UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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AMERICAN AIRLINES, INC., AND SOUTHWEST AIRLINES CO.,
Petitioners

v.

INTELLECTUAL VENTURES I LLC AND
INTELLECTUAL VENTURES II, LLC
Patent Owners

_____

U.S. Patent No. 7,324,469
Issue Date: January 29, 2008

Title: SATELLITE DISTRIBUTED HIGH SPEED INTERNET ACCESS

DECLARATION OF DR. CHUCK EASTTOM Ph.D., D.Sc.

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I. INTRODUCTION

1. My name is William C. Easttom II (Chuck Easttom), I have 30 years of experience in the computer science industry including extensive experience with networking including high speed networking. I have authored 44 computer science books, including textbooks used at over 60 universities around the world. I also have authored over 80 research papers and am an inventor with 27 computer science patents.

2. I hold a Doctor of Science (D.Sc.) degree in Cyber Security from Capitol Technology University (Dissertation Topic: "A Comparative Study of Lattice Based Algorithms for Post Quantum Computing"). I also hold a Doctor of Philosophy (Ph.D.) in Technology focused on nanotechnology (Dissertation Topic: "The Effects of Complexity on Carbon Nanotube Failures") from Capitol Technology University. I also have a Doctor of Philosophy (Ph.D.) in Computer Science from the University of Portsmouth (Dissertation Topic: topic "A Systematic Framework for Network Forensics Using Graph Theory"). I also hold four master's degrees (one in Applied Computer Science, one in Education, one in Strategic and Defense Studies, and one in Systems Engineering).

3. I am currently an Adjunct Lecturer for Georgetown teaching graduate courses in requirements engineering and cryptography. I am also an adjunct at Vanderbilt University teaching graduate computer science courses, specifically quantum

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computing, secure software engineering, and digital forensics. I also developed a graduate course in digital forensics for the University of Dallas and taught that course from 2019 to 2022.

4. I am a Senior member and Distinguished Speaker for the Association of Computing Machinery (ACM) and a Senior Member and Distinguished Visitor of the Institute for Electrical and Electronics Engineering (IEEE). The IEEE is the world's largest and most preeminent engineering organization. Among other activities, the IEEE creates industry standards for a wide range of engineering disciplines, including software development standards. I am also a Distinguished Visitor of the IEEE. I have been involved in IEEE standards creation for several years.

5. My full CV is attached as Exhibit 1003.

6. I have been asked to review the U.S. Patent 7,324,469, and prior art cited in this declaration, and to form my own independent scientific opinions.

7. I am being compensated at my usual rate of $550 per hour. My combination is not dependent in any way upon my conclusions.

II. LEGAL STANDARDS

8. The following subsections represent my understanding of the relevant legal standards.

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A. Validity

9. I understand that each claim of a patent is presumed to be valid. Dependent claims shall also be presumed valid even if they depend upon an invalid claim.

10. 35 U.S. Code § 282 states, "[a] patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity."

B. Obviousness

11. I understand that a patent claim is invalid if the differences between the subject matter and the prior art are such that the subject matter as a whole would have been obvious to a person of skill in the art, or POSITA, at the time of the alleged invention. I further understand that an obviousness analysis involves a review of the scope and content of the asserted prior art; the differences between the prior art and the claims at issue; the level of ordinary skill in the pertinent art; and objective indicia of non-obviousness (i.e., secondary considerations), such as long-felt but unsolved needs, failure

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of others, industry praise, commercial success, and skepticism of others in the field.

12. In determining obviousness based on a combination of prior art references, I also understand that evidence of a reason to combine the teachings is required to make the combination. Any evidence that one or more of the references would have taught away from the claimed invention at the time of the invention must also be considered.

13. I have been informed that the following rationales, among others, may support a conclusion of obviousness:

i. the combination of familiar elements according to known methods to yield predictable results;

ii. the simple substitution of one known element for another to obtain predictable results;

iii. the use of known techniques to improve similar methods or apparatuses in the same way;

iv. the application of a known technique to a known method or apparatus ready for improvement to yield predictable results;

v. the choice of a particular solution from a finite number of identified, predictable solutions with a reasonable expectation of success;

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vi. the use of known work in one field of endeavor in either the same field or a different one based on design incentives or other market forces, if the variations are predictable to one of ordinary skill in the art; and

vii. the following of some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

14. I also understand that secondary considerations such as long-felt but unsolved needs, failure of others, praise, skepticism, and commercial success are relevant to determining obviousness.

15. I understand that there must be evidence showing an articulated reasoning with rational underpinnings to support a motivation to combine teachings and to support the legal conclusion of obviousness. However, I understand that proposed modifications which would render the prior art unsatisfactory for its intended purposes or change the principal operation of the reference do not render a claim obvious.

16. Moreover, if prior art indicates that the invention would not have worked for its intended purpose, or otherwise teaches away from the invention, then a claim would not be obvious. A reference teaches away when a POSITA, upon reading the reference, would be discouraged from following the path set out

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in the reference, or would be led in a direction divergent from the path that was taken in the claim.

C. Motivation to Combine

17. It is my understanding that a motivation to combine must meet certain requirements. It is not sufficient for an expert to simply state there is a motivation to combine. Instead, there must be a clearly articulated reason to combine. In order to satisfy these requirements, the articulated motivation to combine should include the following:

i. the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;

ii. one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately; and

iii. one of ordinary skill in the art would have recognized that the results of the combination were predictable.

D. Claim Construction

18. I understand that the words of a claim are generally given their ordinary and customary meaning to a POSITA as of the effective filing date of the application for

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the patent at issue. I understand that claim construction is a task for the Court to undertake and, as such, I offer no constructions of any claim terms. Throughout my analysis I view terms using their plain and ordinary meaning to one of ordinary skill in the art.

III. ANALYSIS

19. This section contains my analysis of the '469 patent and the prior art.

A. Level Of Ordinary Skill in the Art

20. In determining the level of one of ordinary skill in the art I considered the '469 patent itself, the state of the art at the time of the invention (which I assume for the purposes of this declaration is no earlier than September 29, 2002), and the prior art referenced in the '469 patent itself.

21. I arrived at the conclusion that a POSITA as of September 29, 2002, would be a person with a bachelor's degree related to computer science. This could be fulfilled by a computer science, computer engineering, business information systems, software engineering, or systems engineering degree. A person of ordinary skill in the art would also have 2 years' experience related to networking, including telecommunications. More experience could substitute for education, and more education could substitute for experience. For example, a person with five years of experience could be a person of ordinary skill in the art without a degree. And a

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person with a master's degree and only 1 year of experience could be a person of ordinary skill in the art.

22. I was at least a person of ordinary skill in the art at the time of the invention of the '469 patent.

B. The '469 patent

23. U.S. Patent 7,324,469 was granted on January 29, 2008, and was filed September 27, 2004. The inventor's name is W. David Wilson.

24. The Abstract of the '469 describes it as "A satellite distributed high-speed Internet "Hotspot" enables wireless and hardwired, satellite distributed Internet access for anyone with a PC or other web-ready device (wireless ready or cabled) and a valid credit card or prepaid coupon. The Hotspots can be located anywhere there is 120 volt electricity available or access to the sun for a solar panel and enough space to house the transceiver and mount a satellite dish. Upon connecting to the Hotspot, the user is directed to a remote server for log-on and validation of the user's account. During validation, the remote server verifies that prepaid access time remains in the user's account. Upon validation, the user may browse the web until the prepaid access time runs out. Alternatively, an account may be set up on a "continue until canceled" basis, wherein the user's credit card will be charged for the amount of time used during each session."

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C. Brief Overview of the Prior Art

1. Bruner

25. Bruner, titled "Method and Apparatus for Inflight Electronic Commerce," is U.S. Patent Application No. 2002/0138625A1. The application was filed March 21, 2001, and published September 26, 2002. I am informed Bruner thus qualifies as prior art to the '469 Patent under pre-AIA 35 U.S.C. § 102(b). Bruner teaches a system enabling "remote users, such as airline passengers, to conduct electronic commerce . . . using a communications network, such as . . . satellite based remote communication systems." (Bruner 0021).

2. Clark

26. Clark, titled "Mobile Tele-Computer Network," is U.S. Patent No. 6,445,777B1. It was filed December 21, 1998, and issued September 3, 2002. I am informed Clark thus qualifies as prior art to the '469 Patent under pre-AIA 35 U.S.C. § 102(b). Clark teaches a "tele-computing network architecture" comprising "a wireless local area network (LAN), at least one mobile hub, and a wireless wide area network (WAN) that includes a satellite communication system with a network operations center to control voice and data traffic." (Clark 2:53-58). Clark explains that its mobile hub "may be in the form of a mobile vehicle (e.g., a van) or a portable field unit and is configured to transfer information as a single nomadic

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transmission/reception point between the satellite communication system and the wireless LAN." (Clark 2:60-64).

3. Wu

27. Wu, titled "Network System for Providing Prepaid Wireless Remote Access Service," is U.S. Patent Application No. 2003/00550041A1. The application was filed September 7, 2001, and published March 13, 2003. I am informed Wu thus qualifies as prior art to the '469 Patent under pre-AIA 35 U.S.C. § 102(e). Wu teaches a "network system capable of providing prepaid wireless remote access services." (Wu 0006).

4. Rothblatt

28. Rothblatt, titled "System for Providing Global Portable Internet Access Using Low Earth Orbit Satellite and Satellite Direct Radio Broadcast System," is U.S. Patent No. 6,105,060. It was filed September 5, 1997, and issued August 15, 2000. I am informed Rothblatt thus qualifies as prior art to the '469 Patent under pre-AIA 35 U.S.C. § 102(b). Rothblatt teaches a system for "providing remote user terminals with global portable Internet access using a satellite direct radio broadcast system." (Rothblatt 1:8-12).

5. Combining Bruner and Clark

29. A POSITA would have been motivated to combine Bruner and Clark for multiple reasons. Both Bruner and Clark are directed towards mobile internet access.

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More specifically, both Bruner and Clark are directed towards solving the same problem of providing satellite-enabled internet access to remote users. Because both references are hence analogous, a POSITA would have had a reasonable expectation of success in combining the two.

30. Bruner's "Summary of the Invention" states "[t]he above objects are attained by the present invention, according to which, briefly stated, a system is provided to allow remotely located Internet users, such as airline passengers, to conduct electronic commerce from the remotes location, for example, from their seats during the course of an airline flight." (Bruner, 0011). Clark describes itself with terminology such as "The network comprises a satellite communication system, at least one mobile vehicle, and a wireless local area network (LAN)." (Clark, Abstract). Both Bruner and Clark are directed towards providing internet access via satellite. A POSITA would have found it obvious to combine the two.

31. Furthermore, both Bruner and Clark would benefit from the combination. Clark discloses a network server or network operation center to control relaying of information (Clark Claim 19; Claim 26; 2:53-58; 4:49-53). Clark also discloses a wireless LAN to connect devices to a network, which would have been a well-known network connection method to a POSITA. (Clark, Abstract). Clark further discloses a wireless LAN with a large connection radius of up to half a mile. (Clark 4:12-13). A POSITA would appreciate that Bruner would benefit from Clark's wireless LAN

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and control system as Bruner discloses ecommerce information (Bruner, 0002;0009; 0011;0022; etc.) Bruner specifically discloses "dynamic updates, enabling real time news, financial and sports information, and enables real-time e-commerce" (Bruner 0015). A POSITA would readily understand that this sort of time critical and sensitive information transmittal would benefit from the wireless LAN and control system of Clark. A POSITA would also readily see how the inherent benefits of wireless networks, such as greater convenience and flexibility for user devices, would benefit the system of Bruner. Combining the teachings of Clark with Bruner would have been a simple combination of known elements with predictable results.

32. Both Bruner and Clark disclose satellite communications. Bruner states: "By using a communications network 22, such as provided by ground-based radio towers 25 ***and/or satellite based remote communication systems***, the airborne based remote equipment 19 communicates with the network on the ground based central system 16." (Bruner, 21, emphasis added). Clark discloses "A telecomputer network is described. The network of the present invention includes a wireless voice and data ***wide area network (WAN) comprises a digital satellite communications system*** with a network operations center that controls voice and data traffic." (Clark 2, 8-13, emphasis added). A POSITA would have found Clark and Bruner compatible and readily combinable.

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33. Clark discloses a gateway: "Acting as a 'gateway' onto the full range of public Internet services, clients access any part of the Internet from their remote location nodes connected through one of a wireless LANs of the present invention, as well as from any conventional or cellular phone connection." (Clark 5:17-21). Bruner also discloses a gateway: "The ADS is the inflight remote server 19 that preferably serves content to inflight users of the system and also acts as a gateway to the ground based servers (16, 34, 37, 40) for additional content." (Bruner, 23). A POSITA would have seen the advantage of using Clark's teachings regarding gateways to improve Bruner's access.

6. Combining Bruner and Wu

34. Bruner discloses wireless communication (Bruner, Abstract; 35). Wu discloses a specific wireless standard, 802.11: "In the preferred embodiment of the wireless access network 10, the portable wireless devices 20, 22, and 24 and the wireless access point 26 communicates through radio wave transmissions. The wireless network interface and the wireless access point 26 conforms with the Institute of Electrical and Electronics Engineers (IEEE) standard 802.11 and extensions thereof such as IEEE 802.lla and 802.llb for standardizing wireless local area networks (wireless LANs). "(Wu, 0050), see also Wu (0051, 0056)

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35. A POSITA would have been motivated to combine the specific 802.11 standard of Wu with the wireless communication of Bruner to ensure a standardized approach to wireless connectivity.

36. Furthermore, the general discussion of wireless communication in Bruner, combined with the specific wireless standard of Wu, would have been an obvious combination to a POSITA.

37. Further, both Bruner and Wu are directed towards solving the same problem of providing satellite-enabled internet access to remote users. Because both references are hence analogous, a POSITA would have had a reasonable expectation of success in combining the two.

38. Wu is directed towards providing a customer with a prepaid wireless remote access service. Bruner is directed towards facility worldwide web access to travelling users. A POSITA would have been motivated to combine the pre-paid aspects of Wu with the travelling internet access of Bruner to make such access more flexible and accessible. Such a combination would have been obvious to a POSITA as the technology taught by Wu was well-known at the time and it would have been a combination of known elements with predictable results.

39. Furthermore, Wu discloses an extender: "The portable wireless devices 20, 22, and 24 are connected to the base station 12 through a wireless access point 26 also referred to as a wireless local bridge." (Wu, 48). A POSITA would readily

understand that this wireless local bridge is an extender. It provides access to the base station. A POSITA would have found it obvious to improve Bruner's wireless access by adding the extender of Wu. Extenders were well known at the time, and this would have been a combination of known elements with predictable results.

7. Combining Bruner, Clark, and Rothblatt

40. The reasons and motivation for combining Bruner and Clark were described in section III.C and are repeated here.

41. A POSITA would have been motivated to combine Bruner and Clark for multiple reasons. Both Bruner and Clark are directed towards mobile internet access. More specifically, both Bruner and Clark are directed towards solving the same problem of providing satellite-enabled internet access to remote users. Because both references are hence analogous, a POSITA would have had a reasonable expectation of success in combining the two.

42. Bruner's "Summary of the Invention" states "[t]he above objects are attained by the present invention, according to which, briefly stated, a system is provided to allow remotely located Internet users, such as airline passengers, to conduct electronic commerce from the remotes location, for example, from their seats during the course of an airline flight." (Bruner, 0011). Clark describes itself with terminology such as "The network comprises a satellite communication system, at least one mobile vehicle, and a wireless local area network (LAN)." (Clark,

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Abstract). Both Bruner and Clark are directed towards providing internet access via satellite. A POSITA would have found it obvious to combine the two.

43. Furthermore, both Bruner and Clark would benefit from the combination. Clark discloses a network server or network operation center to control relaying of information (Clark Claim 19; Claim 26; 2:53-58; 4:49-53). Clark also discloses a wireless LAN to connect devices to a network, which would have been a well-known network connection method to a POSITA. (Clark, Abstract). Clark further discloses a wireless LAN with a large connection radius of up to half a mile. (Clark 4:12-13). A POSITA would appreciate that Bruner would benefit from Clark's wireless LAN and control system as Bruner discloses ecommerce information (Bruner, 0002;0009; 0011;0022; etc.) Bruner specifically discloses "dynamic updates, enabling real time news, financial and sports information, and enables real-time e-commerce" (Bruner 0015). A POSITA would readily understand that this sort of time critical and sensitive information transmittal would benefit from the wireless LAN and control system of Clark. A POSITA would also readily see how the inherent benefits of wireless networks, such as greater convenience and flexibility for user devices, would benefit the system of Bruner. Combining the teachings of Clark with Bruner would have been a simple combination of known elements with predictable results.

44. Both Bruner and Clark disclose satellite communications. Bruner states "By using a communications network 22, such as provided by ground-based radio towers

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25 ***and/or satellite based remote communication systems***, the airborne based remote equipment 19 communicates with the network on the ground based central system 16." (Bruner, 21, emphasis added). Clark discloses "A telecomputer network is described. The network of the present invention includes a wireless voice and data ***wide area network (WAN) comprises a digital satellite communications system*** with a network operations center that controls voice and data traffic." (Clark 2, 8-13, emphasis added). A POSITA would have found Clark and Bruner compatible and readily combinable.

45. Clark discloses a gateway: "Acting as a 'gateway' onto the full range of public Internet services, clients access any part of the Internet from their remote location nodes connected through one of a wireless LANs of the present invention, as well as from any conventional or cellular phone connection." (Clark 5:17-21). Bruner also discloses a gateway: "The ADS is the inflight remote server 19 that preferably serves content to inflight users of the system and also acts as a gateway to the ground based servers (16, 34, 37, 40) for additional content." (Bruner, 23). A POSITA would have seen the advantage of using Clark's teachings regarding gateways to improve Bruner's access.

46. Like Bruner and Clark, Rothblatt is directed towards mobile internet access, specifically providing remote user terminals with global portable Internet access

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using a satellite direct radio broadcast system. Thus, a POSITA would have had an expectation of success in combining Bruner, Clark, and Rothblatt.

47. Like Clark, Rothblatt has a gateway. (Rothblatt 4:33-38; 5:13-20). This would allow the POSITA to choose either the Clark gateway, or the Rothblatt gateway to combine with Bruner. This flexibility would allow the POSITA to tailor the combination to whatever was most appropriate for a given application. A POSITA would have had an expectation of success in such a combination.

48. Rothblatt discloses a second satellite. (Rothblatt Claims 2, 7, and 14) And in fact discloses any number of satellites (Rothblatt 3:37-45; 6:26-29). While Clark and Bruner disclose satellite systems, neither explicitly disclose multiple satellites. A POSITA would see the advantage of more than one satellite in improved communications and redundancy and would have been motivated to combine Rothblatt with either Bruner or Clark, or both.

49. Rothblatt explicitly discloses low earth orbit satellites. (Rothblatt Fig. 5, 1:38-46; 3:62-4:3; 12:55-59; 16:28-31). Bruner and Clark do not specify an LEO satellite. However, LEO satellites are frequently used for broadcast purposes. Low Earth Orbit is typically at an altitude of 160 km to 2,000 km above Earth with an orbital period of approximately 90–120 minutes.[1] This is contrasted with Medium Earth

[1] https://spacedge.nss.org/course/view.php?id=81&lang=es&gad_source=1&gclid=Cj0KCQjwhYS_BhD2ARIsAJTMMQbtdYq9derw7h0I-hEDeTkl8DWfpCh14xLMuDUqXl3gddZRN9Cyu84aAvYwEALw_wcB

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Orbit (MEO) that typically has an altitude of 2,000 km to 35,786 km and an orbital period of 2 to 12 hours. Geostationary Orbit (GEO) is typically at an altitude of approximately 35,786 km and a period of 24 hours.[2,3] This technology enables the distribution of television services over large geographic areas, including remote and rural locations where terrestrial broadcasting infrastructure may be limited. The satellite, typically in geostationary orbit (~35,786 km above Earth), receives the uplinked signals. The most common frequency bands used for uplinking are C-band (4–8 GHz) and Ku-band (12–18 GHz). Signals are modulated (e.g., QPSK, 8PSK, or DVB-S2 modulation) and transmitted at high frequencies (C-band, Ku-band, or Ka-band) to the satellite. DVB is Digital Video Broadcasting, and DVB-S2 is version 2.[4] QPSK is Quadrature Phase Shift Keying (also known as quaternary PSK) is a type of phase modulation technique where there are four states involved. It uses four points on the constellation diagram, equispaced around a circle.[5,6]

50. A POSITA would have found it advantageous to combine the explicit disclosure of LEO satellites in Rothblatt with either Bruner or Clark, or both, in order

[2] https://www.american.edu/sis/centers/security-technology/small-satellites-and-international-security.cfm
[3] https://ssdl1.gatech.edu/sites/default/files/ssdl-files/papers/conferencePapers/IAC-2009-D1.6.1.pdf
[4] https://digitalcommons.usu.edu/smallsat/2019/all2019/288/
[5] https://propagation.ece.gatech.edu/ECE6390/project/Fall2010/Projects/group6/ExoBuzz/page1/page8/page8.html
[6] https://www.winlab.rutgers.edu/~narayan/Course/Wless/Lectures05/lect9.pdf

to achieve consistent broadcast and access. Furthermore, a POSITA would have had an expectation of success.

51. For at least these reasons, a POSITA would been motivated to combining Rothblatt with either Bruner, Clark, or both.

D. Claim analysis

1. Claim 1

a) 1 [pre] A method for establishing and operating an Internet Hotspot comprising the steps of:

52. Bruner discloses a remote internet system (Bruner, 0021). Bruner makes it quite clear that this is accomplished via an internet hotspot "While the invention is described with specific reference to an in-flight intranet system, it will be understood by those skilled the art that the invention is generally applicable to any remote vehicle or building including aircraft, ships, trains and hotels." (Bruner, 00002) A POSITA would readily understand that internet on aircraft, ships, and trains can only be accomplished via an internet hotspot. Bruner discusses at length the issues with remote locations and mobile locations accessing the internet, then states "It is therefore an object of the present invention to provide a method and apparatus to allow airline passengers or other remotely located users, to access the Internet during the course of an airline flight, or from remote land-based locations." (Bruner, 0008).

53. Clark teaches a mobile hub. As one example "In one embodiment, the network comprises a wireless local area network (LAN), ***at least one mobile hub,*** and a

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wireless wide area network (WAN) that includes a satellite communication system with a network operations center to control voice and data traffic" (Clark 2:53-58, emphasis added). The mobile hub is disclosed throughout Clark (Clark 2:24-29; Clark 4:12-14; 4:22-29; claim 3). A POSITA would recognize a mobile hub is synonymous with *Internet hotspot*.

54. For at least the reasons described in this section, Bruner alone, or Bruner combined with Clark disclose the Internet Hotspot of claim 1[pre]. A POSITA's motivation to combine Bruner and Clark was discussed in section III.D of this report. This would involve combining known elements with a predictable result.

55. Furthermore, Wu discloses: "In the present invention, there is generally provided a ***base station in communication with one or more wireless stations*** comprising, for example, portable electronic devices." (Wu, 0007, emphasis added). Thus, Bruner alone, or Bruner combined with Wu disclose the Internet Hotspot of claim 1[pre]. A POSITA's motivation to combine Bruner and Wu was discussed in section III.E of this report. This would involve combining known elements with a predictable result.

56. See also claim 24[pre].

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b) 1[a]providing a satellite dish communicating with the Internet via data link with a satellite;

57. Bruner states "The present invention delivers high-speed connections and uses a combination of existing ***satellite systems*** and ground technologies to update information on the onboard server." (Bruner, 0015, emphasis added).

58. Bruner also discloses communicating with the internet via data link with a satellite in the following excerpt "By using a communications network 22, such as provided by ground-based radio towers 25 and/or satellite based remote communication systems, the airborne based remote equipment 19 communicates with the network on the ground based central system 16." (Bruner, 0021).

59. Bruner also provides details on ways in which the satellite data link may be used "Most preferably, this relatively low bandwidth in-flight link is complemented by a high bandwidth (600 kbps) one way satellite up link to the aircraft." (Bruner, 0035)

60. Satellite data links are further described in other portions of Bruner (e.g., Bruner 0080; Claim 2).

61. Clark also discloses a satellite data link. One disclosure in Clark is "A telecomputer network is described. ***The network comprises a satellite communication system***, at least one mobile vehicle, and a wireless local area network (LAN). In one embodiment, the satellite communication system transfers

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information using ethernet packet switching. In one embodiment, the wireless LAN transfers information using the TCP/IP protocol. The mobile vehicle or portable field unit is configured to transfer information as a *single nomadic transmission/reception point between the satellite communication system* and the wireless LAN." (Clark, Abstract, emphasis added). Clark discloses satellite data links throughout (e.g. Clark 2:24-29; Clark 2:53-57; 2:60-64; 4:32-35; 8:54; 9:7; Fig. 1).

62. For at least the reasons described in this section, Bruner alone, or Bruner combined with Clark disclose the satellite dish communicating with the Internet via data link with a satellite of claim 1[a]. A POSITA's motivation to combine Bruner and Clark was discussed in section III.D of this report. This would involve combining known elements with a predictable result.

63. Wu also discloses a satellite data link. For example, Wu discloses "The network system of claim 1 wherein the base station is connected to the global communications network through a communications channel selected from the group consisting of ethernet networks, frame relay networks, synchronous optical network (SONET), asynchronous transfer mode (ATM) networks, digital subscriber loop (xDSL) networks, cable networks, *satellite links*, T1T3/E1 trunk lines, integrated services digital network (ISDN), *satellite feed lines*, and digital cable feed lines." (Wu, Claim 6) (emphasis added). Wu discloses a satellite data link throughout. (E.G., Wu, 0048).

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64. Bruner alone, Bruner combined with Wu disclose the satellite dish communicating with the Internet via data link with a satellite of claim 1[a]. A POSITA's motivation to combine Bruner and Wu was discussed in section III.E of this report. This would involve combining known elements with a predictable result.

65. See also claim 24[a].

c) 1[b] providing at least one router operatively coupled to the satellite dish;

66. Bruner states "With the system 10 of the present invention, airborne users do not communicate directly with the ground network 43 but use the remote ADS server 19 as a router." (Bruner, 0025). Bruner further describes the ADS performing routing functions "The ADS is the inflight remote server 19 that preferably serves content to inflight users of the system and also acts as a gateway to the ground based servers (16, 34, 37, 40) for additional content." (Bruner, 0023); (Bruner, 0021).

67. A POSITA would readily understand that Bruner discloses a router operatively coupled to the satellite dish. A POSITA would further understand that the term *operatively coupled* has its plain and ordinary meaning of operating together, not necessarily directly physically connected.

68. Clark also discloses a router in claims 17 and 24. Clark also discloses "satellite communication System comprises a plurality of hubs, wherein each hub comprises

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a wireless router and a Satellite transmission/reception System to relay information between hubs." (Clark, 10:28-30)

69. For at least the reasons described in this section, Bruner alone, or Bruner combined with Clark disclose at least one router operatively coupled to the satellite dish of claim 1[b]. A POSITA's motivation to combine Bruner and Clark was discussed in section III.D of this report. This would involve combining known elements with a predictable result.

70. Wu also discloses a router operatively coupled to a satellite dish. For example, Wu discloses "With reference again to FIG. 1, the base station 12 is connected to the global communications networks 16 (i.e., the Internet) through a router 14. The router 14 operates to direct the communications traffic from the base station 12 through the global communications network 16 to a service provider router 34 connected at the other end thereof." (Wu, 0058).

71. A POSITA would readily understand that Wu discloses a router operatively coupled to a satellite dish. A POSITA would further understand that the term operatively coupled has its plain and ordinary meaning of operating together, not necessarily directly physically connected.

72. Bruner alone and/or Bruner combined with Wu disclose at least one router operatively coupled to the satellite dish of claim 1[b]. A POSITA's motivation to

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combine Bruner and Wu was discussed in section III.E of this report. This would involve combining known elements with a predictable result.

73. See also claim 24[b].

d) 1[c] providing a subscriber access unit operatively coupled between the satellite dish and the router;

74. Bruner states: "With the system 10 of the present invention, airborne users do not communicate directly with the ground network 43 but use the remote ADS server 19 as a router. Instead, all services are provided via a proxy or gateway services." (Bruner, 0025). Bruner states "the inflight airborne server is connected to existing proprietary telecommunications networks, such as operated by GTE, AT&T, or INMARSAT resellers like COMSAT." (Bruner, 0025). Bruner further discloses that "access to ground based internet content, whether e-commerce or e-mail, is preferably via an application layered gateway or proxy, present on the airborne server." (Bruner, 0026). A POSITA would understand that this disclosure describes subscriber access units.

75. This is described in other sections of Bruner such as "For those passengers that simply must have direct access to the Internet, the system needs an object caching server to provide rapid access to frequently accessed sites. The proxy/object cache should be capable of linking into an existing object cache hierarchy or setting up one of its own. Cache nodes would exist on both the ADS and servers in the GSN.

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Squid is one possibility, MS proxy is another." (Bruner, 0076) A POSITA would readily understand that this is describing a subscriber access unit.

76. The subscriber access unit is further described in the following excerpt from Bruner "In addition, the user can gain access to his or her land based e-mail system 64 and or an aircraft's intranet 67, which is a system accessible only by those members on the flight or, more generally, those connected to the remote server 19, wherever it may be located. Within the intranet, users may be engaged in conversations or chat with other passengers on the flight, engage in on-flight activities such as games or browsing ***through activities provided on the ADS server***. The intranet also provides access to the internet through the ground based GSN 43."(Bruner, 0030, emphasis added).

77. Bruner discloses providing a subscriber access unit operatively coupled between the satellite dish and the router.

78. Wu also discloses providing a subscriber access unit operatively coupled between the satellite dish and the router. For example, Wu discloses "The base station 12 mainly controls and administers local wireless access by one or more customers equipped with the wireless stations 20,22, and 24." (Wu, 0039). Wu also discloses that its base station "is connected to the global communications network through a communications channel" such as "satellite links" or "satellite feed lines." (Wu, Claim 6). Wu also discloses "The portable wireless devices 20, 22, and 24 are

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connected to the base station 12 through a wireless access point 26 also referred to as a wireless local bridge. The access point 26 is a hardware device, or software used in conjunction with a computer, that serves as a communications hub for wireless clients or stations, and provides a connection to a wired network (e.g., LAN, WAN)." (Wu, 0048).

79. Accordingly, Bruner combined with Wu also discloses the elements of claim 1[c]. A POSITA's motivation to combine Bruner and Wu was discussed in section III.E of this report. This would involve combining known elements with a predictable result.

80. See also claim 24[c].

e) 1[d] installing the satellite dish, router and subscriber access unit in a rural location, the rural location experiencing a relatively high volume of transient traffic;

81. Bruner is focused on accessing internet from a remote location, such as a rural location. As one example from Bruner "In effect, the remote server 19 acts much like a local internet on the remote location 14, be it a moving vehicle like an airplane or ship or ***a land-based remote location***." (Bruner, 0079, emphasis added). A POSITA would understand that a land based remote location is a rural location. Bruner also explicitly discloses a rural location "Typically, a webpage requires about 50 k to 60 k bytes of information. The bandwidth required to keep these webpages constantly updated can easily exceed the resources available to transmit this vast

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amount of information. This is also true of remote land based users such as ***those located in rural areas*** or on a floating oil rig, for example." (Bruner, 0006, emphasis added).

82. For at least the reasons described in this section, Bruner discloses installing the satellite dish, router and subscriber access unit in a rural location, the rural location experiencing a relatively high volume of transient traffic.

83. Wu is also focused on accessing internet from a remote, or rural, location. For example, Wu discloses "The present invention is generally directed to a network system capable of providing prepaid wireless remote access services." (Wu, 0006). Indeed, Wu discloses the remote location of its system throughout, e.g., "The wireless stations 20, 22, and 24 may include any wireless-enabled electronic device that can be used to connect to the base station 12 to remotely access the global communications network such as the Internet including the World Wide Web (WWW) for web browsing and the like." (Wu, 0038).

84. Wu further discloses a figure showing different devices, including a "universal internet box," a wireless access point, laptops, and a router being connected via internet to remotely located servers and routers. (Wu, Fig.1). A POSITA would understand based on the above disclosures that Wu discloses the satellite dish, router, and subscriber access unit located in a rural location experiencing a relatively high volume of internet traffic of claim 1[d].

85. For at least these reasons, Bruner in view of Wu installing the satellite dish, router and subscriber access unit in a rural location, the rural location experiencing a relatively high volume of transient traffic. This would have involved combining known elements with predictable results.

86. See claim 24[e].

f) 1[e] connecting a web-ready device to the router;

87. Bruner discloses "From a laptop computer for example, an inflight passenger 13 initiates a dial-up networking PPP connection to the ADS server 19 via the inflight telephone connection (not shown) located adjacent the passenger 13, such as in the seatback or in the armrest of the airline passengers seat." (Bruner, 0023). A POSITA would readily understand that a laptop is a web ready device.

88. Furthermore, Bruner explicitly discloses accessing the web: "Thus, the system of the present invention provides web based e-commerce, information and entertainment to remote users, such as onboard flight passengers." (Bruner, 0016). This is disclosed in other section of Bruner such as "Also the ground based systems are interconnected with website containing data 31 which are preferably operated by partners 34 with the system 10 of the present invention. The system also has access to nonpartner websites 37 to allow the airborne based user 13 to access information from other websites, or to browse the users e-mail server 40 so as to provide communication between the remote traveler 13 and his or her home system 40 via

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the internet." (Bruner, 0021). Bruner also discloses the use of a browser application: "From this point, the user utilizes his or her internet browser software running on the laptop to access a variety of content." (Bruner, 0023).

89. Figure 1 of Bruner discloses the laptop devices (13) connecting to the remote communication system 28. System 28 is described as "The remote system preferably includes remote communication equipment 28 operably connected with the communication network 22." (Bruner, 0021).

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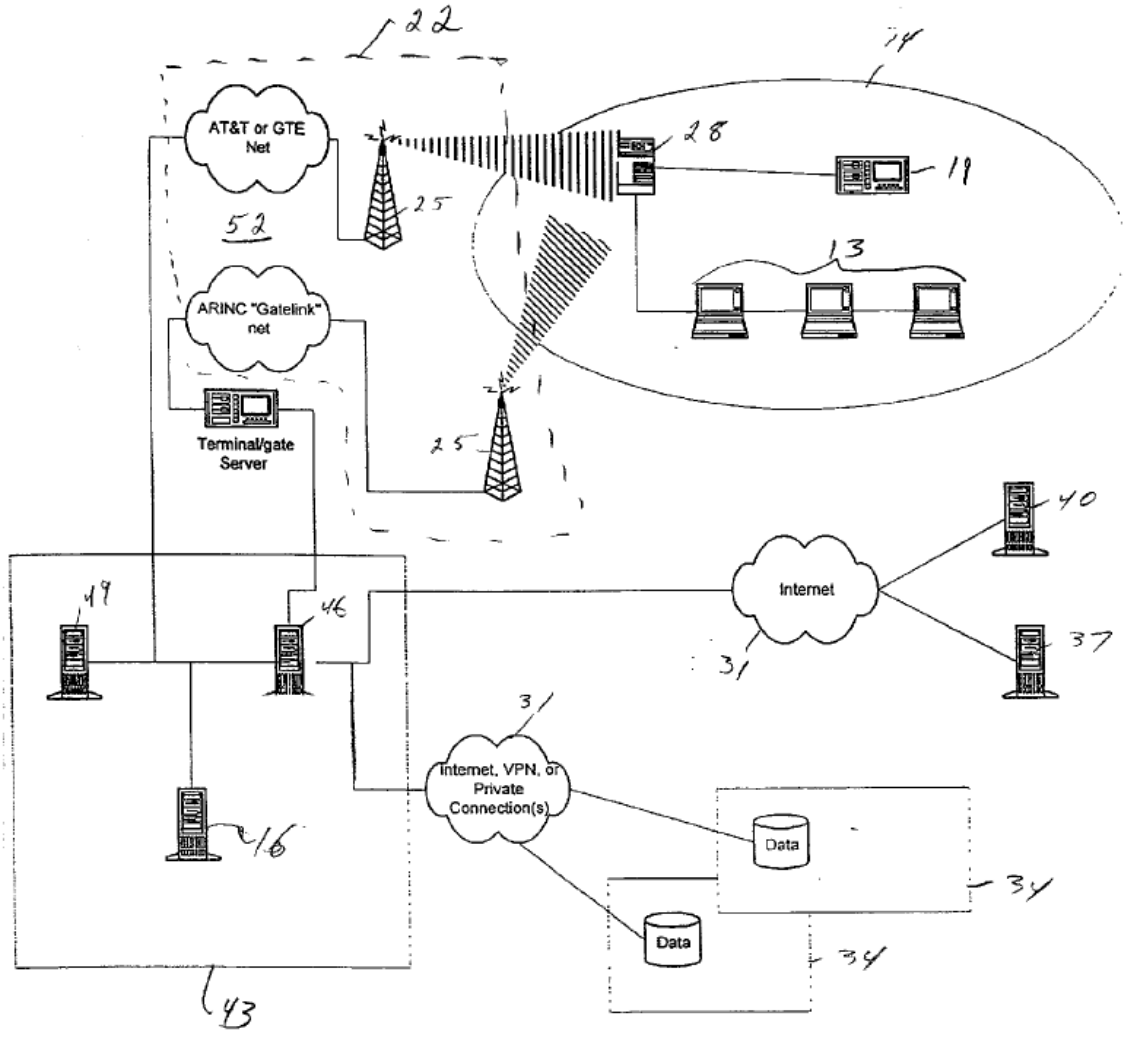

FIG. 1

90. For at least the reasons described in this section, Bruner discloses connecting a web-ready device to the router.

91. Wu discloses "The portable wireless devices 20, 22, and 24 are connected to the base Station 12 through a wireless access point 26 also referred to as a wireless local bridge. The access point 26 is a hardware device, or software used in

conjunction with a computer, that serves as a communications hub for wireless clients or stations, and provides a connection to a wired network (e.g., LAN, WAN)." (Wu, 0048). Further, "The wireless access point 26 provides an interface between the wireless network interface of the wireless portable device 20, 22, or 24, and the wired portion of the wireless access network 10." (Wu, 0049). Based on this disclosure, a POSITA would readily understand that Wu discloses connecting a web-ready device to a router.

92. For at least the reasons described in this section, Bruner in view of Wu discloses claim 24[d]. This would have involved combining known elements with predictable results.

93. See also claim 24[d].

g) 1[f] creating by a user a subscription account, the subscription account being created on a remote server and enabling the user to access the Internet;

94. Bruner discloses "Preferably, as shown in FIG. 2, the user 10 upon accessing the system of the present invention via a home page 55 logs in 58 by providing a user name and password." (Bruner, 0028). A POSITA would recognize that the username and password are indicia of a subscription account. This is disclosed in other section of Bruner such as "FIG. 2 shows a homepage initial site map for airline passengers logging into the inflight Internet system." (Bruner, 0019). Bruner further explains that "The username and password can be provided when the user first

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accesses the system and provides necessary registration information to be able to use all the functions of the airborne based internet service." (Bruner, 0028).

95. Bruner discloses additional details about the subscription account "By way of brief example, the user provides basic information, such as name, e-mail address, and any other personal information that the operator of the site wishes to capture for future reference. For example, it may be desired to know certain demographic data about the user, such as age, sex, and home location, in order to be able to provide designated information to users who fit profiles of generally recognized demographic information. This user profile information is then stored on the database server 49. Thus, the next time the user accesses the site, that user inputs the log-in information and is then given access to the full content of the system 10." (Bruner, 0029)

96. For at least the reasons described in this section, Bruner discloses creating by a user a subscription account, the subscription account being created on a remote server and enabling the user to access the Internet.

97. Wu discloses creating by a user a subscription account, the subscription account being created on a remote server and enabling the user to access the Internet. For example, Wu discloses "The central billing server 32 includes a PIN database for storing information including account data, customer profiles, customer-selected security codes, prepaid card usage history, schedule of charge rates for the services

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for the wireless remote access service." (Wu, 0059). Wu further discloses "The RADIUS server 30 is programmed to execute authentication, authorization, and accounting procedures for checking and validating information provided by the customer desiring to access the services." (Wu, 0060). Wu further discloses "Prior to access, the customers may set up prepaid accounts or balance amounts stored and updated at the central network access server from which an access service charge may be deducted at a predetermined charge rate for the remote access service." (Wu, 0008).

98. For at least the reasons described in this section, Bruner in view of Wu discloses creating by a user a subscription account, the subscription account being created on a remote server and enabling the user to access the Internet. This would have involved combining known elements with predictable results.

h) 1[g] navigating a browser operating on the web-ready device to a subscriber access website, the subscriber access website being capable of verifying that the subscription account is valid;

99. Bruner discloses "providing access to a portal site on the mobile internet server; providing a registration screen for registering the mobile internet user with the portal site; and receiving profile information from the mobile internet user to register the mobile internet user with the portal site." (Bruner, Claim 8). Furthermore, as was discussed in reference to claim 1f, Bruner discloses a subscription account that enables the user to access the internet.

100. Bruner also discloses "In an alternative embodiment, a screen and keyboard can be provided at the passengers seat for the user 14 connection, eliminating the need for the user to have his or her laptop computer. The web application will validate the user, and provide him or her additional content and offer commerce functionality." (Bruner, 0023)

101. For at least the reasons described in this section, Bruner discloses navigating a browser operating on the web-ready device to a subscriber access website, the subscriber access website being capable of verifying that the subscription account is valid.

102. Wu also discloses navigating a browser operating on the web-ready device to a subscriber access website. Wu discloses "The base station 12 redirects the customer's browser to a proprietary WWW page. The base station 12 automatically re-configures the network configuration settings for wireless remote access to the global communications network." (Wu, 0040). A POSITA would understand based on the above disclosures that Wu's "proprietary WWW page" discloses a subscriber access website.

103. Wu also discloses the subscriber access website being capable of verifying that the subscription account is valid. For example, Wu discloses "The customer can initiate the wireless remote access service by simply powering up the wireless station 20, 22, or 24, or by opening the browser software or email program residing on the

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wireless station 20, 22, or 24 within the wireless coverage area of the access point 26." (Wu, 0062). Wu continues: "Upon connection, the base station 12 prompts the portable wireless station 20, 22 or 24 to provide a valid PIN number and security code (e.g. password) corresponding to a prepaid card." (Wu, 0062). A POSITA would understand in light of the above disclosures that the proprietary WWW page of Wu is capable of verifying that the subscription account corresponding to the PIN number and security code is valid.

104. For at least the reasons described in this section, Bruner in view of Wu discloses navigating a browser operating on the web-ready device to a subscriber access website, the subscriber access website being capable of verifying that the subscription account is valid. This would have involved combining known elements with predictable results.

i) 1[h] verifying that the subscription account is valid via the subscriber access website to allow access to the Internet; and allowing a user to access the Internet at the rural location.

105. As was discussed in reference to claim 1f, the user creates a subscription account. Furthermore, Bruner states "Preferably all data required for support of the application is stored within the database server 49, and security restrictions are in place to verify that ***only those persons with appropriate rights can view the data and access system functionality.***" (Bruner, 0023, emphasis added). A POSITA

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would understand that this is describing verifying that the subscription account is valid.

106. Verifying the subscription account is valid is further disclosed in the following excerpt from Bruner "Preferably, as shown in FIG. 2, the user 10 upon accessing the system of the present invention via a homepage 55 logs in 58 by providing a user name and password." (Bruner, 0028). A POSITA would readily appreciate that the user name and password are mechanisms for verifying that the subscription account is valid.

107. This is further disclosed in the following excerpt from Bruner "This user profile information is then stored on the database server 49. Thus, the next time the user accesses the site, that user inputs the log-in information and is then given access to the full content of the system 10." (Bruner, 0029).

108. The use of the system in a rural area was described in reference to claim 1d. See also claim 24[e].

109. For at least the reasons presented, Bruner discloses verifying that the subscription account is valid via the subscriber access website to allow access to the Internet; and allowing a user to access the Internet at the rural location.

110. Wu also discloses verifying that the subscription account is valid via the subscriber access website to allow access to the Internet; and allowing a user to access the Internet at the rural location. As was discussed in reference to claims 1[f]

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and 1[g], Wu discloses "The base station 12 redirects the customer's browser to a proprietary WWW page. The base station 12 automatically re-configures the network configuration settings for wireless remote access to the global communications network." (Wu, 0040). Wu also discloses "The customer can initiate the wireless remote access service by simply powering up the wireless station 20, 22, or 24, or by opening the browser software or email program residing on the wireless station 20, 22, or 24 within the wireless coverage area of the access point 26." (Wu, 0062). Wu continues: "Upon connection, the base station 12 prompts the portable wireless station 20, 22 or 24 to provide a valid PIN number and security code (e.g. password) corresponding to a prepaid card." (Wu, 0062).

111. A POSITA would understand that Wu discloses verifying that the subscription account is valid via the subscriber access website to allow access to the Internet based on Wu's disclosure of a proprietary WWW page provided by its base station and its base station prompting the user for a PIN and security code corresponding to a subscription account.

112. As was discussed in reference to claim 1[d]. Wu also discloses accessing the internet at a rural location. For example, Wu discloses "The present invention is generally directed to a network system capable of providing prepaid wireless remote access services." (Wu, 0006).

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113. For at least these reasons, Bruner in view of Wu discloses verifying that the subscription account is valid via the subscriber access website to allow access to the Internet; and allowing a user to access the Internet at the rural location. This would have involved combining known elements with predictable results.

2. Claim 2

a) 2. The method of claim 1, wherein the router includes at least one jack to which a web-ready device may be connected via a wired connection.

114. Bruner describes at least one jack in the following "passenger 13 initiates a dial-up networking PPP connection to the ADS server 19 via the inflight telephone connection (not shown) located adjacent the passenger 13, such as in the seatback or in the armrest of the airline passengers' seat." (Bruner, 0023) A POSITA would know that PPP or Point to Point Protocol is a protocol for a direct connection between two nodes[7,8]. PPP is described as "PPP is a direct connection from one modem to another modem over a phone line."[9] A POSITA would understand that a direct connection over a phone line requires a jack, specifically a phone jack.

115. For at least the reasons presented, Bruner discloses a router includes at least one jack to which a web-ready device may be connected via a wired connection.

[7] https://gaia.cs.umass.edu/kurose_ross/retired/PPP.pdf
[8] https://www.cs.fsu.edu/~jtbauer/cis5406/lectures/lecture18.html
[9] https://homepage.cs.uri.edu/faculty/wolfe/book/Readings/Reading08.htm

3. Claim 3

a) 3. The method of claim 1, wherein the step of creating a subscription account includes creating the subscription account using a prepaid coupon via the remote server.

116. Prepaid coupon is not defined in the ‘469 patent. Outside of the claims, the ‘469 only uses the term twice stating: “A satellite distributed high-speed Internet “Hotspot” enables wireless and hardwired, satellite distributed Internet access for anyone with a PC or other web-ready device (wireless ready or cabled) and a valid credit card or prepaid coupon.” Therefore, a POSITA would understand a prepaid coupon as any prepaid payment device. Rothblatt discloses “Alternatively, this determination can include a check of ***the prepaid balance*** on the user's debit card 130 or 130' (which has been 40 inserted by the user into the card reader 126) and a check of the user's decryption key to be sure that it is valid.”(Rothblatt, 15:38-42, emphasis added).

117. A prepaid coupon would have been obvious to a POSITA in light of common knowledge and Rothblatt.

118. Similarly, Wu discloses “A prepaid card or PIN database residing on a remote central billing server stores account information including security/identification codes, usage history, etc., correlated to each prepaid card sold or distributed.” (Wu, 0036). A POSITA would have found the method of creating a subscription account

by using a prepaid coupon via the remote server obvious based on the preceding disclosure.

4. Claim 4

a) 4. The method of claim 1, wherein the step of creating a subscription account includes purchasing by the user a quantity of subscription-based access time using a credit card via the remote server.

119. Bruner discloses "The ability to receive a form of electronic payment (credit cards, charge cards, debit cards, electronic cash) in order for a purchase to occur." (Bruner, 0057). Bruner also discloses credit card payments in other sections of Bruner (Bruner, 0027; 0032).

120. Rothblatt discloses "Alternatively, this determination can include a check of the prepaid balance on the user's debit card 130 or 130' (which has been 40 inserted by the user into the card reader 126)" (Rothblatt 15:38-41). A POSITA would readily understand that a card reader that can read a debit card can also read a credit card. The processing for such cards is identical.

121. Wu explicitly discloses a credit card "In an alternative embodiment, the balance amount on the prepaid card may be deducted immediately and electronically from a credit card, a debit card, a check card, a charge account, or other forms of remote payment systems." (Wu, 0034). Wu also discloses "The customer takes the prepaid card to the vendor or vending terminal where payment in the form of a currency, credit card, check card, debit card, or the like may be accepted." (Wu,

0066). Wu explains that "The prepaid card includes a balance amount where charges accrued for wireless remote access services may be deducted therefrom. The balance amount entitles the customer to a specific access amount or time." (Wu, 0035).

122. Bruner, Rothblatt, and Wu alone or in any combination of the three (including combining only 2 of the three) all disclose using a credit card. This would have involved combining known elements with predictable results.

5. Claim 5

a) 5. The method of claim 4, wherein the subscription-based access time may be purchased in a definite quantity.

123. Purchasing a quantity of subscription based access time was already discussed in reference to claim 4.

124. Bruner, Rothblatt, and Wu alone or in any combination of the three (including combining only 2 of the three) all disclose using a credit card. This would have involved combining known elements with predictable results.

6. Claim 6

a) 6. The method of claim 4, wherein the subscription-based access time may be purchased on a "continued until canceled" basis.

125. A POSITA would readily appreciate that the continued until cancelled is a very common way to manage subscription services. This would have been obvious to one of ordinary skill in the art. However, Wu explicitly discloses this "In an alternative embodiment, the balance amount on the prepaid card may be deducted

immediately and electronically from a credit card, a debit card, a check card, a charge account, or other forms of remote payment systems. If the balance amount reaches a minimum limit, the wireless service provider may automatically deduct a new charge amount to replenish the balance amount." (Wu, 0034).

126. The subscription-based access time may be purchased on a "continued until canceled" basis would be obvious to a POSITA in light of Bruner or Clark and is explicitly disclosed in Wu.

7. Claim 7

a) 7. The method of claim 4, wherein the credit card billing is performed by an existing merchant service.

127. Credit card billing is always done via an existing merchant services. This would have therefore been obvious to a POSITA. However, Wu explicitly discloses this "The customer is requested to replenish the balance amount of the prepaid card such as by depositing payment with the participating prepaid card vendors or vending terminals." (Wu, 0030). This is also disclosed in other sections of Wu such as "The customer may purchase a prepaid card in advance from a participating vendor or a vending machine or terminal." (Wu, 0035).

128. The credit card billing being performed by an existing merchant service would be obvious to a POSITA in light of Bruner or Clark and is explicitly disclosed in Wu.

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8. Claim 8

a) 8. The method of claim 7, wherein the existing merchant service is reciprocal with other Internet subscription providers nationwide.

129. Merchant services having reciprocal service is common. This is why one can use a credit card on another credit card vendors network or equipment. However, Wu discloses this explicitly "However, it will be appreciated that the present invention is not so limited, for example, virtually any type of prepaid arrangement or prepayment system may be effected through the use of the system discussed herein. The system may be used to obtain prepaid goods or services of any kind through the global communications network from participating merchants and service providers. In this regard, the goods may relate to data and information which may be sold through data networks, telephone networks, or the Internet." (Wu, 0033).

130. Bruner also discloses this "In operation, the remote user 13 is presented the look and feel of being connected directly to the internet and merchant websites. Via the communication link 22 between the remote server 19 and the central server 16, the central server preferably periodically transmits updated website information from merchant websites to the remote server." (Bruner, 0078). A POSITA would understand that the 'merchant websites' are likely accessing the internet with other Internet subscription providers.

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131. The existing merchant service being reciprocal with other Internet subscription providers nationwide would be obvious to a POSITA in light of Bruner or Clark and is explicitly disclosed in Wu and Bruner.

9. Claim 9

a) 9. The method of claim 1, wherein the verifying step is performed by a subscriber merchant service.

132. Wu discloses that if a customer's balance is inadequate to cover his or her internet access, the "customer is requested to replenish the balance amount of the prepaid card such as by depositing payment with the participating prepaid card vendors or vending terminals." (Wu, 0030). Wu further states "Such vendors or terminals may be operatively associated with the central access server maintained by the wireless service provider." (Wu, 0030).

133. Bruner frequently discusses partner and non partner websites (Bruner, 0021; 0057; 0078; 0079). A POSITA would understand these are merchants.

134. Therefore, Bruner alone or in combination with Wu discloses the verifying step is performed by a subscriber merchant service.

10. Claim 10

a) 10. The method of claim 1, wherein the connecting step includes connecting the web-ready device to the router via a wireless connection.

135. Bruner discloses a wireless connection "However, the system is not dependent on currently unavailable technology. Other wireless communication systems can be

used as the communication link 22 between the remote server 19 and the central server 16." (Bruner, 0035).

136. Clark also discloses a wireless connection "The network also comprises at least one mobile communication hub and a wireless local area network (LAN)." (Clark, 2:13-15)

137. For at least these reasons, Bruner alone or in combination with Clark discloses connecting the web-ready device to the router via a wireless connection.

138. Wu also discloses a wireless connection: "The portable wireless devices 20, 22, and 24 are connected to the base station 12 through a wireless access point 26 also referred to as a wireless local bridge." A POSITA would similarly have been motivated to combine Bruner and Wu to facilitate both wired and wireless connections. This would have involved combining known elements with predictable results.

139. See also claims 24[d] and 25.

11. Claim 11

a) 11. The method of claim 10, wherein a plurality of users can simultaneously connect web-ready devices to the router.

140. Bruner discloses a plurality of users accessing the internet simultaneously at the remote location in the following excerpt "In a presently preferred embodiment, the system comprises a remote server computer located within the aircraft to control

the operations of the system for the passengers in their seats at terminals or phone connections mounted in their seat location." (Bruner, 0011).

141. This is also disclosed in other section of Bruner, such as "It would be advantageous if remote internet users, such as in-flight passengers, during the course of an airline flight could access the internet so as to either keep abreast of current information or have access to Internet e-mail accounts for performing productive work. It would also be advantageous if *airline passengers could browse the Internet* as is commonly done now in ground-based systems for purchase of products or services on the World Wide Web." (Bruner, 0007, emphasis added). In fact, the plurality of users can be seen throughout Bruner (Bruner 0008; 0009; 0010; 0011; 0016; 0019; etc.). Figure 2 of Bruner also shows wherein a plurality of users may access the Internet simultaneously at the remote location by respectively establishing data connections with the router via their web-ready devices:

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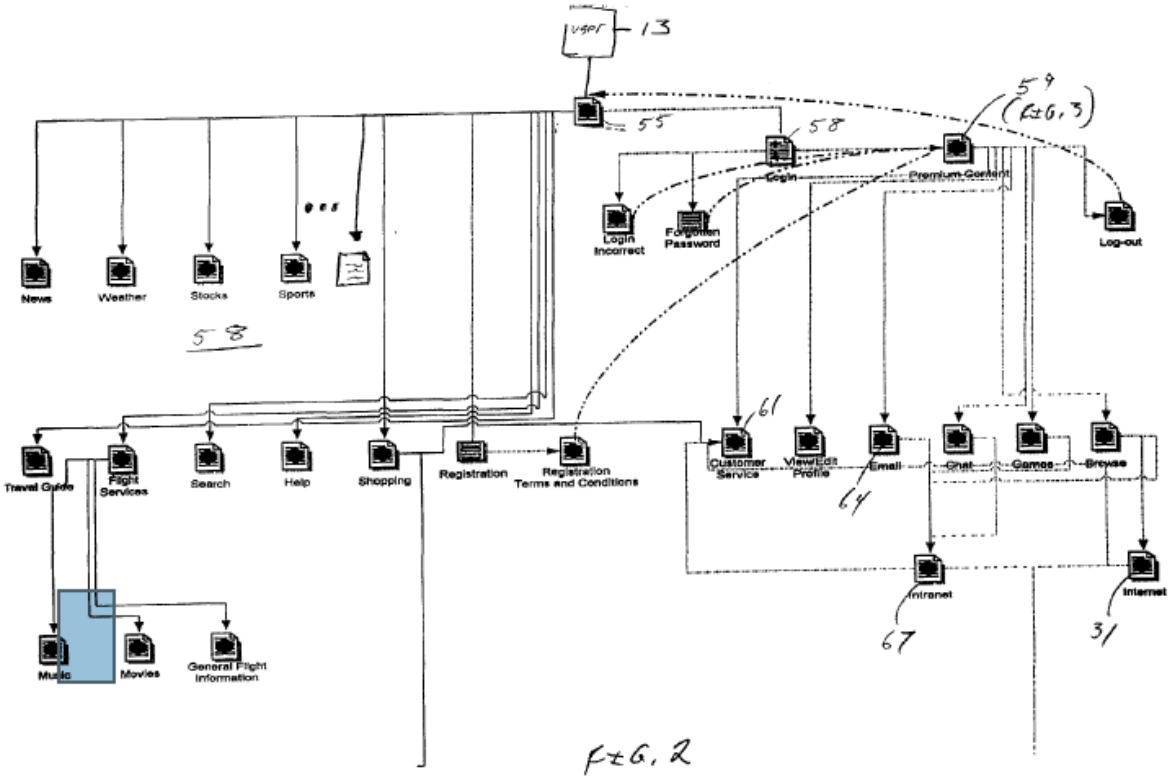

FIG. 2

142. For at least these reasons, Bruner discloses a plurality of users can simultaneously connect web-ready devices to the router.

143. See also claim 26.

12. Claim 12

a) 12. The method of claim 10, further comprising the steps of operatively coupling at least one wireless transceiver extender unit between the satellite dish and the router to extend the range of Internet access at the rural location.

144. Bruner discloses a wireless connection "However, the system is not dependent on currently unavailable technology. Other wireless communication systems can be

used as the communication link 22 between the remote server 19 and the central server 16." (Bruner, 0035).

145. Wireless extenders, also called repeaters, were very common at the time of the '469 patent[10,11,12]. I was personally using such devices from at least as early as 2003.

146. Wu discloses an extender "The portable wireless devices 20, 22, and 24 are connected to the base station 12 through a wireless access point 26 also referred to as a wireless local bridge." (Wu, 48). A POSITA would readily understand that this wireless local brings is an extender. It provides access to the base station. A POSITA would have found it obvious to improve Bruner's wireless access by adding the extender of Wu. Extenders were well known at the time, and this would have been a combination of known elements with predictable results.

147. Wu also discloses using multiple extenders. "It is noted that multiple access points and a wired network backbone may be utilized to create a multiple cell configuration for greater connection range." (Wu, 0049). A POSITA would understand based on the above disclosure that at least one of the access points in the

[10] https://h10032.www1.hp.com/ctg/Manual/c00241920.pdf
[11] https://gcm-networking.netlify.app/www.home-network-help.com/wireless-repeater.html
[12] https://www.ciscopress.com/articles/article.asp?p=426639&seqNum=6

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above disclosure would be acting as a wireless transceiver extender unit between the satellite dish and router in Wu's system.

148. A POSITA at the time of the '469 Patent would have found it obvious to use at least one wireless extender in combination with the teachings of Bruner and/or Bruner in view of Clark.

149. Furthermore, a POSITA would have found it obvious to combine the extender of Wu with the system of Bruner in order to reach more users more efficiently. This would have involved combining known elements with predictable results.

13. Claim 13

a) 13. The method of claim 1, further comprising an amplifier and antenna operatively coupled to the router.

150. It should be first noted that a POSITA would understand that a wireless internet hotspot requires an antenna. The 802.11 standard is the standard for Wi-Fi. 802.11n introduced multiple input multiple output (MIMO)[13,14,15] antennas to improve performance over the antennas disclosed in earlier versions of the

[13] https://www.fs.com/blog/80211-wireless-standards-explained-35.html
[14] https://www.intel.com/content/www/us/en/support/articles/000005725/wireless/legacy-intel-wireless-products.html
[15] https://www.data-alliance.net/blog/mimo-multiple-in-multiple-out-technology-in-80211ac-and-80211n/

standard.[16] Amplifiers are also a common part of router technology[17,18] and have been since the time of the ’469 patent’s invention.[19] An antenna and amplifier operatively coupled to the router would have been obvious to a POSITA. Figure 1 of Bruner explicitly shows antenna being used:

[16] https://pdos.csail.mit.edu/archive/decouto/papers/802.11.pdf
[17] https://www.ti.com/pdfs/bcg/ar7wi_fact_sheet.pdf
[18] https://www.downloads.netgear.com/files/GDC/ANT2405v1/Antennas_Datasheet_26Mar2004.pdf
[19] https://pdos.csail.mit.edu/archive/decouto/papers/802.11.pdf

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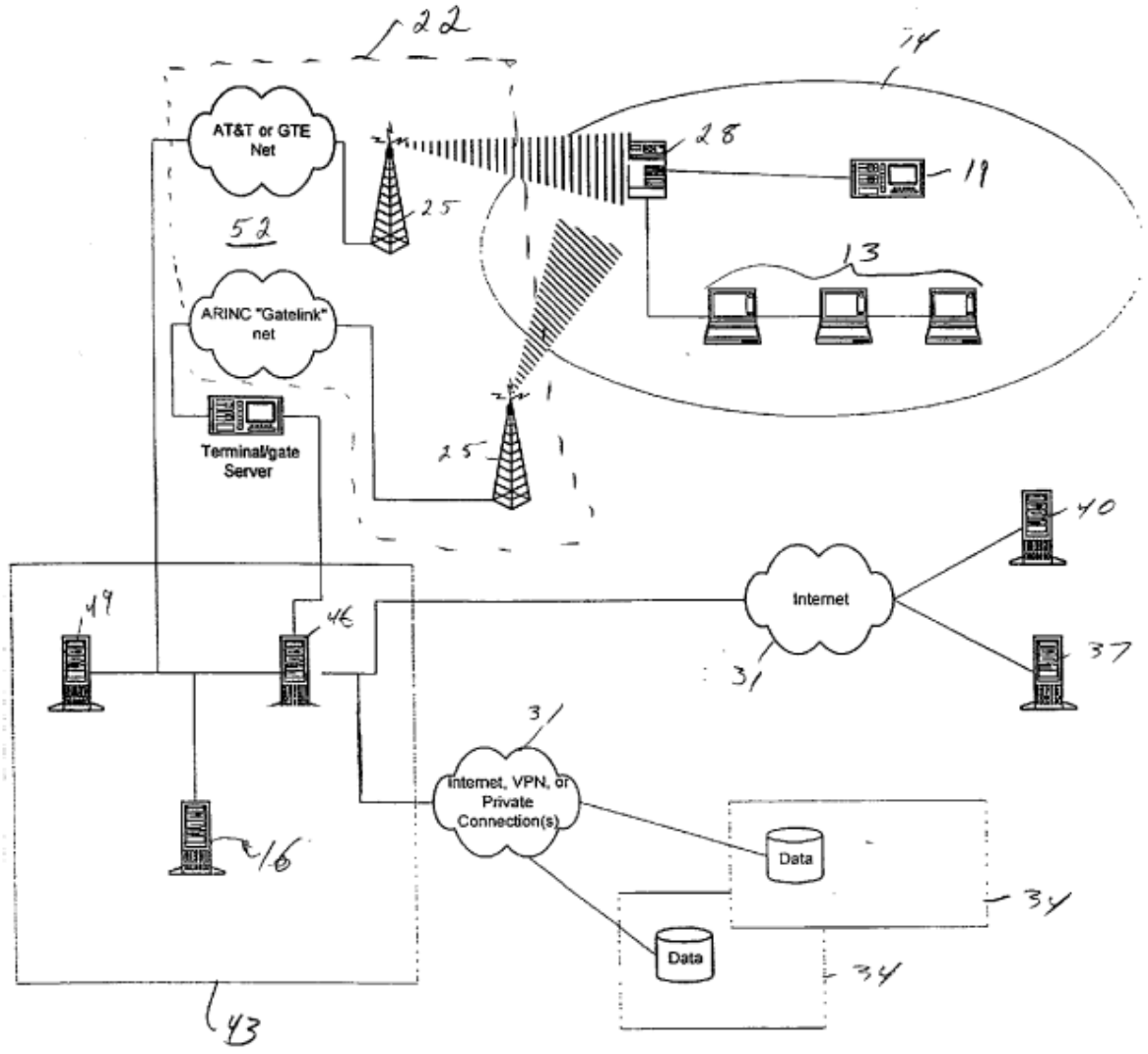

FIG. 1

151. Therefore, a POSITA would have found an amplifier and antenna obvious in light of Bruner.

152. Clark also discloses an amplifier and antenna: “In one embodiment, the LAN 104 is a wireless ethernet LAN connecting multiple remote personal computers (PCs) as nodes. In one embodiment, the LAN 104 covers an "on site" radius of up

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to ½ mile at 2 Mbps from a mobile hub station, strategically placed at the designated location, such as mobile vehicle 103. (Clark, 4:8-14) A POSITA would understand that this description is only possible with an amplifier and antenna.

153. Clark also explicitly discloses an antenna. As one example "Wireless local LAN connectivity and wireless phone systems may be provided for personal mobility. It may be equipped with two fully automated antenna systems for image delivery and production Intranet services. Other functionalities, as described below, may be included for full 25 wireless connectivity." (Clark 7:21-26).

154. For at least these reasons Bruner alone or Bruner combined with Clark discloses an amplifier and antenna operatively coupled to the router. A POSITA's motivation to combine Bruner and Clark was discussed in section III.D of this report. This would involve combining known elements with a predictable result.

155. Rothblatt also discloses an amplifier and antenna coupled to a router. For example, Rothblatt teaches a digital broadcast receiver that receives satellite broadcasts using an antenna. (Rothblatt Fig. 5). Rothblatt further discloses "Within the digital broadcast receiver 21, a low noise amplifier 90 boosts the satellite signal, and the boosted signal is received by an RF front end and QPSK demodulator 92." (Rothblatt 13:5-8). A POSITA would have been motivated to combine Rothblatt with Bruner and Clark to facilitate extended wireless connections. This would have involved combining known elements with predictable results. See also claim 29.

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14. Claim 14

a) 14. The method of claim 10, wherein the wireless connection is one of an 802.11a wireless area network, an 802.11b wireless area network, an 802.11g wireless area network, and an 802.11n in wireless area network.

156. The 802.11 standards were well known prior to the '469 patent. The first version of 802.11 was released to the public in 1997[20,21,22,23]. In 1990, the IEEE formed the 802.11 working group to develop WLAN standards. In 1997, the first official IEEE 802.11 standard was published, providing speeds of 1 Mbps and 2 Mbps in the 2.4 GHz band. 802.11g was published in 2003 and 802.11n was released in 2009.

157. Wu explicitly discloses the 802.11 standard "In the preferred embodiment of the wireless access network 10, the portable wireless devices 20, 22, and 24 and the wireless access point 26 communicates through radio wave transmissions. The wireless network interface and the wireless access point 26 conforms with the Institute of Electrical and Electronics Engineers (IEEE) standard 802.11 and extensions thereof such as IEEE 802.lla and 802.llb for standardizing wireless local area networks (wireless LANs)." (Wu, 0050), see also Wu (0051, 0056)

[20] https://www.wevolver.com/article/the-evolution-of-wi-fi-networks-from-ieee-80211-to-wi-fi-6e
[21] http://hulk.bu.edu/pubs/papers/2014/TR-2014-04-29.pdf
[22] https://www.draytek.co.uk/information/blog/blog-wifi-history
[23] http://metro.cs.ucla.edu/papers/Pefkianakis.ISCC11.pdf

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158. A POSITA at the time of the ’469 Patent would have found it obvious to use an 802.11a, 802.11b, 802.11g, or 802.11n standard router in combination with the teachings of Bruner and/or Bruner in view of Clark.

159. Furthermore, a POSITA would have found it obvious to take the generic wireless network described in Bruner and combine it with Wu to provide a standardized wireless method that would be accessible by a wide number of devices. This would have involved combining known elements to achieve predictable results.

160. See also claim 32.

15. Claim 24

a) 24 [pre]. An Internet Hotspot comprising:

161. Bruner discloses a remote internet system (Bruner, 0021). Bruner makes it quite clear that this is accomplished via an internet hotspot “While the invention is described with specific reference to an in-flight intranet system, it will be understood by those skilled the art that the invention is generally applicable to any remote vehicle or building including aircraft, ships, trains and hotels.” (Bruner, 00002) A POSITA would readily understand that internet on aircraft, ships, and trains can only be accomplished via an internet hotspot. Bruner discusses at length the issues with remote locations and mobile locations accessing the internet, then states “It is therefore an object of the present invention to provide a method and apparatus to

allow airline passengers or other remotely located users, to access the Internet during the course of an airline flight, or from remote land-based locations." (Bruner, 0008).

162. Clark teaches a mobile hub. As one example "In one embodiment, the network comprises a wireless local area network (LAN), ***at least one mobile hub,*** and a wireless wide are a network (WAN) that includes a satellite communication system with a network operations center to control voice and data traffic" (Clark 2:53-58, emphasis added). The mobile hub is disclosed throughout Clark (Clark 2:24-29; 4:12-14; 4:22-29; claim 3).

163. Bruner alone, or Bruner combined with Clark disclose the Internet Hotspot of claim 24[pre]. A POSITA's motivation to combine Bruner and Clark was discussed in section III.D of this report. This would involve combining known elements with a predictable result.

164. Furthermore, Wu discloses: "In the present invention, there is generally provided a ***base station in communication with one or more wireless stations*** comprising, for example, portable electronic devices." (Wu, 0007, emphasis added). Thus, Bruner alone, or Bruner combined with Wu disclose the Internet Hotspot of claim 24[pre]. A POSITA's motivation to combine Bruner and Wu was discussed in section III.E of this report. This would involve combining known elements with a predictable result.

165. See also claim 1[pre].

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b) 24 [a] a satellite dish communicating with the Internet via one or more data links with a satellite;

166. Bruner states "The present invention delivers high-speed connections and uses a combination of existing ***satellite systems*** and ground technologies to update information on the onboard server." (Bruner, 0015, emphasis added).

167. Bruner also discloses communicating with the internet via data link with a satellite in the following excerpt: "By using a communications network 22, such as provided by ground-based radio towers 25 and/or satellite based remote communication systems, the airborne based remote equipment 19 communicates with the network on the ground based central system 16." (Bruner, 0021).

168. Bruner also provides details on ways in which the satellite data link may be used: "Most preferably, this relatively low bandwidth in-flight link is complemented by a high bandwidth (600 kbps) one way satellite up link to the aircraft." (Bruner, 0035)

169. Satellite data links are further described in other portions of Bruner (e.g., Bruner 0080; Claim 2).

170. Clark also discloses a satellite data link. One disclosure in Clark is "A telecomputer network is described. ***The network comprises a satellite communication system***, at least one mobile vehicle, and a wireless local area network (LAN). In one embodiment, the satellite communication system transfers

information using ethernet packet switching. In one embodiment, the wireless LAN transfers information using the TCP/IP protocol. The mobile vehicle or portable field unit is configured to transfer information as a *single nomadic transmission/reception point between the satellite communication system* and the wireless LAN." (Clark, Abstract, emphasis added). Clark discloses satellite data links throughout (e.g. Clark 2:24-29; Clark 2:53-57; 2:60-64, 4:32-35; 8:54; 9:7; Fig. 1).

171. Bruner alone, or Bruner combined with Clark disclose the satellite dish communicating with the Internet via data link with a satellite of claim 24[a]. A POSITA's motivation to combine Bruner and Clark was discussed in section III.D of this report. This would involve combining known elements with a predictable result.

172. Wu also discloses a satellite data link. For example, Wu discloses "The network system of claim 1 wherein the base station is connected to the global communications network through a communications channel selected from the group consisting of ethernet networks, frame relay networks, synchronous optical network (SONET), asynchronous transfer mode (ATM) networks, digital subscriber loop (xDSL) networks, cable networks, *satellite links*, T1T3/E1 trunk lines, integrated services digital network (ISDN), *satellite feed lines*, and digital cable feed lines." (Wu, Claim 6) (emphasis added). Wu discloses a satellite data link throughout. (E.G., Wu, 0048).

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173. Bruner alone, Bruner combined with Wu disclose the satellite dish communicating with the Internet via data link with a satellite of claim 24[a]. A POSITA's motivation to combine Bruner and Wu was discussed in section III.E of this report. This would involve combining known elements with a predictable result.

174. See also claims 1a and 1b.

c) 24 [b] at least one router operatively coupled to the satellite dish;

175. Bruner states "With the system 10 of the present invention, airborne users do not communicate directly with the ground network 43 but use the remote ADS server 19 as a router." (Bruner, 0025). Bruner further describes the ADS performing routing functions "The ADS is the inflight remote server 19 that preferably serves content to inflight users of the system and also acts as a gateway to the ground based servers (16, 34, 37, 40) for additional content." (Bruner, 0023); (Bruner, 0021).

176. A POSITA would readily understand that Bruner discloses a router operatively coupled to the satellite dish. A POSITA would further understand that the term *operatively coupled* has its plain and ordinary meaning of operating together, not necessarily directly physically connected.

177. Clark also discloses a router in claims 17 and 24. Clark also discloses "satellite communication System comprises a plurality of hubs, wherein each hub comprises a wireless router and a Satellite transmission/reception System to relay information between hubs." (Clark, 10:28-30)

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178. Bruner alone, or Bruner combined with Clark disclose at least one router operatively coupled to the satellite dish of claim 24[b]. A POSITA's motivation to combine Bruner and Clark was discussed in section III.D of this report. This would involve combining known elements with a predictable result.

179. Wu also discloses a router operatively coupled to a satellite dish. For example, Wu discloses "With reference again to FIG. 1, the base station 12 is connected to the global communications networks 16 (i.e., the Internet) through a router 14. The router 14 operates to direct the communications traffic from the base station 12 through the global communications network 16 to a service provider router 34 connected at the other end thereof." (Wu, 0058).

180. A POSITA would readily understand that Wu discloses a router operatively coupled to a satellite dish. A POSITA would further understand that the term operatively coupled has its plain and ordinary meaning of operating together, not necessarily directly physically connected.

181. Bruner alone and/or Bruner combined with Wu disclose at least one router operatively coupled to the satellite dish of claim 24[b]. A POSITA's motivation to combine Bruner and Wu was discussed in section III.E of this report. This would involve combining known elements with a predictable result.

182. See also claim 1[b].

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d) 24 [c] a subscriber access unit operatively coupled between the satellite dish and the at least one router, the subscriber access unit being capable of authenticating a subscription account associated with a user prior to allowing the user access to the Internet; and

183. Bruner states "With the system 10 of the present invention, airborne users do not communicate directly with the ground network 43 but use the remote ADS server 19 as a router. Instead, all services are provided via a proxy or gateway services." (Bruner, 0025). Bruner states "the inflight airborne server is connected to existing proprietary telecommunications networks, such as operated by GTE, AT&T, or INMARSAT resellers like COMSAT." (Bruner, 0025). Bruner further discloses that "access to ground based internet content, whether e-commerce or e-mail, is preferably via an application layered gateway or proxy, present on the airborne server." (Bruner, 0026). A POSITA would understand that this disclosure describes subscriber access units.

184. This is described in other sections of Bruner such as "For those passengers that simply must have direct access to the Internet, the system needs an object caching server to provide rapid access to frequently accessed sites. The proxy/object cache should be capable of linking into an existing object cache hierarchy or setting up one of its own. Cache nodes would exist on both the ADS and servers in the GSN. Squid is one possibility, MS proxy is another." (Bruner, 0076) A POSITA would readily understand that this is describing a subscriber access unit.

185. The subscriber access unit is further described in the following excerpt from Bruner "In addition, the user can gain access to his or her land based e-mail system 64 and or an aircraft's intranet 67, which is a system accessible only by those members on the flight or, more generally, those connected to the remote server 19, wherever it may be located. Within the intranet, users may be engaged in conversations or chat with other passengers on the flight, engage in on-flight activities such as games or browsing ***through activities provided on the ADS server***. The intranet also provides access to the internet through the ground based GSN 43." (Bruner, 0030, emphasis added).

186. Bruner discloses authentication in the following excerpt: "Preferably, as shown in FIG. 2, the user 10 upon accessing the system of the present invention via a home page 55 logs in 58 by providing a user name and password." (Bruner, 0028). A POSITA would recognize that the username and password are indicia of a subscription account. This is disclosed in other section of Bruner such as "FIG. 2 shows a homepage initial site map for airline passengers logging into the inflight Internet system," (Bruner, 0019), "Such a system provides that the proxy services insure that all air to ground traffic may be logged and billed accordingly," (Bruner, 0026), "This provides protection from any unwanted traffic on the telecommunications network 22, as well as preventing users from bypassing the log-in and accounting services involved with the ADS or gateway," (Bruner, 0026).

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187. Bruner discloses providing a subscriber access unit operatively coupled between the satellite dish and the router.

188. Wu also discloses providing a subscriber access unit operatively coupled between the satellite dish and the router. For example, Wu discloses "The base station 12 mainly controls and administers local wireless access by one or more customers equipped with the wireless stations 20,22, and 24." (Wu, 0039). Wu also discloses that its base station "is connected to the global communications network through a communications channel" such as "satellite links" or "satellite feed lines." (Wu, Claim 6). Wu also discloses "The portable wireless devices 20, 22, and 24 are connected to the base station 12 through a wireless access point 26 also referred to as a wireless local bridge. The access point 26 is a hardware device, or software used in conjunction with a computer, that serves as a communications hub for wireless clients or stations, and provides a connection to a wired network (e.g., LAN, WAN)." (Wu, 0048).

189. Wu discloses authentication in the following excerpt: "Upon connection, the base station 12 prompts the portable wireless station 20, 22 or 24 to provide a valid PIN number and security code (e.g. password) corresponding to a prepaid card." (Wu, 0062). Indeed, Wu discloses authentication throughout, e.g., (Wu, 0059; 0060; 0063; claim 11).

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190. Wu thus discloses a subscriber access unit operatively coupled between a satellite dish and a router that is capable of authenticating a subscription account associated with a user prior to allowing the user access to the internet. Accordingly, Bruner combined with Wu also discloses the elements of claim 24[c]. A POSITA's motivation to combine Bruner and Wu was discussed in section III.E of this report. This would involve combining known elements with a predictable result.

191. See also claim 1c.

e) 24 [d] a web-ready device operatively coupled to the at least one router, the web-read device having a browser application operating thereon for accessing the Internet;

192. Bruner discloses "From a laptop computer for example, an inflight passenger 13 initiates a dial-up networking PPP connection to the ADS server 19 via the inflight telephone connection (not shown) located adjacent the passenger 13, such as in the seatback or in the armrest of the airline passengers seat." (Bruner, 0023). A POSITA would readily understand that a laptop is a web ready device.

193. Furthermore, Bruner explicitly discloses accessing the web: "Thus, the system of the present invention provides web based e-commerce, information and entertainment to remote users, such as onboard flight passengers." (Bruner, 0016). This is disclosed in other section of Bruner such as "Also the ground based systems are interconnected with website containing data 31 which are preferably operated by partners 34 with the system 10 of the present invention. The system also has access

to nonpartner websites 37 to allow the airborne based user 13 to access information from other websites, or to browse the users e-mail server 40 so as to provide communication between the remote traveler 13 and his or her home system 40 via the internet." (Bruner, 0021). Bruner also discloses the use of a browser application: "From this point, the user utilizes his or her internet browser software running on the laptop to access a variety of content." (Bruner, 0023).

194. Figure 1 of Bruner discloses the laptop devices (13) connecting to the remote communication system 28. System 28 is described as "The remote system preferably includes remote communication equipment 28 operably connected with the communication network 22." (Bruner, 0021).

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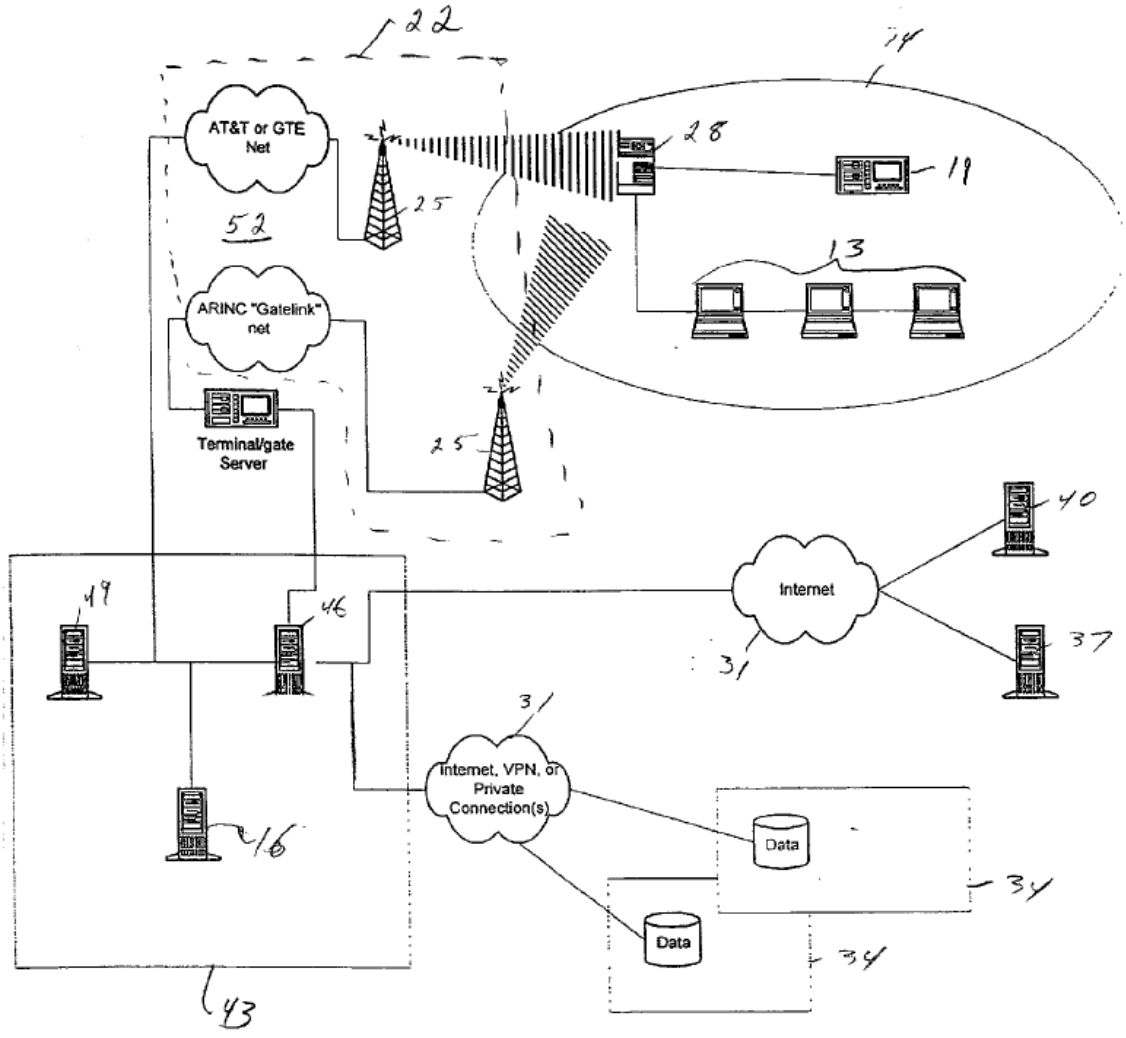

FIG. 1

195. For at least the reasons described in this section, Bruner discloses a web-ready device operatively coupled to the router.

196. Wu discloses "The portable wireless devices 20, 22, and 24 are connected to the base Station 12 through a wireless access point 26 also referred to as a wireless local bridge. The access point 26 is a hardware device, or software used in

conjunction with a computer, that serves as a communications hub for wireless clients or stations, and provides a connection to a wired network (e.g., LAN, WAN)." (Wu, 0048). Further, "The wireless access point 26 provides an interface between the wireless network interface of the wireless portable device 20, 22, or 24, and the wired portion of the wireless access network 10." (Wu, 0049). Based on this disclosure, a POSITA would readily understand that Wu discloses a web-ready device coupled to a router.

197. Wu also discloses a browser operating on the web-ready device for accessing the internet: "The customer can initiate the wireless remote access service by simply powering up the wireless station 20, 22, or 24, or by opening the browser software or email program residing on the wireless station 20, 22, or 24 within the wireless coverage area of the access point 26." (Wu, 0062).

198. For at least the reasons described in this section, Bruner in view of Wu discloses claim 24[d]. This would have involved combining known elements with predictable results.

199. See also claims 1[e] and 1[g].

f) 24 [e] wherein the satellite dish, at least one router and the subscriber access unit are located in a remote location a experiencing a relatively high volume of transient traffic;

200. Bruner is focused on accessing internet from a remote location. As one example from Bruner "In effect, the remote server 19 acts much like a local internet

on the remote location 14, be it a moving vehicle like an airplane or ship or ***a land-based remote location***." (Bruner, 0079, emphasis added). Bruner also discloses: "Typically, a webpage requires about 50 k to 60 k bytes of information. The bandwidth required to keep these webpages constantly updated can easily exceed the resources available to transmit this vast amount of information. This is also true of remote land based users such as ***those located in rural areas*** or on a floating oil rig, for example." (Bruner, 0006, emphasis added). Bruner also discloses: "the remote internet system 10 of the present invention to allow remote users 13, such as airline passengers, to conduct electronic commerce ("e-commerce") from a remote location 14, such as during the course of an airline flight." (Bruner, 0021).

201. As noted in the discussions regarding claims 24[a], 24[b], and 24[c], Bruner discloses a satellite dish, at least one router, and a subscriber access unit. Accordingly, for at least the reasons described in this section, Bruner discloses a satellite dish, at least one router and a subscriber access unit located in a remote location experiencing a relatively high volume of transient traffic.

202. Wu is also focused on accessing internet from a remote location. For example, Wu discloses "The present invention is generally directed to a network system capable of providing prepaid wireless remote access services." (Wu, 0006). Indeed, Wu discloses the remote location of its system throughout, e.g., "The wireless stations 20.22, and 24 may include any wireless-enabled electronic device that can

be used to connect to the base station 12 to remotely access the global communications network such as the Internet including the World Wide Web (WWW) for web browsing and the like." (Wu, 0038).

203. Wu further discloses a figure showing different devices, including a "universal internet box," a wireless access point, laptops, and a router being connected via internet to remotely located servers and routers. (Wu, Fig.1). A POSITA would understand based on the above disclosures that Wu discloses the satellite dish, router, and subscriber access unit located in a remote location experiencing a relatively high volume of internet traffic of claim 24[e].

204. For at least these reasons, Bruner in view of Wu discloses a satellite dish, at least one router and a subscriber access unit located in a remote location experiencing a relatively high volume of transient traffic. This would have involved combining known elements with predictable results.

205. See also claim 1d.

g) 24 [f] wherein the user may authenticate the subscription account and access the Internet at the remote location by establishing a data connection between the web-ready device and the router.

206. Bruner discloses accessing the internet at a remote location, for example "The system of the present invention operate is an Internet Content Provider and software developer that makes access to e-mail, real-time Internet and entertainment content affordable and reliable to remote travelers in commercial airplanes, business jets and

cruise ships where access to these services is expensive, difficult or unavailable." (Bruner, 0015)

207. Bruner discloses a subscription account: "Preferably, as shown in FIG. 2, the user 10 upon accessing the system of the present invention via a home page 55 logs in 58 by providing a user name and password." (Bruner, 0028). A POSITA would recognize that the username and password are indicia of a subscription account. This is disclosed in other section of Bruner such as "FIG. 2 shows a homepage initial site map for airline passengers logging into the inflight Internet system;" (Bruner, 0019).

208. Bruner discloses additional details about the subscription account "By way of brief example, the user provides basic information, such as name, e-mail address, and any other personal information that the operator of the site wishes to capture for future reference. For example, it may be desired to know certain demographic data about the user, such as age, sex, and home location, in order to be able to provide designated information to users who fit profiles of generally recognized demographic information. This user profile information is then stored on the database server 49. Thus, the next time the user accesses the site, that user inputs the log-in information and is then given access to the full content of the system 10." (Bruner, 0029). Bruner further discloses that "altering of connections can be configured to allow only communication to and from the ground distribution servers 46 and the central site 14. This provides protection form any unwanted traffic on the

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telecommunications network 22, as well as preventing users from bypassing the log-in and accounting services involved with the ADS or gateway." (Bruner, 0025).

209. Bruner discloses authentication in the following excerpt: "Preferably, as shown in FIG. 2, the user 10 upon accessing the system of the present invention via a home page 55 logs in 58 by providing a user name and password." (Bruner, 0028). A POSITA would recognize that the username and password are indicia of a subscription account. This is disclosed in other section of Bruner such as "FIG. 2 shows a homepage initial site map for airline passengers logging into the inflight Internet system," (Bruner, 0019), "Such a system provides that the proxy services insure that all air to ground traffic may be logged and billed accordingly," (Bruner, 0026), "This provides protection from any unwanted traffic on the telecommunications network 22, as well as preventing users from bypassing the log-in and accounting services involved with the ADS or gateway," (Bruner, 0026).

210. For at least these reasons, Bruner discloses user may authenticate the subscription account and access the Internet at the remote location by establishing a data connection between the web-ready device and the router.

211. Wu also discloses accessing the internet from a remote location. For example, Wu discloses "The present invention is generally directed to a network system capable of providing prepaid wireless remote access services." (Wu, 0006). Indeed, Wu discloses the remote location of its system throughout, e.g., "The wireless

stations 20.22, and 24 may include any wireless-enabled electronic device that can be used to connect to the base station 12 to remotely access the global communications network such as the Internet including the World Wide Web (WWW) for web browsing and the like." (Wu, 0038).

212. Wu also discloses a subscription account and authentication in the following excerpt: "Upon connection, the base station 12 prompts the portable wireless station 20, 22 or 24 to provide a valid PIN number and security code (e.g. password) corresponding to a prepaid card." (Wu, 0062).

213. Wu discloses authentication and subscription accounts throughout: "The central billing server 32 includes a PIN database for storing information including account data, customer profiles, customer-selected security codes, prepaid card usage history, schedule of charge rates for the services for the wireless remote access service." (Wu, 0059). See also, e.g., "The RADIUS server 30 receives an access request from the RADIUS client (i.e., the base station 12 or the web access server 28) for authentication and authorization for access." (Wu, 0063); "The RADIUS server 30 is programmed to execute authentication, authorization, and accounting procedures for checking and validating information provided by the customer desiring to access the services." (Wu, 0060).

214. Wu also discloses a user establishing a data connection between a web-ready device and a router. For example, Wu discloses "The customer can initiate the

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wireless remote access service by simply powering up the wireless station 20, 22, or 24, or by opening the browser software or email program residing on the wireless station 20, 22, or 24 within the wireless coverage area of the access point 26." (Wu, 0062).

215. For at least these reasons, Bruner in view of Wu discloses user may authenticate the subscription account and access the Internet at the remote location by establishing a data connection between the web-ready device and the router. This would have involved combining known elements with predictable results.

16. Claim 25

a) 25. The Internet Hotspot of claim 24, wherein the data connection is one of a wired data connection and a wireless data connection.

216. Bruner discloses "From a laptop computer for example, an inflight passenger 13 initiates a dial-up networking PPP connection to the ADS server 19 via the inflight telephone connection (not shown) located adjacent the passenger 13, such as in the seatback or in the armrest of the airline passengers seat." (Bruner, 0023). A POSITA would readily understand that a laptop is a web ready device. A POSITA would know that PPP or Point to Point Protocol is a protocol for a direct connection between two nodes. PPP is described as "PPP is a direct connection from one modem to another modem over a phone line." A POSITA would understand that a direct connection over a phone line is a wired connection.

217. Bruner also discloses a wireless connection “However, the system is not dependent on currently unavailable technology. Other wireless communication systems can be used as the communication link 22 between the remote server 19 and the central server 16.” (Bruner, 0035).

218. Clark also discloses a wireless connection "The network also comprises at least one mobile communication hub and a wireless local area network (LAN)." (Clark, 2:13-15). A POSITA would have been motivated to combine Bruner and Clark in order to facilitate both wired and wireless connections. This would have involved combining known elements with predictable results.

219. Wu also discloses a wireless connection: “The portable wireless devices 20, 22, and 24 are connected to the base station 12 through a wireless access point 26 also referred to as a wireless local bridge.” A POSITA would similarly have been motivated to combine Bruner and Wu to facilitate both wired and wireless connections. This would have involved combining known elements with predictable results.

220. For at least these reasons, Bruner alone or in combination with Clark or with Wu discloses the hotspot of claim 24 where the data connection is one of a wired data connection and a wireless data connection.

17. Claim 26

a) 26. The Internet Hotspot of claim 24, wherein a plurality of users may access the Internet simultaneously at the remote location by respectively establishing data connections with the router via their web-ready devices.

221. Bruner discloses a plurality of users accessing the internet simultaneously at the remote location in the following excerpt "In a presently preferred embodiment, the system comprises a remote server computer located within the aircraft to control the operations of the system for the passengers in their seats at terminals or phone connections mounted in their seat location." (Bruner, 0011).

222. This is also disclosed in other sections of Bruner, such as "It would be advantageous if remote internet users, such as in-flight passengers, during the course of an airline flight could access the internet so as to either keep abreast of current information or have access to Internet e-mail accounts for performing productive work. It would also be advantageous if *airline passengers could browse the Internet* as is commonly done now in ground-based systems for purchase of products or services on the World Wide Web." (Bruner, 0007, emphasis added). In fact, the plurality of users can be seen throughout Bruner (Bruner 0008; 0009; 0010; 0011; 0016; 0019; etc.). Figure 2 of Bruner also shows wherein a plurality of users may access the Internet simultaneously at the remote location by respectively establishing data connections with the router via their web-ready devices:

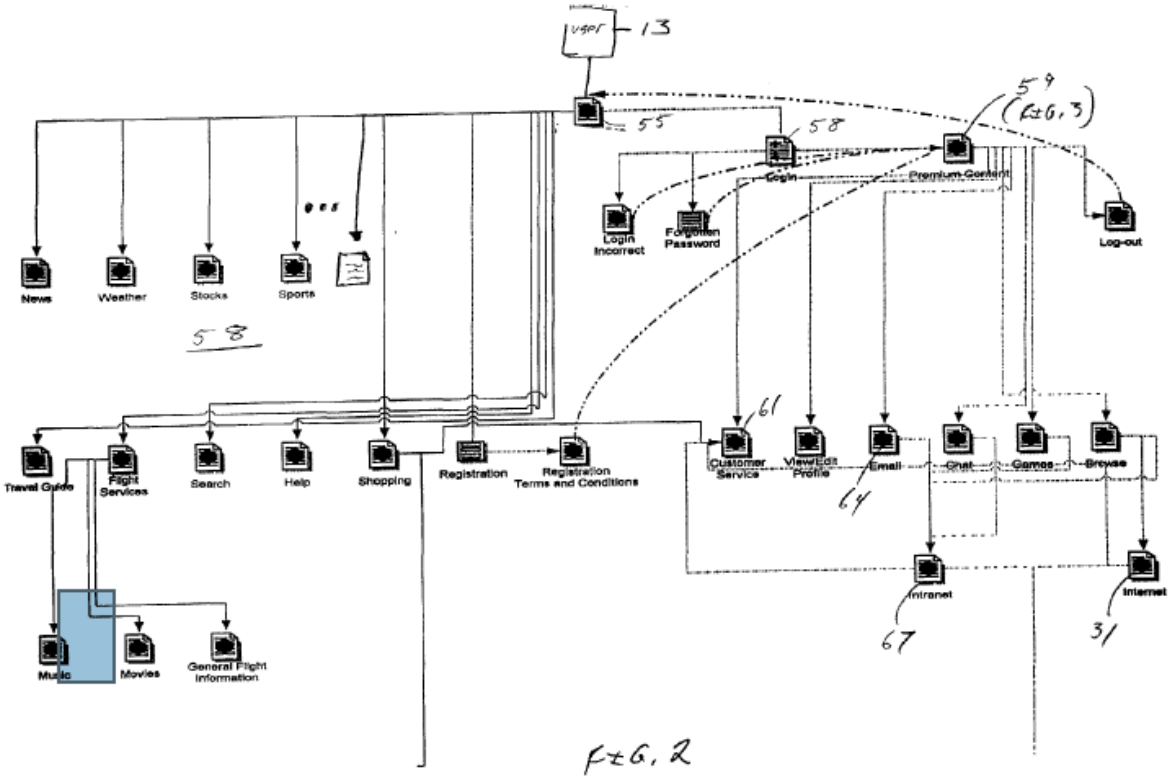

FIG. 2

223. For at least these reasons, Bruner discloses a plurality of users may access the Internet simultaneously at the remote location by respectively establishing data connections with the router via their web-ready devices.

224. Furthermore, Wu discloses every element of claim 26. Beginning in the Abstract, Wu states "A network system for providing a customer with a prepaid wireless remote access service where the system comprises ***a base station including a wireless access point for communicating through a wireless medium*** with a wireless station operated by a customer, a global communications network including a plurality of remote computer servers, the global communications network being

connected to the base station, and a central access server in communication with the base station through the global communications network for providing the customer with the wireless prepaid remote access service from the wireless station to the plurality of remote computer servers." (Wu Abstract, emphasis added) A POSITA would understand that a wireless access point is an Internet hotspot wherein a plurality of users may access the internet simultaneously.

225. The wireless access point is further disclosed throughout Wu (Wu, 37, 48, 49, 50, 51, 52, 53, 54, etc.). We also discloses a plurality of users accessing the internet simultaneously via the wireless access point/hotspot "The base station 12 may be implemented in a variety of environments where multiple customers may obtain high speed access to the global communications network 16 (i.e., the Internet) over a range of IP configurations (e.g. fixed IP, DHCP client, or private IP) on the wireless stations 20, 22, and 24." (Wu, 39).

226. Bruner and Wu, alone or in combination disclose a plurality of users may access the Internet simultaneously at the remote location by respectively establishing data connections with the router via their web-ready devices.

18. Claim 27

a) 27. The Internet Hotspot of claim 26, wherein the data connections include wired data connections.

227. Bruner discloses "From a laptop computer for example, an inflight passenger 13 initiates a dial-up networking PPP connection to the ADS server 19 via the

inflight telephone connection (not shown) located adjacent the passenger 13, such as in the seatback or in the armrest of the airline passengers seat." (Bruner, 0023). A POSITA would readily understand that a laptop is a web ready device. A POSITA would know that PPP or Point to Point Protocol is a protocol for a direct connection between two nodes. PPP is described as "PPP is a direct connection from one modem to another modem over a phone line." A POSITA would understand that a direct connection over a phone line is a wired connection.

228. See also claim 25.

229. For at least these reasons, Bruner discloses the internet hotspot wherein the data connections include wired data connections.

19. Claim 28

a) 28. The Internet Hotspot of claim 26, wherein the data connections include wireless data connections.

230. Bruner also discloses a wireless connection "However, the system is not dependent on currently unavailable technology. Other wireless communication systems can be used as the communication link 22 between the remote server 19 and the central server 16." (Bruner, 0035).

231. Clark also discloses a wireless connection "The network also comprises at least one mobile communication hub and a wireless local area network (LAN)." (Clark, 2:13-15)

232. Wu also discloses wireless data connections Beginning in the Abstract, Wu states "A network system for providing a customer with a prepaid wireless remote access service where the system comprises ***a base station including a wireless access point for communicating through a wireless medium*** with a wireless station operated by a customer, a global communications network including a plurality of remote computer servers, the global communications network being connected to the base station, and a central access server in communication with the base station through the global communications network for providing the customer with the wireless prepaid remote access service from the wireless station to the plurality of remote computer servers." (Wu Abstract, emphasis added) A POSITA would understand that a wireless access point is an Internet hotspot wherein a plurality of users may access the internet simultaneously.

233. See also claim 25.

234. For at least these reasons, Bruner alone; Wu alone; Bruner in combination with Clark; and Bruner in combination with Wu; discloses the hotspot of claim 24 where the data connection includes wireless data connections.

20. Claim 29

a) 29. The Internet Hotspot of claim 28, further comprising an amplifier and antenna operatively coupled to the router.

235. It should be first noted that a POSITA would understand that a wireless internet hotspot requires an antenna. The 802.11 standard is the standard for Wi-Fi.

802.11n introduced multiple input multiple output (MIMO)[24,25,26] antennas to improve performance over the antennas disclosed in earlier versions of the standard.[27] Amplifiers are also commonly part of router technology[28,29] and have been since the time of the '469 patent's invention.[30] An antenna and amplifier operatively coupled to the router would have been obvious to a POSITA.

236. Clark also discloses an amplifier and antenna: "In one embodiment, the LAN 104 is a wireless ethernet LAN connecting multiple remote personal computers (PCs) as nodes. In one embodiment, the LAN 104 covers an "on site" radius of up to ½ mile at 2 Mbps from a mobile hub station, strategically placed at the designated location, such as mobile vehicle 103. (Clark, 4:8-14) A POSITA would understand that this description is only possible with an amplifier and antenna.

237. Clark also explicitly discloses an antenna. As one example "Wireless local LAN connectivity and wireless phone systems may be provided for personal

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[24] https://www.fs.com/blog/80211-wireless-standards-explained-35.html

[25] https://www.intel.com/content/www/us/en/support/articles/000005725/wireless/legacy-intel-wireless-products.html

[26] https://www.data-alliance.net/blog/mimo-multiple-in-multiple-out-technology-in-80211ac-and-80211n/

[27] https://pdos.csail.mit.edu/archive/decouto/papers/802.11.pdf

[28] https://www.ti.com/pdfs/bcg/ar7wi_fact_sheet.pdf

[29] https://www.downloads.netgear.com/files/GDC/ANT2405v1/Antennas_Datasheet_26Mar2004.pdf

[30] https://pdos.csail.mit.edu/archive/decouto/papers/802.11.pdf

mobility. It may be equipped with two fully automated antenna systems for image delivery and production Intranet services. Other functionalities, as described below, may be included for full 25 wireless connectivity." (Clark 7:21-26)

238. For at least these reasons, Bruner alone or in combination with Clark discloses the Internet Hotspot of claim 28, further comprising an amplifier and antenna operatively coupled to the router.

239. Rothblatt also discloses an amplifier and antenna coupled to a router. For example, Rothblatt teaches a digital broadcast receiver that receives satellite broadcasts using an antenna. (Rothblatt Fig. 5). Rothblatt further discloses "Within the digital broadcast receiver 21, a low noise amplifier 90 boosts the satellite signal, and the boosted signal is received by an RF front end and QPSK demodulator 92." (Rothblatt 13:5-8). A POSITA would have been motivated to combine Rothblatt with Bruner and Clark to facilitate extended wireless connections. This would have involved combining known elements with predictable results. See also claim 13.

21. Claim 30

a) 30. The Internet Hotspot of claim 29, wherein the router is a Vivato outdoor switch.

240. Claim 30 only adds a well-known product, a Vivato outdoor switch, and as such would have been obvious to a POSITA. The Vivato products[31,32], including the

[31] https://www.wired.com/2003/05/wifirevolution/
[32] https://www.edn.com/unlock-and-load-characterizing-todays-plls/

outdoor switch[33] were well known long before the '469 patent. A POSITA at the time of the '469 Patent would have found it obvious to use a Vivato outdoor switch as a router in combination with the teachings of Bruner and/or Bruner in view of Clark.

22. Claim 31

a) 31. The Internet Hotspot of claim 24, further comprising at least one wireless extender transceiver operatively coupled between the subscriber access unit and the router.

241. Wireless extenders, also called repeaters, were very common at the time of the '469 patent[34,35,36]. I was personally using such devices from at least as early as 2003.

242. Wu explicitly discloses an extender "The portable wireless devices 20, 22, and 24 are connected to the base station 12 through a wireless access point 26 also referred to as a wireless local bridge." (Wu, 48). A POSITA would readily understand that this wireless local brings is an extender. It provides access to the base station.

243. A POSITA at the time of the '469 Patent would have found it obvious to use at least one wireless extender in combination with the teachings of Bruner alone. Furthermore, a POSITA would have found it obvious to combine Bruner and Wu.

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[33] https://www.networkcomputing.com/wi-fi/vivato-antennas-bring-wi-fi-to-spokane
[34] https://h10032.www1.hp.com/ctg/Manual/c00241920.pdf
[35] https://gcm-networking.netlify.app/www.home-network-help.com/wireless-repeater.html
[36] https://www.ciscopress.com/articles/article.asp?p=426639&seqNum=6

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The wireless extender of Wu would provide more access to the users of Bruner, thus improving Bruner. This would be combining known elements with predictable results.

23. Claim 32

a) 32. The Internet Hotspot of claim 25, wherein the wireless connection is one of an 802.11a wireless area network, an 802.11b wireless area network, an 802.11g wireless area network, and an 802.11n wireless area network.

244. The 802.11 standards were well known prior to the '469 patent. The first version of 802.11 was released to the public in 1997[37,38,39,40]. In 1990, the IEEE formed the 802.11 working group to develop WLAN standards. In 1997, the first official IEEE 802.11 standard was published, providing speeds of 1 Mbps and 2 Mbps in the 2.4 GHz band. 802.11g was published in 2003 and 802.11n was released in 2009. Wu explicitly discloses the 802.11 Wireless standard: "The wireless network interface and the wireless access point 26 conforms with the Institute of Electrical and Electronics Engineers (IEEE) standard 802.11 and extensions thereof such as IEEE 802.lla and 802.llb for standardizing wireless local area networks

[37] https://www.wevolver.com/article/the-evolution-of-wi-fi-networks-from-ieee-80211-to-wi-fi-6e
[38] http://hulk.bu.edu/pubs/papers/2014/TR-2014-04-29.pdf
[39] https://www.draytek.co.uk/information/blog/blog-wifi-history
[40] http://metro.cs.ucla.edu/papers/Pefkianakis.ISCC11.pdf

(wireless LANs). “ (Wu, 0049) A POSITA would have found it obvious to combine the explicit wireless standard of Wu with the wireless connectivity of Clark.

245. Wu explicitly discloses the 802.11 standard “In the preferred embodiment of the wireless access network 10, the portable wireless devices 20, 22, and 24 and the wireless access point 26 communicates through radio wave transmissions. The wireless network interface and the wireless access point 26 conforms with the Institute of Electrical and Electronics Engineers (IEEE) standard 802.11 and extensions thereof such as IEEE 802.lla and 802.llb for standardizing wireless local area networks (wireless LANs).” (Wu, 0050), see also Wu (0051, 0056)

246. A POSITA at the time of the ’469 Patent would have found it obvious to use an 802.11a, 802.11b, 802.11g, or 802.11n standard router in combination with the teachings of Bruner and/or Bruner in view of Clark.

247. A POSITA would have found it obvious to combine the general description of Wireless in Bruner or Clark, with the specific wireless standard of Wu. This would provide access to a wide range of devices thus improving Bruner or Clark.

248. See also claim 14.

IV. CONCLUSIONS

249. Based on the analysis provided in this declaration along with my education, training, and experience, it is my opinion that the claims of the ‘469 described in this

declaration are anticipated or rendered obvious by the prior art cited as viewed by one of ordinary skill in the art.

250. The claims referenced in this declaration are disclosed in Bruner, or would have been obvious in view of Bruner.

251. Furthermore, the claims referenced in this declaration would have been obvious in view of Bruner and Wu. Such a combination would involve combining known elements with a predictable result.

252. Furthermore, the claims referenced in this declaration would have been obvious in view of Bruner and Clark. Such a combination would involve combining known elements with a predictable result.

253. Furthermore, the claims referenced in this declaration would have been obvious in view of Bruner, Clark, and Rothblatt. Such a combination would involve combining known elements with a predictable result.

Dr. Chuck Easttom

29 April 2025

Date

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