwab also meets the claim element "switching facility."

[18b] the method comprising the steps of: receiving a first call, which is intended for a specified recipient, at a controlling device in communication with the switching facility;

143. Platform 18, which received the incoming call for the subscriber (the "first call"), is the claimed "controlling device in communication with the switching facility." Ex. 1005 at 4:8-18, Figs. 1-3. In one embodiment, the call is received from an end office switch of the PSTN, which is the claimed "switching facility" as interpreted above. *See* Fig. 2. Thus, the platform is in communication with the switching facility.

144. Schwab also discloses that the platform 18 can be "connect[ed]" to the IXC rather than an end office switch. In that embodiment, there is communication between the platform and the IXC.

145. To the extent that the Patent Owner attempts to argue that the switching facility must be a tandem switch, Schwab still discloses that the controlling device is in at least indirect communication with a tandem switch of the PSTN. As noted above, the applicant in the prosecution history of the '777 Patent acknowledged that "[t]ypically, a telephone call involves an originating end office switch, a plurality of tandem switches, and a terminating end office switch." *See* Ex. 1007 at 94. Because the call received by platform 18 came through the PSTN 14, the call is typically routed through at least one tandem switch first. This means

that the platform 18 must be at least in indirect communication with a PSTN tandem switch. Otherwise, the platform 18 would not be able to receive the call.

[18c] identifying one or more control criteria previously associated with the specified recipient,

146. In Schwab, a subscriber has a "subscriber's profile" that is stored "in a database" and that "indicates how a subscriber wants his or her incoming calls to be directed." Ex. 1005 at 4:22-25, 5:18-24. When a call is received by the platform 18, the platform 18 "retrieve[s]" the subscriber's profile "from memory," and uses that retrieved subscriber's profile to forward the call. Ex. 1005 at 4:32-5:4, 27:65-29:33.

147. The subscriber's profile stored in the database is control criteria. Furthermore, because the subscriber's profile is retrieved "from memory" in order to be used to forward the call, the subscriber's profile (e.g., control criteria) must have been "previously associated with the specified recipient."

[18d] wherein the one or more control criteria was entered via a web-based interface;

148. Schwab first describes how a subscriber can change or modify their subscriber's profile using a "touch tone telephone." Ex. 1005 at 4:8-53, 6:16-25, 16:30-25:35, Figs. 5-53. However, Schwab further explains that the subscriber can

change or modify their subscriber's profile using "other input media … such as the ***web***." Ex. 1005 at 4:28-31 (emphasis added); 6:19-21 (explaining that a subscriber can use "a keyboard or mouse" to make changes to the subscriber's profile). This disclosure of using "the web" as an "input media" to change or modify a subscriber's profile discloses control criteria "entered via a web-based interface."

[18e] initiating a second call at the controlling device in accordance with the control criteria associated with the specified recipient; and

149. Schwab explains that the subscriber can set up their subscriber profile to indicate that calls should be routed in accordance with a "simultaneous ring option where all of the phone numbers selected by the subscriber will ring at the same time until one of the phone numbers is answered." Ex. 1005 at 4:43-5:4, 25:36-26:57, Figs. 54-57.

150. When the "simultaneous ring option" is enabled and the platform 18 receives a call made to the subscriber (the first call), the platform 18 will retrieve the subscriber's profile and "determine[] that simultaneous routing has been selected and both the subscriber's business and car telephones 21 and 23 respectively should be rung simultaneously." *Id*. The platform 18 will then "initiate[] calls simultaneously to the subscriber's business and car telephones." *Id.* Each of these calls is a second call initiated in accordance with the control criteria associated with the specified recipient.

[18f] connecting the first and second calls at the controlling device after the second call is received by a communication device associated with the specified recipient.

151. As is explained in connection with claim element 18e, after the platform 18 receives a call made to the subscriber (the first call), the simultaneous ring option causes the platform 18 to "initiate[] calls simultaneously to the subscriber's business and car telephones." Ex. 1005 at 4:43-5:4, 5:44-48, 25:36-26:57, Figs. 4 and 54-57. Each of these calls is a second call.

152. When the subscriber answers one of these second calls (such as the call "to the phone in her car"), the subscriber may be "prompt[ed] for a PIN entry." Ex. 1005 at 4:43-5:4, 5:44-48, 25:36-26:57, Figs. 4 and 54-57. This discloses that the second call is received by a communication device associated with the specified recipient. The subscriber may then "enter her PIN" causing "the call to be completed to the subscriber's car." *Id.* This completion of the call to the subscriber's car discloses connecting the first call (the call routed to the platform 18) to the second call (the call initiated by the platform 18 to the subscriber's car) at the controlling device.

3. Claim 26

***A method as defined in claim 18, wherein at least either of the first call or the second call is routed within the communication network. ***

153. In Schwab, both the first call (the call routed to the platform 18) and the second call (the call initiated by the platform 18 to the subscriber's car) are routed through the PSTN 14. Ex. 1005 at 4:43-5:4, 5:44-48, 25:36-26:57, Figs. 4 and 54-57. For example, this is shown in FIG. 2, which shows the first call (arrows marked as 2) being routed from the caller 20 through the PSTN 14 to the platform 18, and further shows the second call (arrows marked as 4b) being routed from the platform 18 through the PSTN 14 and the cellular network to the subscriber. Ex. 1005 at Fig. 2. The PSTN 14 is the communication network, as is explained in connection with claim element 18a.

4. Claim 29

A method as defined in claim 18, wherein the controlling device is configured as a tandem access controller.

154. Schwab discloses that the platform 18 (the controlling device) is a device with processor. Specifically, the platform 18 "includes several hardware and software components that are integrated into the platform to provide the processing, switching, peripheral control, database of subscribers' profiles and interactive voice response capabilities for implementing the present invention. Specifically, these components include computers 30, a voice switch 32, and multiple resource modules 34 for interactive voice response, voice mail, and voice

recognition." Ex. 1005 at 5:30-40 (emphases added); Fig. 4. As such, the platform 18 is a processor, which discloses these limitations.

155. Notably, even if "tandem access controller" were interpreted more narrowly so as to require a connection to the PSTN, or even a connection to a tandem switch, as explained above, the disclosed platform is at least indirectly connected to a tandem switch of the PSTN.

5. Claim 30

A method as defined in claim 29, wherein the tandem access controller is coupled to and operates in conjunction with at least one of the switching facilities located within the communication network.

156. Schwab discloses that platform 18 (the "tandem access controller") is at least connected indirectly to a switching facility, which discloses the limitation of claim 30.

157. First, Figure 1 of Schwab illustrates that the platform 18 is connected to the PSTN 14. Ex. 1005 at Fig. 1. There is a direct connection with an end office switch of the PSTN, and an indirect connection to the other switches of the PSTN, including tandem switches.

158. Second, Schwab explains as another embodiment that the platform 18 may also be connected to an IXC, which is also a switching facility, as is discussed above in connection with claim elements 18a and 18b.

159. Additionally, Schwab discloses that the "tandem access controller" operates in conjunction with at least one of the switching facilities located within the communication network. In particular, Schwab discloses that both the first call (the call routed to the platform 18) and the second call (the call initiated by the platform 18 to the subscriber's car) are routed through the PSTN 14, as is explained above in connection with claim 26. By routing the second call through the PSTN 14 to the subscriber, the platform 18 is operating in conjunction with each of the switches (including edge switches and tandem switches) positioned between the platform 18 and the subscriber. Thus, the platform 18 operates in conjunction with the switching facilities of the PSTN 14 to route calls to the subscriber, which discloses the limitations of this claim.

160. Also, Schwab also explains that the platform 18 can be connected to an IXC, which is a switching facility, as is discussed above. Based on this connection, calls are routed to and from the platform through the IXC. Thus, in this embodiment too the platform works in conjunction with the IXC (a switching facility) to route calls to the subscriber, disclosing the limitations of claim 30.

6. Claim 31

A method as defined in claim 18, wherein both the first and second calls are routed within the communication network.

161. As is explained above in connection with claim 26, both the first call (the call routed to the platform 18) and the second call (the call initiated by the platform 18 to the subscriber's car) are routed through the communication network.

7. Claim 45

[45a] A method for processing an incoming call from a switching facility on a communication network that comprises edge switches for routing calls within a local geographic area and switching facilities for routing calls to other geographic areas,

162. See the analysis of claim element 18a above.

[45b] the method comprising the steps of: receiving a first call, which is intended for a specified recipient, at a controlling device in communication with the switching facility;

163. See the analysis of claim element 18b above.

[45c] identifying one or more control criteria previously associated with the specified recipient,

164. See the analysis of claim element 18c above.

[45d] wherein the one or more control criteria are entered via a web-based interface; and

165. See the analysis of claim element 18d above.

[45e] routing the first call from the controlling device to a voicemail server in accordance with the control criteria associated with the specified recipient.

166. Schwab discloses that a subscriber's profile (e.g., the control criteria) may include "a default destination such as voice mail." Ex. 1005 at 4:38-43, 5:44-48, 29:14-33, Fig. 67. Specifically, "[t]he subscriber may choose a sequential ring option where incoming calls are forwarded sequentially to a series of telephone numbers starting with the telephone number given the highest priority until either the call is answered ***or the call is sent to a default destination such as voice mail***, for example." *Id*. (emphasis added). Thus, depending on what options the subscriber choices, calls may be routed to voicemail, disclosing this limitation of claim 45.

E. Claims 18, 37, and 45 Are Obvious Over O'Neal in view of Schwab

1. Claim 18

167. Claim 18 includes the phrase "***a controlling device in communication with the switching facility***." As is discussed above, "***switching facility***" should be interpreted to mean at least "[a]ny point in the switching fabric of converging networks." Under this correct interpretation, a "switching facility" includes an edge switch. Also, as is discussed above, "***a controlling device in communication with the switching facility***" should be interpreted to mean that the controlling

device is in either direct or indirect communication with the switching facility. Using these interpretations, O'Neal discloses each of the limitations of Claim 18, as is discussed above.

168. However, even if "***switching facility***" were to be (incorrectly) interpreted so as to exclude edge switches, and even if "***a controlling device in communication with the switching facility***" were to be (incorrectly) interpreted to mean that the controlling device is in direct communication with the switching facility, these (incorrect) interpretations are disclosed by Schwab.

169. Specifically, as is discussed above, Schwab discloses that the platform 18 can be connected to the "IXCs facility point of the presence (POP)" rather than end office switches. *See* Ex. 1005 at 5:65-6:4. An IXC, which stands for Interexchange Carrier (*see* Ex. 1005 at 5:65-66), meets the Patent Owner's own definition of a switching facility because it is an "intercarrier connection point." *See* Ex. 1007 at 94 n.1. In this embodiment of Schwab, there is direct communication between the platform 18 and the IXC, which discloses these limitations.

170. It would have been obvious to one of ordinary skill in the art to modify O'Neal so that the UMS 101 was connected to an "IXCs facility point of the presence (POP)" so that the UMS 101 was in direct communication with the IXC, thereby disclosing these limitations of claim 18. Such a modification would

improve the system of O'Neal, as it would allow the UMS 101 to provide service to subscribers "who are served by Interexchange Carriers (IXCs)," as is explained by Schwab. Ex. 1005 at 5:65-6:4.

171. Additionally, such a modification would lead to the predictable result of a communication system where the UMS 101 was connected to an IXC, as opposed to an edge office switch.

172. Also, this modification would merely involve connecting the UMS 101 to an IXC, as opposed to an edge office switch. Such a modification would not have been beyond the skill of a person of ordinary skill in the art.

173. As such, it would have been obvious to one of ordinary skill in the art to modify O'Neal so that the UMS 101 was connected to an “IXCs facility point of the presence (POP)” so that the UMS 101 was in direct communication with the IXC, thereby disclosing these limitations of claim 18.

2. Claim 37

174. As is discussed above with regard to Claim 37, O'Neal discloses each of the limitations of Claim 37. However, even if “***switching facility***” of Claim 37 were to be (incorrectly) interpreted so as to exclude edge switches, and even if "***a controlling device in communication with the switching facility***" of Claim 37 were to be (incorrectly) interpreted to mean that the controlling device is in <u>direct</u> communication with the switching facility, it would have been obvious to modify

O'Neal using Schwab to disclose these limitations, as is discussed above with regard to Claim 18.

3. Claim 45

175. As is discussed above with regard to Claim 45, O'Neal discloses each of the limitations of Claim 45. However, even if "***switching facility***" of Claim 45 were to be (incorrectly) interpreted so as to exclude edge switches, and even if "***a controlling device in communication with the switching facility***" of Claim 45 were to be (incorrectly) interpreted to mean that the controlling device is in direct communication with the switching facility, it would have been obvious to modify O'Neal using Schwab to disclose these limitations, as is discussed above with regard to Claim 18.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information or belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 6/23/2016

Tal Lavian, Ph.D.