IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

ROVI GUIDES, INC.; ROVI TECHNOLOGIES CORP.; and VEVEO, INC.,

Plaintiffs,

v.

COMCAST CORPORATION; COMCAST CABLE COMMUNICATIONS, LLC; COMCAST CABLE COMMUNICATIONS MANAGEMENT, LLC; COMCAST OF HOUSTON, LLC; COMCAST BUSINESS COMMUNICATIONS, LLC; COMCAST HOLDINGS CORPORATION; COMCAST SHARED SERVICES, LLC; ARRIS INTERNATIONAL PLC; ARRIS GROUP INC.; ARRIS TECHNOLOGY, INC.; ARRIS ENTERPRISES LLC; ARRIS SOLUTIONS, INC.; PACE LTD.; PACE AMERICAS HOLDINGS, INC.; PACE AMERICAS INVESTMENTS, LLC; PACE AMERICAS, LLC; TECHNICOLOR SA; TECHNICOLOR USA, INC.; and TECHNICOLOR CONNECTED HOME USA LLC,

Defendants.

Case No. 2:16-CV-321

DEMAND FOR JURY TRIAL

FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiffs Rovi Guides, Inc. ("Rovi Guides"), Rovi Technologies Corp. ("Rovi Technologies"), and Veveo, Inc. ("Veveo") (collectively "Rovi" or "Plaintiffs") hereby bring this First Amended Complaint for patent infringement ("Complaint") against Comcast Corporation; Comcast Cable Communications, LLC; Comcast Cable Communications Management, LLC; Comcast of Houston, LLC; Comcast Business Communications, LLC; Comcast Holdings Corporation; Comcast Shared Services, LLC (all Comcast entities, collectively, "Comcast" or

"Comcast Defendants"); Arris Group Inc.; Arris Technology, Inc.; Arris Enterprises LLC; Arris Solutions, Inc.; Arris International plc; Pace Ltd.; Pace Americas Holdings, Inc.; Pace Americas Investments, LLC; Pace Americas, LLC (all Arris and Pace entities, collectively, "Arris" or "Arris Defendants"); Technicolor SA; Technicolor USA, Inc.; Technicolor Connected Home USA LLC (all Technicolor entities, collectively, "Technicolor" or "Technicolor Defendants") (Arris and Technicolor, collectively, "Manufacturer Defendants") (all defendant entities, collectively, "Defendants") for infringement of U.S. Patent Nos. 8,713,595 ("the '595 Patent"), 8,755,666 ("the '666 Patent"), 7,996,864 ("the '864 Patent"), 9,172,987 ("the '987 Patent"), 7,895,218 ("the '218 Patent"), 8,122,034 ("the '034 Patent"), 8,433,696 ("the '696 Patent"), and 6,725,281 ("the '281 Patent") (collectively, "the Asserted Patents"). Plaintiffs, on personal knowledge as to their own acts, and on information and belief as to all others based on investigation, allege as follows:

SUMMARY OF THE ACTION

1. For over a decade Comcast has built its interactive cable business on the back of Rovi's technology that Comcast had licensed for a fixed term. Comcast refuses to renew its license on acceptable terms and continues to make, use, sell/lease and offer to sell/lease products that not only practice Rovi's patented innovations, but also compete with Rovi's own Interactive Program Guide ("IPG") products. The Comcast X1 IPG Product (alone and/or as implemented on various digital receivers) infringes at least one claim of each of the Asserted Patents and competes with Rovi's Connected Guide technology, which also practices Rovi's patented technology. This action seeks to put an end to Comcast's, and the Manufacturer Defendants', unauthorized, infringing conduct.

2. Twelve years ago, when Rovi's patent portfolio was less than half the size it is today and when it did not yet include many of the patented innovations that consumers have come to demand, such as video-on-demand, whole-home DVR technology, and robust mobile access to and control of in-home set-top boxes, Comcast paid Rovi over $250 million for a license to Rovi's patent portfolio ("License"). The Comcast License also included important, non-monetary terms.

3. As a result of Comcast's License, Comcast was licensed to the Asserted Patents for certain uses in connection with Comcast's and its affiliates' Pay-TV systems. However, Comcast's License expired on March 31, 2016, and Comcast has not only failed to remove its infringing products and services from the market, it continues to provide those infringing products and services, with the aid and assistance of the Manufacturer Defendants.

4. As part of the parties' negotiations in an attempt to renew Comcast's License, Rovi provided Comcast with detailed claim charts and other evidence demonstrating how Comcast's Xfinity television products and services, including its X1 IPG Product, infringe at least one claim of several of the Asserted Patents. Rovi also explained to Comcast that without renewing its License, Comcast would no longer have permission to make use of Rovi's patented innovations. Instead of taking a license, Comcast has decided to willfully infringe the Asserted Patents.

5. Comcast's decision to willfully infringe stands in stark contrast to its recognition twelve years ago of the need for a license from Rovi. Comcast's refusal to take a license today also stands in stark contrast to other major Pay-TV providers, such as AT&T, which has more subscribers than any other Pay-TV provider in the U.S., and which recently reaffirmed the need

for a license to Rovi's guidance patent portfolio, including a license to the Asserted Patents, by signing a comprehensive patent license agreement with Rovi.

6. In addition to Pay-TV providers, most of the market-leading set-top box manufacturers also have taken limited licenses to Rovi's patented inventions, including defendants Arris and Technicolor (through a predecessor-in-interest). However, those licenses do not extend to the unlawful acts at issue herein—i.e., they do not permit Arris or Technicolor to make or provide digital television receivers, such as set-top boxes ("STB"), for use by or with Comcast's Xfinity service in the United States.

THE PARTIES

I. ROVI: A PIONEER IN MEDIA TECHNOLOGY

7. Rovi is and has been a pioneer and recognized leader in media technology, including the technology used to facilitate consumer access to and discovery of television and other audiovisual media. Since introducing one of the first on-screen electronic program guides in 1981, Rovi has continued to innovate to develop products, services, and other solutions to connect consumers with entertainment.

8. Thanks largely to those innovations, Rovi has amassed a portfolio of over 1,200 issued U.S. patents and 500 pending U.S. patent applications, including the Asserted Patents. Rovi has added to its patent portfolio through strategic acquisitions of groundbreaking companies, such as Veveo, Inc., and of patent portfolios from world-class innovators, such as Microsoft. Rovi's patented inventions are used daily by consumers of media content, and are "must-haves" for television and other media service providers and the consumer electronics industry that supports them.

9. In recognition of the importance and value of Rovi's patented technologies and Rovi's role as an innovator, every major U.S. Pay-TV provider, including Comcast, and almost every major U.S. set-top box manufacturer, has taken a license to a portfolio of Rovi's patents.

II. ROVI: CORPORATE ENTITIES

10. Plaintiff Rovi Guides, Inc. is a Delaware corporation with a principal place of business at Two Circle Star Way, San Carlos, California 94070. Rovi Guides is a wholly-owned subsidiary of Rovi Corporation and is the owner of the Asserted '864, '987, '595, and '666 Patents.

11. Plaintiff Rovi Technologies Corporation is a Delaware corporation with a principal place of business at 2830 De La Cruz Blvd., Santa Clara, California 95050. Rovi Technologies is a wholly-owned subsidiary of Rovi Corporation and is the owner of the Asserted '281 Patent.

12. Plaintiff Veveo, Inc. is a Delaware corporation with a principal place of business at 40 Shattuck Road, Suite 303, Andover, Massachusetts 01810. Veveo is a wholly-owned subsidiary of Rovi Corporation and is the owner of the Asserted '218, '034, and '696 Patents.

13. Rovi is a global leader in digital entertainment technology solutions. Rovi's market leading digital entertainment solutions enable the proliferation of access to media on electronic devices; these solutions include products and services related to IPGs and other content discovery solutions, personalized search and recommendation, advertising and programming promotion optimization, and other data and analytics solutions to monetize interactions across multiple entertainment platforms. Rovi's solutions are used by companies worldwide in applications such as cable, satellite, and internet protocol television ("IPTV") receivers (including digital television set-top boxes ("STBs") and DVRs); PCs, mobile, and tablet devices; and other means by which consumers connect to entertainment.

DEFENDANTS

III. THE COMCAST DEFENDANTS

14. On information and belief, Comcast Corporation is a Pennsylvania corporation with a principal place of business at One Comcast Center, 1701 John F. Kennedy Blvd., Philadelphia, Pennsylvania 19103. Through its wholly-owned subsidiaries, Comcast Corporation provides "Comcast" branded services, including Xfinity digital video, audio, and other content services to customers. Subscribers to Comcast's Xfinity television services receive a receiver, such as a set-top box. Upon information and belief, Comcast Corporation, jointly with the other Defendants, develops the infringing Xfinity services and equipment and provides the infringing receivers to customers.

15. On information and belief, Comcast Cable Communications, LLC is a Delaware limited liability company with a principal place of business at One Comcast Center, 1701 John F. Kennedy Blvd., Philadelphia, Pennsylvania 19103. On information and belief, Comcast Cable Communications, LLC is a subsidiary of Comcast Corporation. Upon information and belief, Comcast Cable Communications, LLC, jointly with the other Defendants, develops the infringing Xfinity services and equipment and provides infringing receivers to customers.

16. On information and belief, Comcast Cable Communications Management, LLC is a Delaware limited liability company with a principal place of business at One Comcast Center, 1701 John F. Kennedy Blvd., Philadelphia, Pennsylvania 19103. On information and belief, Comcast Cable Communications Management, LLC is a subsidiary of Comcast Corporation. Upon information and belief, Comcast Cable Communications Management, LLC, jointly with the other Defendants, develops the infringing Xfinity services and equipment and provides infringing receivers to customers.

17. On information and belief, Comcast of Houston, LLC is a Delaware limited liability company with a principal place of business at 8590 W. Tidwell Road, Houston, TX 77040-5578. On information and belief, Comcast of Houston, LLC is a subsidiary of Comcast Corporation. Upon information and belief, Comcast of Houston, LLC, jointly with the other Defendants, develops the infringing Xfinity services and equipment and provides infringing receivers to customers.

18. On information and belief, Comcast Business Communications, LLC is a Pennsylvania limited liability company with a principal place of business at One Comcast Center, 1701 John F. Kennedy Blvd., Philadelphia, Pennsylvania 19103. On information and belief, Comcast Business Communications, LLC is a subsidiary of Comcast Corporation. Upon information and belief, Comcast Business Communications, LLC, jointly with the other Defendants, develops the infringing Xfinity services and equipment and provides infringing receivers to customers.

19. On information and belief, Comcast Holdings Corporation is a Pennsylvania corporation with a principal place of business at One Comcast Center, 1701 John F. Kennedy Blvd., Philadelphia, Pennsylvania 19103. On information and belief, Comcast Holdings Corporation is a subsidiary of Comcast Corporation. Upon information and belief, Comcast Holdings Corporation, jointly with the other Defendants, develops the infringing Xfinity services and equipment and provides infringing receivers to customers.

20. On information and belief, Comcast Shared Services, LLC is a Delaware corporation with a principal place of business at 330 N. Wabash Ave. 22, Chicago, IL 60611-3586. On information and belief, Comcast Shared Services, LLC is a subsidiary of Comcast Corporation. Upon information and belief, Comcast Shared Services, LLC, jointly with the other

Defendants, develops the infringing Xfinity services and equipment and provides infringing receivers to customers.

IV. THE MANUFACTURER DEFENDANTS

21. On information and belief, Arris International plc is a public liability company organized under the laws of England with a principal place of business at 3871 Lakefield Drive, Suwanee, GA 30024.

22. On information and belief, Arris Group Inc. is a Delaware corporation with a principal place of business at 3871 Lakefield Drive, Suwanee, GA 30024. On information and belief, Arris Group Inc. is a subsidiary of Arris International plc. On information and belief, on April 17, 2013, Arris Group Inc. (or a subsidiary of Arris Group Inc.) acquired the Motorola Home business from Google Inc., which, among other things, included Motorola's set-top box business, which in turn included certain Motorola-branded Accused Products, as defined herein.

23. On information and belief, Arris Technology, Inc. is a Delaware corporation with a principal place of business at 101 Tournament Drive, Horsham, PA 19044. On information and belief, Arris Technology, Inc. is a subsidiary of Arris Group Inc.

24. On information and belief, Arris Enterprises LLC is a Delaware corporation with a principal place of business at 3871 Lakefield Drive, Suwanee, GA 30024. On information and belief, Arris Enterprises LLC is a subsidiary of Arris Technology, Inc.

25. On information and belief, Arris Solutions, Inc. is a Delaware corporation with a principal place of business at 3871 Lakefield Drive, Suwanee, GA 30024. On information and belief, Arris Solutions, Inc. is a subsidiary of Arris Enterprises LLC.

26. On information and belief, Pace Ltd. is a public liability company organized under the laws of England with a principal place of business at Victoria Road, Saltaire, West Yorkshire, BD18 3LF, England.

27. On information and belief, Pace Americas Holdings, Inc. is a Delaware corporation with a principal place of business at 3701 FAU Boulevard, Suite 200, Boca Raton, FL 33431. On information and belief, Pace Americas Holdings, Inc. is a subsidiary of Pace Ltd.

28. On information and belief, Pace Americas Investments, LLC is a Delaware limited liability company with a principal place of business at 3701 FAU Boulevard, Suite 200, Boca Raton, FL 33431. On information and belief, Pace Americas Investments, LLC is a subsidiary of Pace Americas Holdings, Inc.

29. On information and belief, Pace Americas, LLC is a Delaware limited liability company with a principal place of business at 3701 FAU Boulevard, Suite 200, Boca Raton, FL 33431. On information and belief, Pace Americas, LLC is a subsidiary of Pace Americas Investments, LLC.

30. On information and belief, on January 4, 2016, Arris acquired Pace. Accordingly, any reference to "Arris" herein includes reference to Pace.

31. Upon information and belief, the Arris Defendants have an indemnification obligation to the Comcast Defendants that extends to the patent infringement claims in this matter.

32. On information and belief, Technicolor SA is a corporation organized under the laws of France with a principal place of business at 1-5 Rue Jeanne d'Arc, 92130 Issy-les-Moulineaux, France. Upon information and belief, on November 20, 2015, Technicolor SA (or a subsidiary of Technicolor SA) acquired Cisco System Inc.'s Cisco Connected Devices division, which, among other things, included Cisco System Inc.'s set-top box business.

33. On information and belief, Technicolor USA, Inc. is a Delaware corporation with a principal place of business at 10330 North Meridian Street, Indianapolis, IN 46290. On information and belief, Technicolor USA, Inc. is a subsidiary of Technicolor SA.

34. On information and belief, Technicolor Connected Home USA LLC is a Delaware limited liability company with a principal place of business at 101 West 103rd Street, Indianapolis, IN 46290. On information and belief, Technicolor Connected Home USA LLC is a subsidiary of Technicolor USA, Inc.

35. On information and belief, Defendants operate jointly and collectively to provide to end user customers, and encourage and support the use of, the infringing Comcast Xfinity services and products, as described herein. On information and belief, to the extent the infringing acts involve activities of Comcast and Arris and/or Technicolor, Defendants' infringement of the Asserted Patents is joint, as (1) there are express agreements between Comcast and Arris, and Comcast and Technicolor, which agreements relate to the design, manufacture, importation, distribution, and/or sale of the products accused of infringement herein; (2) there exists a common purpose between Comcast on the one hand, and Arris and Technicolor on the other, including relating to the distribution of the products accused of infringement herein and delivery of the Comcast Xfinity services to subscribers; (3) and there is a community of pecuniary interest in that the purpose among Defendants is to profit from the delivery and expansion of the Comcast Xfinity services and distribution of the products accused of infringement herein.

36. In addition, upon information and belief, Comcast exercises direction and control over Arris and Technicolor with respect to the manufacture, importation, sale for importation, and/or sale or lease after importation, of the products accused of infringement herein, by

instructing Arris and Technicolor to make and import the products accused of infringement herein according to Comcast's specifications.

JURISDICTION AND VENUE

37. This is an action arising under the patent laws of the United States, 35 U.S.C. §§ 1 et seq. Accordingly, this Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 (federal question) and 1338(a) (action arising under an Act of Congress relating to patents). Venue is proper in this judicial district under 28 U.S.C. §§ 1391 and 1400(b).

38. More specifically, this action for patent infringement involves Defendants' manufacture, use, sale and/or lease, offer for sale and/or lease, and/or importation into the United States of infringing receivers, including set-top boxes (and their peripheral devices, such as remote control units), having hardware and software components, including, in particular, interactive program guide ("IPG") software, alone or in conjunction with Comcast servers and/or mobile applications (the "Accused Products") that are used in and with Comcast's Xfinity video services.

39. This action also involves Comcast's attempts and offers to license, sell, or otherwise provide to other service providers, which are not licensed to the Asserted Patents, Comcast's X1 IPG Product (an Accused Product), which is designed to practice one or more claims of the Asserted Patents, and which competes with Rovi's own IPG products.

40. The Accused Products include Digital Video Recorder ("DVR") receivers, including at least ARRIS-Motorola ACQ-XG1, ARRIS-Motorola MX011ANM, ARRIS-Motorola MX011BNM, ARRIS-Motorola AX013AN, ARRIS-Motorola XG5 (MG2404), Motorola DCH3416, Motorola DCH6416, Motorola DCT3400, Motorola DCT6208, Motorola DCT6412, Motorola DCX3400, Motorola RNG200N, Motorola DCX3400/M, Motorola

DCX3501M, Motorola MOR200BN, Pace RNG200N, Pace TDC575D, Pace XG1, Pace XG1-P, Pace PX001ANC, Pace PX001ANM, Pace PX012ANM, Pace PX012ANC, Pace PX013ANM, Pace PX013ANC (manufactured by or on behalf of Arris); Cisco RNG200, Cisco Explorer 8540HDC/8550 HDC, Cisco RNG200N, Cisco Explorer 8652HDC, Scientific Atlanta 8300 (manufactured by or on behalf of Technicolor) (collectively, "Accused DVR Products").

41. The Accused Products also include non-DVR receivers, including at least Motorola DCH100, Motorola DCH2300, Motorola DCH6200, Motorola DCH70, Motorola DCT700, Motorola DCT1800, Motorola DCT2000, Motorola DCT2500, Motorola DCT5100, Motorola DCT6200, Motorola DCX3200, Motorola RNG150, Motorola DCX3200M P2, Pace RNG110, Pace RNG150N, Pace PR150BNC, Pace PR150BNM X1, Pace RNG150N P2, Pace XG2, Pace Xi3, Pace XiD X1 (manufactured by or on behalf of Arris); and Cisco RNG100, Cisco Explorer 1540C, Cisco RNG150, Cisco Explorer 1640HDC, Cisco RNG150N, Scientific Atlanta 4250 (manufactured by or on behalf of Technicolor) (collectively, "Accused Non-DVR Products").

42. This Court has general and/or specific personal jurisdiction over Comcast Corporation and venue is proper, in part because Comcast Corporation, directly and/or in combination with its subsidiaries and/or through its agents, does continuous and systematic business in this district including by providing infringing products and services to residents of the Eastern District of Texas, by providing infringing products and services that it knew would be used within this district, and/or by participating in the solicitation of business from residents of this district. In addition, upon information and belief, Comcast Corporation, directly or through its subsidiaries, places infringing products within the stream of commerce, which is directed at this district, with the knowledge and/or understanding that such products will be sold,

leased, or otherwise provided to customers within this district. In addition, upon information and belief, Comcast Corporation, directly or through its subsidiaries, employs individuals within the Eastern District of Texas, including employees who provide infringing products and services to customers here, and maintains offices and facilities here. Comcast Corporation, directly or through its subsidiaries, operates highly commercial websites through which regular sales and/or leases of products and/or sales of services are made to customers in this district, including products and services that, on information and belief, infringe the Asserted Patents.

43. This Court has general and/or specific personal jurisdiction over Comcast Cable Communications, LLC and venue is proper, in part because Comcast Cable Communications, LLC, directly and/or in combination with other Comcast entities and/or through its agents, does continuous and systematic business in this district including by providing infringing products and services to residents of the Eastern District of Texas, by providing infringing products and services that it knew would be used within this district, and/or by participating in the solicitation of business from residents of this district. In addition, upon information and belief, Comcast Cable Communications, LLC, directly or through its subsidiaries, places infringing products within the stream of commerce, which is directed at this district, with the knowledge and/or understanding that such products will be sold, leased, or otherwise provided to customers within this district. In addition, upon information and belief, Comcast Cable Communications, LLC, directly or through its subsidiaries, employs individuals within the Eastern District of Texas, including employees who provide infringing products and services to customers here, and maintains offices and facilities here. Comcast Cable Communications, LLC, directly or through its subsidiaries, operates highly commercial websites through which regular sales and/or leases

of products and/or sales of services are made to customers in this district, including products and services that, on information and belief, infringe the Asserted Patents.

44. This Court has general and/or specific personal jurisdiction over Comcast Cable Communications Management, LLC and venue is proper, in part because Comcast Cable Communications Management, LLC, directly and/or in combination with other Comcast entities and/or through its agents, does continuous and systematic business in this district including by providing infringing products and services to residents of the Eastern District of Texas, by providing infringing products and services that it knew would be used within this district, and/or by participating in the solicitation of business from residents of this district. In addition, upon information and belief, Comcast Cable Communications Management, LLC, directly or through its subsidiaries, places infringing products within the stream of commerce, which is directed at this district, with the knowledge and/or understanding that such products will be sold, leased, or otherwise provided to customers within this district. In addition, upon information and belief, Comcast Cable Communications Management, LLC, directly or through its subsidiaries, employs individuals within the Eastern District of Texas, including employees who provide infringing products and services to customers here, and maintains offices and facilities here. Comcast Cable Communications Management, LLC, directly or through its subsidiaries, operates highly commercial websites through which regular sales and/or leases of products and/or sales of services are made to customers in this district, including products and services that, on information and belief, infringe the Asserted Patents.

45. This Court has general and/or specific personal jurisdiction over Comcast of Houston, LLC and venue is proper, in part because Comcast of Houston, LLC has a principal place of business in the state of Texas and because Comcast of Houston, LLC, directly and/or in

combination with Comcast Corporation and/or other Comcast Corporation subsidiaries, and/or through its agents, does continuous and systematic business in this district including by providing infringing products and services to residents of the Eastern District of Texas, by providing infringing products and services that it knew would be used within this district, and/or by participating in the solicitation of business from residents of this district. In addition, upon information and belief, Comcast of Houston, LLC, directly or through Comcast Corporation and/or other Comcast Corporation subsidiaries, has placed its products within the stream of commerce, which is directed at this district, with the knowledge and/or understanding that such products will be sold, leased, or otherwise provided to customers within this district. In addition, upon information and belief, Comcast of Houston, LLC, directly or through Comcast Corporation and/or other Comcast Corporation subsidiaries, has employed individuals within the Eastern District of Texas, including employees who provide infringing products and services to customers here, and maintain offices and facilities here.

46. This Court has general and/or specific personal jurisdiction over the remaining Comcast Defendants and venue is proper, in part because said Defendants, directly and/or in combination with Comcast Corporation and/or other Comcast Corporation subsidiaries, and/or through their agents, do continuous and systematic business in this district including by providing infringing products and services to residents of the Eastern District of Texas, by providing infringing products and services that it knew would be used within this district, and/or by participating in the solicitation of business from residents of this district.

47. The Court has general and/or specific personal jurisdiction over Arris and venue is proper in part because, on information and belief, Arris does continuous and systematic business in this district by providing infringing products to residents of the Eastern District of

Texas, by providing infringing products that it knew would be used within this district, and/or by participating in the solicitation of business from residents of this district. In addition, upon information and belief, Arris places its Accused Products within the stream of commerce, which is directed at this district, with the knowledge and/or understanding that such products will be sold, leased, or otherwise provided to customers within this district. Upon information and belief, accused Arris receivers are provided to customers in the Eastern District of Texas. Arris operates a highly commercial and interactive website accessible to residents of the Eastern District of Texas that, among other things, permits customers to interact with Arris agents or representatives, including via live chat. In addition, Arris Group maintains offices and, on information and belief, employees, in Houston, TX. Further, Pace Americas LLC maintains offices in Austin, TX, which is home to Pace Americas West and consists of engineering and services staff, and in San Antonio, TX, which is one of two customer care sites. Therefore, the exercise of jurisdiction over Arris will not offend traditional notions of fair play and substantial justice.

48. The Court has general and/or specific personal jurisdiction over Technicolor and venue is proper in part because, on information and belief, Technicolor does continuous and systematic business in this district by providing infringing products to residents of the Eastern District of Texas, by providing infringing products that it knew would be used within this district, and/or by participating in the solicitation of business from residents of this district. In addition, upon information and belief, Technicolor places its Accused Products within the stream of commerce, which is directed at this district, with the knowledge and/or understanding that such products will be sold, leased, or otherwise provided to customers within this district. Upon information and belief, accused Technicolor receivers are provided to customers in the Eastern

District of Texas. Technicolor operates a highly commercial and interactive website accessible to residents of the Eastern District of Texas that, among other things, permits customers to contact Technicolor agents or representatives. Therefore, the exercise of jurisdiction over Technicolor will not offend traditional notions of fair play and substantial justice.

FACTUAL BACKGROUND

I. ROVI'S HISTORY OF INNOVATION AND COMMERCIAL SUCCESS

49. Since launching TV Guide Magazine in 1953, the Rovi family of companies (which include, through mergers, joint ventures, and acquisitions, United Video, TV Guide Onscreen, StarSight Telecast, Prevue, TV Guide, Video Guide, Gemstar, GuideWorks, Aptiv Digital, Macrovision, Veveo, and FanTV) has been a pioneer and recognized leader in media technology, including the technology used to facilitate consumer access to television and other audiovisual media. Today, Rovi's market leading digital entertainment solutions enable the proliferation of access to media on electronic devices; these solutions include products and services related to interactive program guides ("IPGs") and other content discovery solutions, personalized search and recommendation, advertising and programming promotion optimization, and other data and analytics solutions to monetize interactions across multiple entertainment platforms. Rovi's solutions are used by companies worldwide in applications such as cable, satellite, and internet protocol television ("IPTV") receivers (including digital television set-top boxes ("STBs") and digital video recorders ("DVRs")); PCs, mobile, and tablet devices; and other means by which consumers connect to entertainment.

50. In particular, Rovi has developed the substantial majority of the pioneering advances in IPG technology and related functionality for subscription-based television broadcasting ("Pay-TV").

51. In 1981, one of the Rovi family of companies introduced one of the first, if not the first, on-screen electronic program guide ("EPG"). This EPG, displayed on a dedicated cable channel, allowed Pay-TV providers to provide scrolling on-screen television listings to their customers throughout the day. Rovi's early EPG product was widely adopted by North American cable systems, and became the way in which consumers discovered the content they desired.

52. In the late 1980s, another one of the Rovi family of companies invented the VCR Plus®, which significantly simplified programming of videocassette recorders, enabling television subscribers to more easily record the content they desired. VCR Plus® was a resounding success, and helped establish the Rovi family of companies as the frontrunner in the program guide industry by broadly licensing its VCR Plus® product and related technologies.

53. Around 1994, another of the Rovi family of companies launched the first IPG services designed for use in Pay-TV television receivers. These early IPGs were full-screen grid guides that displayed television program listings by time and channel in a two-dimensional grid. Using a remote control, a user could interact with the guides to see, for example, what was on television at a later time or on a different channel, instead of depending on the automated scrolling of a traditional on-screen guide.

54. In 2004, Rovi's immediate predecessor-in-interest launched the i-Guide®, one of the first IPGs that provided for dual tuner support. Rovi's i-Guide®, which Rovi continues to offer to this day, allows users to watch and record programs simultaneously, providing users at the time with unprecedented convenience in the television viewing experience.

55. Rovi's IPG technologies today allow for multi-screen entertainment across a variety of user devices (e.g., seamless access to the same media from multiple devices and device

types, like a television and mobile device), and provide customizable listings for televisions, receivers, game consoles, and mobile devices, thereby allowing consumers to find, discover, and enjoy the content they want, when they want it, and where they want to access it. These and other innovations help users navigate an increasingly overwhelming amount of content, and discover and access entertainment they desire on virtually any platform or device.

56. To maintain Rovi's leadership position in this industry, Rovi has invested and continues to invest significant resources in the design, development and licensing of its IPGs and related technologies used by television service providers (as well as others in the digital entertainment industry). Since 2013 alone, Rovi has invested over $300 million in research and development. Furthermore, Rovi has over 800 U.S.-based, full-time employees supporting the development of new products and platforms.

57. Rovi has incorporated its technological innovations resulting from its significant research and development into its commercial products. For example, Rovi's i-Guide® and Passport® Guide are IPGs that provide comprehensive listings, intuitive search capabilities, advanced DVR and Video on Demand functionality, and HD support. Similarly, Rovi's TotalGuide xD is an advanced IPG for mobile devices, which allows consumers to find their favorite programs, tune channels, and manage their DVRs remotely.

58. The value of Rovi's innovative solutions has been recognized by numerous leading Pay-TV service providers, who license these technologies and solutions from Rovi. All told, as of December 31, 2015, Rovi's technology was used by over 184 million subscribers worldwide.

59. Rovi's innovative IPG related technologies have been recognized through numerous industry awards and accolades. For example, in 2012 Rovi was awarded a

Technology and Engineering Emmy® Award for its "Pioneering On-Screen Interactive Program Guides" that assist "viewer[s] in rapidly locating their desired program." These Emmy® awards are designed to recognize "developments . . . involved in engineering technologies which either represent so extensive an improvement on existing methods or are so innovative in nature that they materially have affected the transmission, recording, or reception of television."[1]

60. Rovi's history of innovation is also reflected in the extensive patent coverage that Rovi has obtained for its inventions. This portfolio, which includes more than 5,400 issued or pending patents worldwide, is a direct result of Rovi's substantial and ongoing investment in research and development. The Asserted Patents are reflective of this history of innovation, embodying a number of firsts in the development of IPG-related technologies.

61. Rovi's current commercial products, including in particular its i-Guide®, Passport® Guide, and TotalGuide xD IPG solutions, all embody Rovi's patented technology.

62. The strength of Rovi's patent portfolio has been recognized by the entertainment industry. In particular, all major U.S. Pay-TV providers, including Comcast, as well as AT&T (which recently acquired DirecTV), Verizon, Time Warner Cable, and Dish/EchoStar, among others, have acknowledged the value of Rovi's innovations by taking licenses from Rovi for its patents covering these innovations. Rovi has also licensed its patent portfolio to many leading content providers, including both traditional media (cable, satellite, IPTV) and new media (online, mobile) video providers, as well as manufacturers and distributors of receivers and other consumer electronic devices.

[1] Technology & Engineering, The National Academy of Television Arts & Sciences, http://emmyonline.com/tech (last visited Mar. 28, 2016).

63. Rovi's long-term financial success depends in part on its ability to establish, maintain, and protect its proprietary technology through patents. Defendants' infringement presents significant and ongoing damages to Rovi's business.

II. COMCAST HAS LONG BENEFITED FROM ITS USE OF ROVI'S PATENTED TECHNOLOGIES

64. Prior to Comcast first licensing Rovi's patents, it measured business success with reference to how many subscribers it had. Comcast did not historically measure its business success by the quality of the services it provided to its customers. Comcast touted itself in its 2002 10K as being the "largest cable operator in the United States."

65. Nonetheless, beginning in or around 2004, Comcast began attributing revenue growth to its "advanced services" including video-on-demand ("VOD") and digital-video-recording ("DVR"). Comcast recognized that its future business success depended on product differentiation from other cable operators and satellite providers—product differentiation that offering advanced services to its customers provided.

66. In 2004, to secure the growth in its "advanced services," Comcast entered into a license agreement with Gemstar (a forerunner to Rovi) ("2004 Agreement") which Comcast in SEC filings described as an effort "to acquire and develop technology that will drive product differentiation and new applications and extend our nationwide fiber-optic network2 and enhance Comcast's IPG platform to improve Comcast's ability to compete with its competitors. Importantly, the 2004 Agreement was not a sale of technology from Gemstar to Comcast by which Comcast "acquired" the technology from Gemstar; it was a license for a fixed term during which Comcast had permission from Gemstar to use that technology for specific purposes, but only until the license expired. The 2004 Agreement included a Joint Venture with Gemstar

[2] *See* http://www.secinfo.com/dVut2.z4Ag.htm (last visited Apr. 25, 2016).

called Guideworks, under which Gemstar would help Comcast develop a next generation IPG platform, as well as a license to Gemstar's guidance patent portfolio.

67. Comcast's use of Rovi's (then Gemstar's) technology to develop and enhance interactive program guides to be offered by Comcast is evidenced, among other ways, by Comcast's description of the 2004 Agreement in the Comcast 2006 10K SEC filing. Comcast stated, "This [2004 Agreement] allows us to utilize Gemstar's intellectual property and technology and the TV Guide brand and content on our interactive program guides. . . In addition, we and Gemstar formed an entity to develop and enhance interactive programming guides."3

68. In order to further secure improved products and services, in 2004, "Comcast sign[ed] strategic agreements with Gemstar-TV Guide and Microsoft to develop enhancements to the user interface and the functionality of its service offerings."4

69. Comcast's 10K SEC filings from 2004 to date consistently evidence Comcast's recognition of the importance to its profitability and success of the technology needed to provide advanced services in connection with its digital cable and high-speed internet services, including video on demand ("VOD" or "On Demand"), high-definition television ("HDTV") programming and digital video recorders ("DVR"s). In fact, in its 2004 10K, Comcast noted that its "subscriber growth is attributable to new and improved products and advanced services in our digital cable and high-speed Internet services."5 That recognition in each filing thereafter is

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[3] http://www.secinfo.com/$/SEC/Filings.asp?CIK-1166691&Find=Rovi+%7C=Macrovision+%7C+Gemstar&Page=All&List=Hits&Show=Each>

[4] *See* Comcast Timeline, http://corporate.comcast.com/news-information/timeline (last visited Mar. 30, 2016).

[5] *See* Comcast Annual Report 2004 at 20, http://apps.shareholder.com/sec/viewerContent.aspx?companyid=CMCSA&docid=3492536 (last visited Mar. 31, 2016).

repeatedly evidenced by both Comcast's description of the reasons for its revenue growth and, correspondingly, its description of the risk factors that confront Comcast. Increased competition from telecommunications providers, ISPs, and satellite companies in the provision and delivery of new and advanced services was and since 2004 has been one of Comcast's greatest competitive concerns.

70. Rovi is informed and believes that the technology Rovi made available to Comcast during the term of the 2004 Agreement was foundational to Comcast's ability from 2004 to the present to offer new and advanced services, to grow its business, and to develop its own interactive program guide and advance service platforms, and throughout that period Comcast personnel were aware of these facts. In 2010, Comcast and Rovi terminated their Joint Venture, while at the same time, Comcast reaffirmed its need for Rovi technology by entering into an expanded patent license agreement with Rovi. Indeed, Rick Rioboli, SVP, Comcast Metadata Products and Search Services, remarked that "Rovi has been a very important partner of ours for many years."

71. In 2012, during the pendency of its soon-to-expire License to Rovi's patents, Comcast launched X1 IPG Product, which it describes as "a cloud□enabled video platform that transformed the TV into an interactive, integrated entertainment experience."[6]

72. In 2014, also during the pendency of its soon-to-expire License to Rovi's patents, Comcast introduced the next generation of its X1 IPG Product, which it describes as "designed to make navigation, search and discovery of content easier and quicker than ever before. The X1

[6] Our Story, Comcast, http://corporate.comcast.com/our-company/our-story (last visited Mar. 30, 2016).

gives customers an interactive TV experience, providing instant access to all of their Entertainment."7

73. As set forth herein, Comcast's X1 IPG Product technology is designed to and does infringe at least one claim of each of the Asserted Patents.

74. Comcast has an installed base of more than 10 million X1 users and is continuing to market that product throughout the United States in an attempt to further expand the reach of its X1 IPG Product.

75. Even today, Comcast recognizes the critical role that its infringing IPG platform has in driving product differentiation and consumer demand for its products and services. For example, Comcast recently explained to the FCC that "the interface is how MVPDs [multichannel video program distributors] . . . differentiate themselves in a highly competitive marketplace."8 Comcast further explained that, "[f]aced with fierce competition, providers are intent on giving consumers the flexibility they demand to access video programming on the devices of their choice, and delivering more value to customers."9

76. On March 31, 2016 Comcast's license to use the Rovi technology expired. Comcast has refused to execute a new license, yet continues to practice the inventions claimed in Rovi's patents, and continues to offer and sell the X1 product and enhanced IPG platform that not only infringes Rovi's patents, but could not and would not ever have been lawfully developed but for the permitted use by Comcast of Rovi's technology granted in the 2004 Agreement.

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[7] Our Story, Comcast, http://corporate.comcast.com/our-company/our-story (last visited Mar. 30, 2016).

[8] http://corporate.comcast.com/images/2016-04-22-AS-FILED-Comcast-DSTAC-STB-NPRM-Comments.pdf (last visited Apr. 23, 2016).

[9] *Id.*

III. COMCAST AND ROVI ARE HORIZONTAL COMPETITORS IN THE DEVELOPMENT AND PROVISION OF IPG SOLUTIONS

77. Comcast markets and sells its Accused Products, including the X1 IPG Product, in the United States.

78. Comcast describes its Accused Products, including the X1 IPG Product, as delivering the simplest, fastest and most complete way to access all your entertainment on all your screens. Comcast explains that with its Accused Products, including the X1 IPG Product, a user experiences TV and Internet together like never before with advanced search, personalized recommendations, apps at home and on the go and the fastest in-home WiFi for all rooms, all devices, all the time.

79. Rovi also markets and sells innovative guide products that compete with Comcast's Accused Products, including the X1 IPG Product, in the United States.

80. Since 1981, Rovi has evolved the traditional grid-based TV guide to meet consumer expectations. Today it is no longer sufficient to simply offer scheduling information; guides must be a wellspring of "six degrees" content integrating program information, personalized recommendations, related Internet resources and social media for various devices.

81. To meet these goals, Rovi's Connected Guides, including next-generation, cloud-based components of Rovi's Connected Guide Solution, offer a global, multi-screen entertainment offering for service providers and application developers. These lightweight guides provide customizable listings for TVs, set-top boxes, game consoles, mobile devices and websites, so consumers can find and discover content when and where they want.

82. Rovi's Connected Guide Products compete with Comcast's Accused Products, including the X1 IPG Product, in the IPG market in the United States.

83. For example, Cox Communications has, for the past several years, licensed Rovi's Passport Guide IPG platform, which Cox has deployed to millions of subscribers. Similarly, Cequel III Programming, LLC d/b/a Suddenlink Communications ("Suddenlink") has, for the past several years, licensed Rovi's i-Guide IPG platform, which Suddenlink has deployed to hundreds of thousands of subscribers. On information and belief, Comcast has marketed its X1 IPG Product to both Cox and Suddenlink, and Cox has begun deploying the X1 platform to its customers.

IV. COMCAST IGNORED ROVI'S PATENT RIGHTS EVEN DURING THE PERIOD COMCAST HAS BEEN A ROVI LICENSEE

84. Comcast's License did not include the right for Comcast to make, license, sell, or otherwise transfer products, such as the X1 IPG Product, that practice or are designed to practice Rovi's patents, for use in products or services not owned by Comcast or Comcast affiliates.

85. Nevertheless, on information and belief, Comcast is and has been actively marketing its X1 IPG Product, which is designed to practice claims of the Asserted Patents, to other Pay-TV service providers, which service providers do not themselves have an appropriate patent license from Rovi, for use in those service providers' systems and set-top boxes deployed to subscribers. On information and belief, one example of such a service provider is Suddenlink.

86. While Suddenlink has licensed Rovi's i-Guide IPG product from Rovi, Suddenlink does not have a patent license from Rovi that would permit Suddenlink to use Comcast's X1 IPG Product in connection with the set-top boxes Suddenlink provides to its subscribers. On information and belief, Comcast knows these facts, but has continued to market its competing X1 IPG Product to Suddenlink, as well as to other service providers.

87. In addition, Comcast's X1 IPG Product is built upon the Reference Design Kit ("RDK") platform. "Comcast's RDK [is] an integrated software package providing a common

platform for managing cable television equipment located at the consumers' homes, including set-top boxes, DVRs and home gateways."[10] The RDK enables "potential hardware partners to build their own versions of Comcast's next generation setup."[11]

88. Upon information and belief, to encourage adoption of Comcast's X1 IPG Product by others, Comcast established, promoted the existence of, and continues to promote the RDK. With the pending expiration of its License, and in an attempt to devalue Rovi's patent portfolio while simultaneously seeking to strengthen its own bargaining position, in 2013 Comcast (together with Time Warner Cable) formed the Reference Design Kit (RDK) Consortium.

89. In addition to marketing its X1 IPG Product to other Pay-TV providers, on information and belief, Comcast has continued to promote its infringing products and services even after filing of the original Complaint in this action by announcing, on April 20, 2016, the launch of its Xfinity TV Partner Program, in order to encourage and enable television and consumer electronics companies to implement Comcast's Xfinity IPG app, which "will provide access to [Comcast's] TV cable service, . . . live and on demand programming and cloud DVR recordings, and will be available on partners' smart TVs, TV-connected devices, and other IP-enabled video devices."[12] Comcast will "provide consumers with a capability to search through

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[10] *In re Comcast Corp., Time Warner Cable Inc., Charter Commc'ns, Inc., & SpinCo to Assign & Transfer Control of FCC Licenses & Other Authorization*, MB Dkt. No. 14-57, Comments of Broadcom Corp. (Aug. 18, 2014), *available at* http://apps.fcc.gov/ecfs/document/view?id=7521773052.

[11] Richard Lawler, *Humax's take on an IP-connected TV box for Comcast passes through the FCC*, ENGADGET (Nov. 28, 2012), http://www.engadget.com/2012/11/28/comcast-humax-xi3-h-ip-cable-box/.

[12] Mark Hess, *Comcast Seeks TV and Other Consumer Electronics Partners to Bring Xfinity TV Cable Service to More Retail Devices*, COMCAST VOICES (Apr. 20, 2016), http://corporate.comcast.com/comcast-voices/comcast-seeks-partners-to-bring-xfinity-tv-cable-service-to-more-retail-devices (last visited Apr. 25, 2016).

Comcast's video assets from a device's user interface with playback of a selected asset via the Xfinity TV Partner app."[13] "The Xfinity TV Partner App can be easily implemented by any company whose consumer electronics device supports HTML5 and other compatibility requirements."[14]

90. On information and belief, Comcast will continue to market its X1 IPG Product and Xfinity TV Partner Program to its customers as well as to other Pay-TV providers (including Pay-TV providers that do not have a license to Rovi's patents) and consumer electronics manufacturers. Comcast will continue to do so in competition (directly and indirectly) with Rovi's own patent-protected IPG products. Time Warner Cable, on the other hand, recently renewed its license agreement with Rovi.

V. DEFENDANTS' INFRINGING PRODUCTS, SERVICES AND ACTIVITIES

91. On information and belief, Comcast is in the business of providing digital video, audio, and other content services to customers under the name "Xfinity." Comcast provides subscribers to its subscription digital services with at least one Accused Product that is necessary for the receipt of such services.

92. On information and belief, Xfinity products and services are provided to consumers through the coordinated and combined participation of Defendants and/or under Defendants' instruction, direction, and/or control. Directly and/or indirectly, Comcast Corporation owns regional subsidiaries that provide telecommunications and video services to customers in a number of states. Xfinity services have been made available to consumers

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[13] *Id.*

[14] *Id.*; *see also* Comcast, *The Xfinity TV Partner Program: Bringing the Xfinity Experience to More Consumer Devices and TV Screens*, https://developer.xfinity.com/cableapp (last visited Apr. 23, 2016); Comcast, *The Xfinity TV Partner Program Frequently Asked Questions*, https://developer.xfinity.com/cableapp/moreinfo (last visited Apr. 23, 2016).

through at least the following regional subsidiaries owned, directly or indirectly, by Comcast Corporation: Comcast of Arkansas/Florida/Louisiana/Minnesota/Mississippi/Tennessee, Inc.; Comcast of Boston, Inc.; Comcast of California II, LLC; Comcast of California III, Inc.; Comcast of California IX, Inc.; Comcast of California/Colorado, LLC; Comcast of California/Colorado/Florida/Oregon, Inc.; Comcast of California/Colorado/Illinois/Indiana/Michigan, LP; Comcast of California/Maryland/Pennsylvania/Virginia/West Virginia, LLC; Comcast of California/Massachusetts/Michigan/Utah, LLC; Comcast of Colorado IX, LLC; Comcast of Colorado/Florida/Michigan/New Mexico/Pennsylvania/Washington, LLC; Comcast of Colorado/Pennsylvania/West Virginia, LLC; Comcast of Connecticut, Inc.; Comcast of Connecticut/Georgia/Massachusetts/New Hampshire/New York/North Carolina/Virginia/Vermont, LLC; Comcast of Florida/Georgia/Illinois/Michigan, LLC; Comcast of Florida/Georgia/Pennsylvania, L.P.; Comcast of Garden State, L.P.; Comcast of Houston, LLC; Comcast of Illinois VI, Inc.; Comcast of Illinois/Indiana/Ohio, LLC; Comcast of Maine/New Hampshire, Inc.; Comcast of Maryland, LLC; Comcast Cable of Maryland, LLC; Comcast of Massachusetts I, Inc.; Comcast of Massachusetts II, Inc.; Comcast of Massachusetts III, Inc.; Comcast of Massachusetts/New Hampshire, LLC; Comcast of New Jersey II, LLC; Comcast of Oregon II, Inc.; Comcast of Philadelphia II, LLC; Comcast of Potomac, LLC; Comcast of South Jersey, LLC; Comcast of Southeast Pennsylvania, LLC; Comcast of the South; Comcast of Utah II, Inc.; and Mile Hi Cable Partners, LP (collectively, "regional subsidiaries").

93. Upon information and belief, Comcast Corporation and its regional subsidiaries hold themselves out as a single entity in providing the infringing Xfinity products and services. Comcast's various Xfinity services are centrally advertised, documented, and explained on the

website, www.xfinity.com. Upon information and belief, the Comcast regional subsidiaries use identical contracts and other documents in the provision of the infringing Comcast Xfinity products and services that are generated and approved by Comcast Corporation and/or collectively by the aforementioned regional subsidiaries. For example, Comcast Xfinity TV services have the same "Residential Services Policies" for residential customers, regardless of their location.15

94. Upon information and belief, acting through one or more of its officers and/or its board of directors, Comcast Corporation has: (a) approved and authorized the development by designated Comcast Corporation subsidiaries of the technology and infrastructure necessary to offer the Xfinity service to the consuming public; (b) approved and authorized the capital expenditures by its subsidiaries necessary to provide the Xfinity service to consumers; and/or (c) authorized and directed its regional subsidiaries to provide the Xfinity service under the Comcast brand to consumers in their operating areas. Comcast Corporation further directed and controlled the activities of its regional subsidiaries. In doing so, Comcast Corporation (together with the remaining Defendants) actively induced the infringement of such subsidiaries.

95. Comcast markets the Xfinity service to subscribers of each of the regional subsidiaries described above, including subscribers of Comcast of Houston, LLC in the Eastern District of Texas, and actively solicits their business through Comcast's website.

96. Upon information and belief, Comcast has been involved in the design, testing, and implementation of the Xfinity service. Upon information and belief, Comcast provides overall management and coordination of the elements of the network used to deliver Comcast's Xfinity services, and of the regional subsidiaries that own and operate those elements.

[15] *See* Xfinity Terms of Service, Comcast, http://my.xfinity.com/terms/ (last visited Mar. 28, 2016).

97. In addition, Comcast has caused and directed at least the regional subsidiaries to engage in activities, including those activities described above, that have resulted in the infringement of one or more claims of the Asserted Patents. In performing the activities that, either individually or in combination, have infringed one or more claims of the Asserted Patents, the regional subsidiaries have acted as agents of at least Comcast Corporation, and their infringing activities have been within the course and scope of that agency.

98. Upon information and belief, Comcast does not manufacture the set-top boxes that it provides to Xfinity customers. Upon information and belief, Comcast's set-top boxes are purchased from Arris and Technicolor.

99. Comcast set-top boxes contain, or are designed to receive and execute, software (including IPG software) enabling a Comcast subscriber to infringe the Asserted Patents. Upon information and belief, such software has been installed on the receivers before being provided to end-user customers. Upon information and belief, the receivers are specifically manufactured to be combined with such software for use in Comcast's service infrastructure. Comcast leases and/or otherwise provides to its subscribers these receivers along with user guides and manuals describing how to use the receivers and their associated features. In addition, Comcast provides for download free of charge mobile applications intended to be used with its Xfinity services, including for controlling DVR and program guide functionality, as well as software updates for its receivers.

100. Rovi is informed and believes that Comcast has engaged in activities which promote the use and distribution of the X1 IPG Product and the Xfinity services and thereby encourages the infringement of Rovi's patents so long as Comcast remains unlicensed by Rovi. Those activities include, among others, its development, creation, and promotion of the RDK

software by which developers are encouraged, in an open source platform, to develop new applications that will run on set top boxes and other consumer premise equipment (CPE) loaded with Comcast's X1 IPG product and Xfinity services technology (which infringe Rovi's patents).

101. Rovi is informed and believes that, in or before 2012, Comcast was considering ways (a) to promote the adoption of its X1 IPG platform, which extensively utilizes Rovi's patented technology, as an industry standard; (b) to have new applications and enhancements to its platform developed; and (c) to avoid the R&D cost of developing such new applications and enhancements. The solution to meet those three goals was for Comcast to develop a reference design kit, which was a defined stack of software on one layer of an operating set top box, that would be "open-source" and available to all developers and vendors to create further enhancements and applications that could run on that software, and Comcast's products.

102. Comcast is also the founder and key developer of the Reference Design Kit. "Comcast's RDK is an integrated software package providing a common platform for managing cable television equipment located at the consumers' homes, including set-top boxes, DVRs and home gateways."[16] The RDK enables "potential hardware partners to build their own versions of [Comcast']s next generation setup."[17]

103. Through the RDK, Comcast "work[s] closely with STB manufactures and silicon suppliers during their early design phase and chipset prototype production in order to minimize

[16] *In re Comcast Corp., Time Warner Cable Inc., Charter Commc'ns, Inc., & SpinCo to Assign & Transfer Control of FCC Licenses & Other Authorization*, MB Dkt. No. 14-57, Comments of Broadcom Corp. (Aug. 18, 2014), *available at* http://apps.fcc.gov/ecfs/document/view?id=7521773052.

[17] Richard Lawler, *Humax's take on an IP-connected TV box for Comcast passes through the FCC*, ENGADGET (Nov. 28, 2012), http://www.engadget.com/2012/11/28/comcast-humax-xi3-h-ip-cable-box/.

development cycles. In fact, STB suppliers can now take a new chip from RDK-integrated silicon vendors and have a working STB design in days."[18]

104. Comcast also works and has worked directly with System on Chip ("SoC") manufacturers "to get the RDK up and running on those chip platforms before they even started building the [set-top] box around th[eir] chip."[19]

105. Through the promotion of the RDK, Comcast has made significant "effort[s] to get vendors such as original equipment manufacturers (OEMs), semiconductor manufacturers, software vendors, software integrators and multichannel video programming distributors to create an ecosystem for new gear for . . . Comcast's X1 service."[20]

106. "The RDK is supported by more than 200 licensees including CE [consumer electronics] and SoC [System on Chip] manufactures. . . ."[21]

107. Through at least the promulgation of the Comcast RDK, Comcast is directly involved in the design and manufacture of the receivers, including set-top boxes, onto which the infringing Comcast interactive program guides are loaded.

108. Comcast purchases significant quantities of receivers, including set-top boxes, from third parties, including the Manufacturer Defendants.

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[18] Steve Heeb, *Looking Back At RDK In 2015: Driving Speed And Innovation*, VIDEONET, http://www.v-net.tv/looking-back-at-rdk-in-2015-driving-speed-and-innovation (last visited Mar. 28, 2016).

[19] Mike Robuck, *Built for speed: Comcast RDK*, CED MAGAZINE (July 5, 2012, 12:41 PM), http://www.cedmagazine.com/article/2012/07/built-speed-comcast-rdk (quoting Comcast's Steve Reynolds, senior vice president of CPE and home networking).

[20] News and Events, Pace licenses RDK set-top design kit from Comcast, RDK CENTRAL, http://rdkcentral.com/pace-licenses-rdk-set-top-design-kit-from-comcast/ (last visited Mar. 28, 2016); *see* Deborah D. McAdams, *Motorola Mobility Licenses Comcast RDK*, TVTECHNOLOGY (Aug. 22, 2012), http://www.tvtechnology.com/news/0002/motorola-mobility-licenses-comcast-rdk/215089.

[21] About RDK, RDK CENTRAL, http://rdkcentral.com/about-rdk/ (last visited Mar. 28, 2016).

109. As of October 2014, Comcast had "deployed about 5 million X1 boxes," and was "'on track' to have the majority of its customers on X1 within three years [i.e., by 2017]."[22]

110. "All of Comcast's X1-class [set-top] boxes are based on the Reference Design Kit (RDK)."[23]

111. These third parties manufacture and/or assemble these devices at manufacturing facilities located outside the United States on Comcast's behalf and in accordance with the software and specifications provided as part of the RDK.

112. Comcast has had and continues to have significant involvement in the importation and distribution of these Comcast receivers, including by causing the manufacture and importation of these Comcast receivers to occur through the promulgation of the Comcast RDK; the ordering and purchase of such receivers from third party manufacturers, which receivers would not have been made or imported into the United States otherwise; and the subsequent delivery of such receivers to its subscriber base.

113. On account of Comcast's involvement in the design and development of the RDK from the chip stage onward, Comcast has held itself out as the "supplier" of its receivers, including its set-top boxes that it distributes to its subscribers. For example, in connection with the FCC filing made by Comcast relating to the potential merger of Comcast and Time Warner,

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[22] Jeff Baumgartner, *Comcast: 5 Million X1 Boxes Deployed*, MULTICHANNEL NEWS (Oct. 23, 2014, 11:00 AM), http://www.multichannel.com/news/tv-apps/comcast-5-million-x1-boxes-deployed/384990; *see* News and Events, Comcast: 5 Million X1 Boxes Deployed, RDK CENTRAL (Oct. 23, 2014), http://rdkcentral.com/comcast-5-million-x1-boxes-deployed/.

[23] Jeff Baumgartner, *Comcast Starts To Deploy IP-Only Boxes For X1*, MULTICHANNEL NEWS (Oct. 28, 2014, 4:00 PM), http://www.multichannel.com/news/technology/comcast-starts-deploy-all-ip-boxes-x1/385122.

Comcast repeatedly referred to "Comcast-supplied set-top boxes," and characterized set-top boxes used in connection with the X1 IPG Product as "Comcast's."[24]

114. These Comcast receivers contain, or are designed to receive and execute, software (including IPG software) enabling a Comcast subscriber to view, record, and control television broadcasts; connect to and interact with Comcast's service infrastructure and download data, software, and content; and receive an array of digital video, audio, and other content. Comcast designs the infringing IPG software that is loaded onto such receivers (and for which purpose such receivers were designed).

115. Such software is installed on the receivers before importation into the United States, or is installed on the accused receivers in the United States after importation but before being provided to end-user customers. Upon information and belief, the receivers are specifically manufactured, in accordance with the RDK, to be combined with such software for use in Comcast's service infrastructure.

116. On information and belief, Xfinity products and services are provided to consumers through the coordinated and combined participation of Defendants and/or under Defendants' instruction, direction, and/or control.

FIRST CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 8,713,595

117. Plaintiffs reallege and incorporate by reference the allegations of paragraphs 1-116 of this Complaint.

118. The '595 Patent is valid and enforceable under United States Patent Laws.

[24] *See generally, e.g.*, *In re Comcast Corp.*, MB Dkt. No. 14-57, Opp'n to Pets. to Deny & Resp. to Comments (Sept. 23, 2014), *available at* http://apps.fcc.gov/ecfs/document/view?id=7522909787.

119. Rovi Guides, Inc. owns, by assignment, all right, title, and interest in and to the ’595 Patent.

120. A copy of the ’595 Patent is attached as Exhibit A.

121. The original applications that led to the issuance of the ’595 Patent were filed on April 6, 1995, November 9, 1998, January 26, 2001, and November 21, 2003.

I. THE ’595 PATENT

122. As the ’595 Patent explains, “In response to viewer demand, cable and satellite telecasting services have been improving programming variety, mainly by increasing the number of program channels available to their customers.” ’595 Patent at 1:30-34.

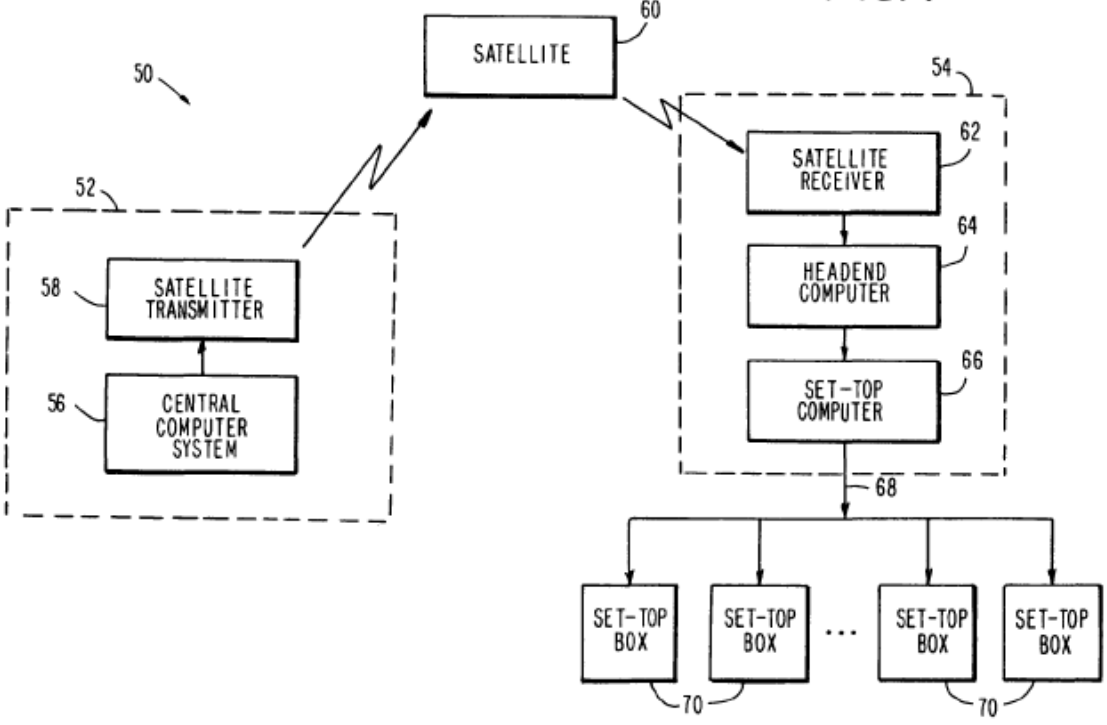
123. The ’595 Patent further explains that “improved programming variety is welcomed by the viewing public, but it does not come without cost. . . . Another concern is that the increased number of channels makes it more likely that two programs of interest will be telecast at any given time. Viewers therefore often find it necessary to record one program for later viewing while another program of interest is being watched. Thus, as the number of channels provided by telecasting services increases, the need for a system and process that simplifies the notoriously difficult task of scheduling programs for VCR recording becomes more pressing.” ’595 Patent at 1:40-61.

124. The ’595 Patent discloses, for example, “interactive program guide systems and related processes. . . which can automatically tune a television, or program a VCR, based on program selections made from program schedule information displayed on a television or other suitable video monitor. This interactive program guide is implemented preferably using a microprocessor-controlled set-top box that is coupled to the viewer’s television set. The set-top box receives program schedule information and software from a headend telecasting center.” ’595 Patent at 4:10-19.

125. The '595 Patent discloses that "[o]nce a program of interest has been located and highlighted by the curser, the viewer can use the remote control to cause the set-top box to tune to the selected program ('point and tune'), or to schedule the program for later viewing or recording (if not yet being telecast)." '595 Patent at 4:37-41.

126. Figure 1 "is a block diagram of a telecasting system which may provide the interactive program guide of the present invention." '595 Patent at 5:43-45.

FIG. 1

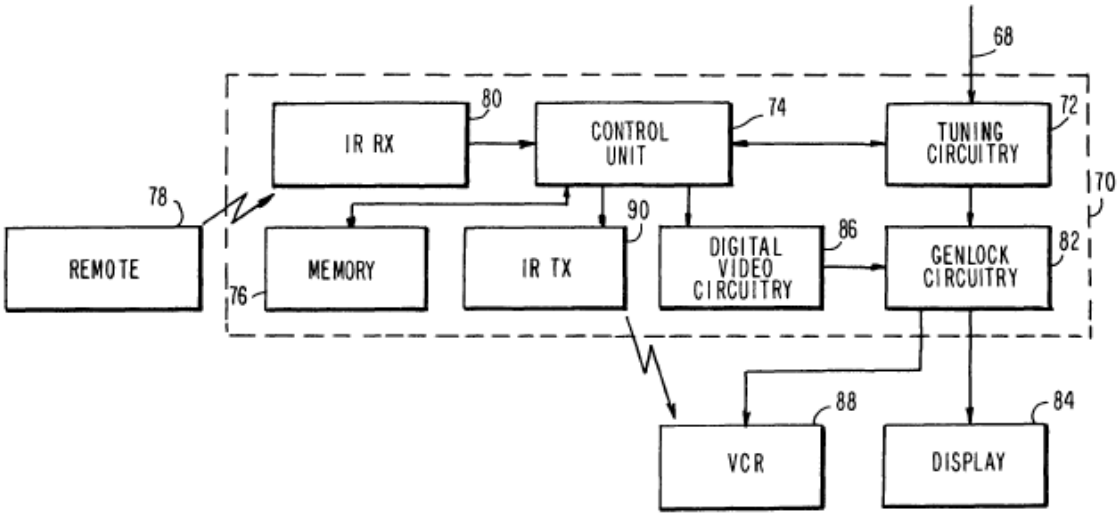


127. The '595 Patent discloses that "the data center 52 transmits program schedule information for all telecasting services that provide the interactive program guide of the present invention. . . . The 'reduced' set of program schedule information is supplied to a set-top computer 66. The set-top computer 66 formats the program schedule information for transmission on a cable network 68 along with television program signals on a plurality of

channels. . . . A plurality of set-top boxes 70 coupled to the cable network 68 receive the television program signals and the program schedule information." '595 Patent at 6:37-55.

128. Figure 2 "is a block diagram of a set-top box suitable for implementing the interactive program guide of the present invention." '595 Patent at 5:46-48.

FIG. 2



129. The '595 Patent explains that:

> The program schedule information, operational parameters, and software modules are provided to a control unit **74**, which is preferably microprocessor-based. The control unit **74** stores the program schedule information, operational parameters, and software modules in a memory **76**. The memory **76** is preferably random access memory (RAM), but it may also include read only memory (ROM) or flash memory to provide the control unit **74** with the instructions necessary to perform the initial loading of program schedule information, operational parameters, and software modules into the memory **76** when the set-top box **70** is turned on. After the memory **76** is loaded, it preferably contains program schedule information for the current day and at least six subsequent days.
>
> In addition to directing the program schedule information, operational parameters and software modules to the control unit **74**, the tuning circuitry **72** also tunes the set-top box **70** to a program channel selected by the viewer. The viewer can make channel selections by using a remote control **78** that communicates with the control unit **74** through an infrared receiver **80**. Upon receiving the viewer's channel selection, the control unit**74** causes the tuning circuitry **72** to tune to the selected channel. The television signals on the selected channel are received by generator synch lock ("genlock") circuitry **82**. When the interactive program

> guide is not on, the television signals on the selected channel pass through the genlock circuitry **82** and are received by a display **84**, which is preferably a conventional television set. The display **84** displays the television program on the selected channel.
>
> The remote control **78** may also be used by the viewer to invoke the interactive program guide of the present invention. When the control unit **74** receives the appropriate command, it retrieves at least a portion of the program schedule information from the memory **76**. The control unit **74** provides the retrieved data to digital video circuitry **86** which converts the digital data to video signals. The interactive program guide video signals are then provided to the genlock circuitry **82** which synchronizes those signals to the television signals received from the tuning circuitry **72**. The interactive program guide appears as an overlay on the television program that was being displayed on the display **84**. As the viewer uses the remote control **78** to navigate in the interactive program guide, the appropriate program schedule information is retrieved from the memory **76** by the control unit **74**, and ultimately displayed on the display **84**. When the viewer deselects the interactive program guide, the control unit **74** stops providing data to the digital video circuitry **86**, and the interactive program guide disappears.
>
> The interactive program guide can be used by the viewer to select programs of interest for display on the display **84**. The interactive program guide may also be used to program a video cassette recorder (VCR) **88**. The control unit **74** preferably exerts control over the VCR **88** through the use of an infrared transmitter **90** which communicates with an infrared receiver (not shown) of the VCR **88**. Control preferably includes starting and stopping recording by the VCR **88**, and it may also include channel selection as well as other more advanced control commands.

'595 Patent at 7:23-8:13.

130. The '595 Patent also discloses that "[t]he invention also contemplates the use of a set-top box (not shown) that includes two tuners—one each for the VCR 88 and the display 84." '595 Patent at 8:20-23.

131. Figures 11-28 of the '595 Patent "are logic flow diagrams representing, at a functional level, a control program used to implement the interactive program guide of the present invention." '595 Patent at 5:52-54. Figures 16-18 "represent the Selection routine **738**." '595 Patent at 25:57.

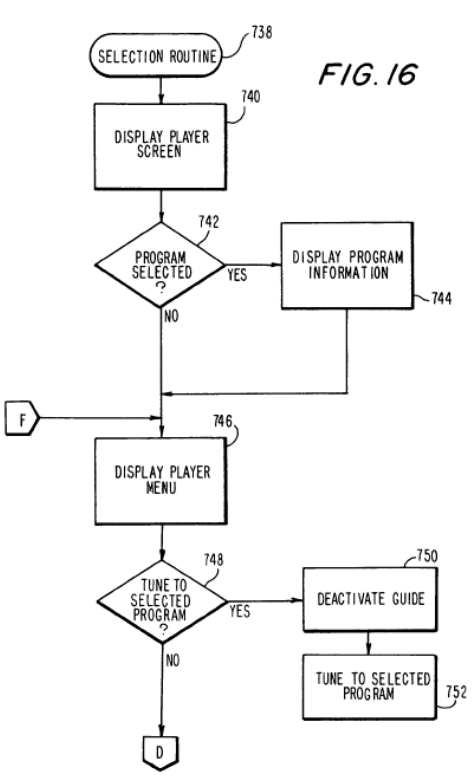


FIG. 16

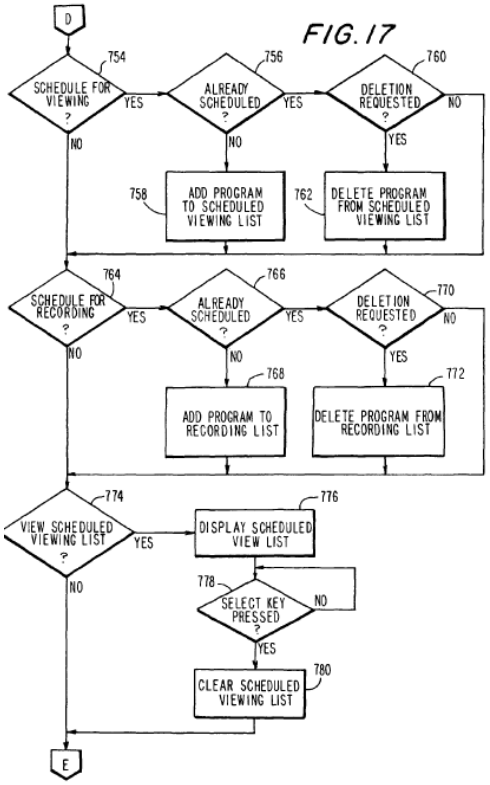


FIG. 17

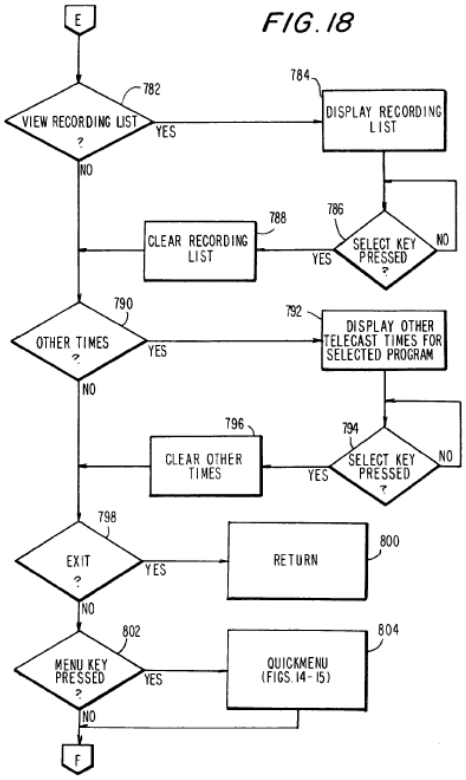


FIG. 18

132. The '595 Patent discloses that "[a]t test 748, the control unit 74 (FIG. 2) determines if the viewer selected the 'Tune to Program' player menu choice (i.e., if the selected program is currently being telecast). If so, the interactive program guide is deactivated (i.e., cleared from the display 84 (FIG. 2)) at step 750. The control unit 74 (FIG. 2) then causes the tuning circuitry 72 (FIG. 2) to tune to the channel that is carrying the selected program at step 752. The program is then displayed on the display 84 (FIG. 2)." '595 Patent at 26:8-15.

133. The '595 Patent further discloses that "[a]t test 764, the control unit 74 (FIG. 2) determines if the viewer selected the 'Add to Recording List' player menu choice (i.e., if the selected program is not currently being telecast). If so, test 766 is performed to determine if the viewer already scheduled the selected program for recording. If the selected program was not previously scheduled, an entry for the selected program is added to the recording list in the memory 76 (FIG. 2) at step 768." '595 Patent at 26:33-40.

134. In view of the historical context and development of simultaneously recording one program while watching another, discussed below, a person of ordinary skill in the art would have understood that the '595 Patent's inventions provide unconventional solutions to solve the problems they address.

II. HISTORICAL CONTEXT OF THE '595 PATENT

135. Using an IPG to control multiple tuners in a single set-top box to permit watching one program and recording another simultaneously was not common or conventional at the time of invention of the '595 Patent.

136. At the time of the invention of the '595 Patent, non-interactive electronic program guides themselves were relatively new, and development of such technology was still in its early stages. *See generally*, *e.g.*, '595 Patent at 1:30-2:32.[25] Indeed, "[t]he 1990s were a time of EPG innovation. StarSight Telecast, Inc. debuted an interactive on-screen guide service (IPG) in 1994 to accommodate the continually increasing amount of cable and satellite channels."[26] As the '595 Patent also recognized, "many cable telecasting services now offer several dozen program channels, and it is expected that this number will steadily increase as more cable services replace their coaxial cable networks with fiber optic networks. It is expected that satellite telecasting services also will continue to improve programming variety by increasing the number of program channels available to their customers. Needless to say, improved programming variety is welcomed by the viewing public." '595 Patent at 1:33-41.

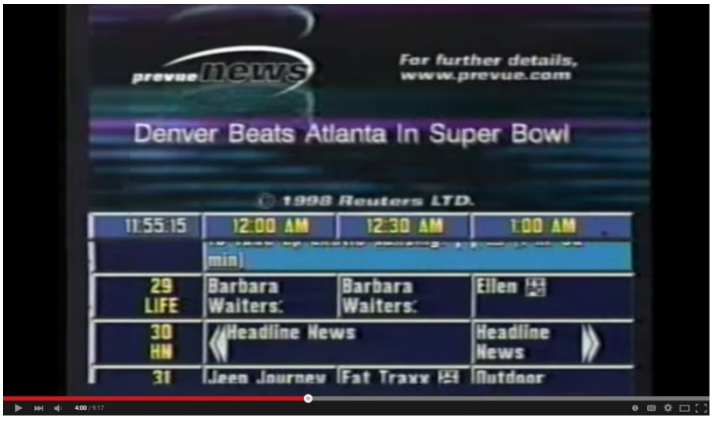
137. Early responses to the increased amount of television programs included a scrolling program guide prevalent at the time of the '595 invention: "[o]ver the past several

[25] *See also, e.g.*, Brian Cameron, *The On-Screen EPG Industry: Past, Present and Future*, FYI TELEVISION BLOG (Feb. 24, 2014), http://blog.fyitelevision.com/2014/02/the-on-screen-epg-industry-past-present.html#sthash.pZe8NDDB.dpbs (last visited March 29, 2016).

[26] *Id.*

years, television viewers have grown accustomed to a scrolling television program guide that is offered by many telecasting services in the United States. One such guide, known as the Prevue Channel, presents to the viewer (on a channel selected by the telecasting service), a scrolling grid containing program schedule information for each channel offered by that telecasting service. The horizontal axis of the scrolling grid identifies program schedule times, and the vertical axis identifies program channels." '595 Patent at 1:62-2:3.[27]

138. At the time of the invention of the '595 Patent, IPGs were still in their infancy. The interactive program guides discussed by the '595 Patent were not yet widely adopted by Pay-TV providers. Indeed, as mentioned, still prevalent at the time were non-interactive programming schedules that scrolled through programming for all channels, as shown below.



Prevue Channel format from 1993 to 1999.[28]

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[27] *See also, e.g.*, Brian Cameron, *The On-Screen EPG Industry: Past, Present and Future*, FYI TELEVISION BLOG (Feb. 24, 2014), http://blog.fyitelevision.com/2014/02/the-on-screen-epg-industry-past-present.html#sthash.pZe8NDDB.dpbs (last visited Mar. 29, 2019) ("In 1981, the United Video Satellite Group (UVSG) provided the very first Electronic Program Guide Channel in the U.S., which allowed cable subscribers to access television listings on their screens for the first time. It was a simple arrangement that was essentially just comprised of the channel number and program name. Towards the tail end of the decade, the system was rebranded as the Prevue Guide, and continued under this name until the new millennium. In addition to television listings, advertisements and music were also added to the mix.").

[28] *Prevue Becomes TV Guide Channel – Feb. 1, 1999*, YOUTUBE, https://www.youtube.com/watch?v=rLApAmSQQ5U (last visited Mar. 29, 2016).

139. As the '595 Patent also recognized, though "the scrolling grid program guide ha[d] proven valuable to viewers over the past several years, it is not an interactive program guide, and therefore, it lacks certain capabilities that viewers would find very useful," such as the ability to view program schedule information beyond a short window of time, the ability to control the pace of the scrolling, and the ability to use the grid directly to tune to a desired channel or program a VCR. '595 Patent at 2:16-28.

140. And, though IPGs were known and aimed at providing such capabilities, they had their disadvantages. For example, the '595 Patent discusses U.S. Patent No. 4,706,121 to Young and its problems with respect to, inter alia, restrictive searching capabilities. '595 Patent at 2:29-57. Indeed, it was not until the 2000s that IPGs "became an industry standard."[29]

141. The inventors of the '595 Patent also explicitly recognized the need for IPGs with capabilities that simplified the problems caused by the growing number of channels and programs: "the increased number of channels makes it more likely that two programs of interest will be telecast at any given time. Viewers therefore often find it necessary to record one program for later viewing while another program of interest is being watched. Thus, as the number of channels provided by telecasting services increases, the need for a system and process that simplifies the notoriously difficult task of scheduling programs for VCR recording becomes more pressing." '595 Patent at 1:53-61.

142. The inventors of the '595 Patent thus specifically addressed one such problem caused by the then-limited IPG technology relating to multiple programs being telecast at the same time: "if the viewer wishes to record and view different programs at the same time, the

[29] *See, e.g.*, Brian Cameron, *The On-Screen EPG Industry: Past, Present and Future*, FYI TELEVISION BLOG (Feb. 24, 2014), http://blog.fyitelevision.com/2014/02/the-on-screen-epg-industry-past-present.html#sthash.XfuG6ltQ.dpbs (last visited Mar. 29, 2016).

VCR 88 can be connected directly to the cable network 68. The invention also contemplates the use of a set-top box (not shown) that includes two tuners—one each for the VCR 88 and the display 84." '595 Patent at 8:14-23. The claimed invention thus covers an "[IPG] that directs multiple tuners in response to multiple user selections," specifically to "display and record different programs simultaneously." '595 File History at Feb. 27, 2012 Reply; Nov. 15, 2012 Reply.

143. Indeed, the inventions of the '595 Patent came several years before multi-tuner set-top boxes became commercially available, much less common or conventional. In 1999, DirecTV and TiVo partnered to introduce combination DirecTV / TiVo receivers. The Philips DSR6000 "DirecTiVo" device contained two tuners.[30]

144. Thus, to address the existing IPG-based problems relating to the technical inability to display one program on a television using a set-top box while using that set-top box to record a different program, the '595 Patent discloses the unique IPG-controlled dual-tuner solutions detailed above. Given the state of the art at the time, the '595 Patent inventions were a novel, non-conventional solution that directly addressed problems arising in the field of video recording devices and IPGs implemented thereon.

145. During prosecution of the '595 Patent, the prosecution history of which is hereby incorporated by reference in its entirety, applicants noted that the prior art cited by the examiner did not disclose the unconventional features of their invention. Indeed, none of the prior art

[30] *Philips DSR6000 for DirecTV*, TIVOPEDIA.COM, http://www.tivopedia.com/model-philips-dsr6000.php (last visited Dec. 8, 2015); *DirecTV and TiVo History*, TIVOPEDIA.COM, http://www.tivopedia.com/directv-and-tivo-history.php (last visited Mar. 28, 2016); Steve Kovsky, *Video IEDs: More Than Just Appliances*, PEARSON QUE (Nov. 1, 2002), http://www.quepublishing.com/articles/article.aspx?p=29893 (last visited Mar. 28, 2016).

presented disclosed an IPG that controlled more than a single tuner in a set-top box to both record and view the same program.

146. As noted above, the ’595 Patent is drawn to address a specific, technical problem arising in the context of controlling multiple tuners within a set-top box via an IPG. Consistent with the problem addressed being rooted in video recording and IPG technology, the ’595 Patent’s solutions naturally are also rooted in that same technology that cannot be performed with pen and paper or in the human mind. The ’595 Patent discloses the use of, inter alia, tuning circuitry, microprocessor control units, video recorders, and storage systems for implementing the invention and, indeed, the physical recording of one program being telecast while simultaneously viewing another program being telecast by using an IPG on a set-top box is not something that could be performed with pen and paper or in the human mind.

147. This technical context is reflected in the ’595 Patent’s claims. For example, each of the claims requires, inter alia, a set-top box including two tuners, receiving program schedule information to be stored in a memory, receiving requests through an IPG to simultaneously record and view two different programs, and using a video recorder to record one program and a display device to display the other program.

148. A person having ordinary skill in the art at the time of the inventions of the ’595 Patent would not have understood that the inventions could or would be performed solely in the human mind or using pen and paper. Using pen and paper would ignore the stated purpose of the ’595 Patent and the problem it was specifically designed to address. Doing so would also run counter to the inventors’ detailed description of the inventions and the language of the claims and be a practical impossibility.

III. '595 PATENT ALLEGATIONS

149. Defendants have infringed and are infringing, individually and/or jointly, either literally or under the doctrine of equivalents, the '595 Patent in violation of 35 U.S.C. § 271 et seq., directly and/or indirectly, by making, using, offering for sale/lease, selling or leasing in the United States, and/or importing into the United States without authority or license, set-top boxes, including set-top boxes with two or more tuners and DVR functionality, including without limitation, one or more of the Accused DVR Products (hereafter "the '595 Accused Products") that infringe at least claim 17 of the '595 Patent. On information and belief after reasonable investigation, each of the '595 Accused Products comprises or is designed to be used with: a non-transitory machine-readable medium for an interactive television program guide that controls a first tuner and a second tuner, said machine-readable medium having machine program logic recorded thereon for: receiving television programs and program schedule information; storing the program schedule information in a memory; causing a display device to display a program guide display with said interactive television program guide; receiving a user selection to record, with a video recorder, a first television program indicated on said program guide display with said interactive television program guide; receiving a user selection to view a second television program indicated on said program guide display with said interactive television program guide; and directing an output of said first tuner of said first television program selected to be recorded to said video recorder and an output of said second tuner of said second television program selected to be viewed to said display device with said interactive television program guide, such that said first television program selected to be recorded is recorded by said video recorder at the same time that said television second program selected to be viewed is displayed by said display device, and wherein a set-top box includes two tuners, one

each for said video recorder and said display device, said two tuners comprising said first tuner and said second tuner.

150. Defendants have been, and currently are, active inducers of infringement of the ’595 Patent under 35 U.S.C. § 271(b) and contributory infringers of the ‘595 Patent under 35 U.S.C. § 271(c).

151. Defendants knew of the ’595 Patent, or should have known of the ’595 Patent but were willfully blind to its existence. Upon information and belief, Defendants have had actual knowledge of the ’595 Patent since at least as early as the filing and/or service of the original Complaint in this action. Further, prior to the filing this Complaint, Rovi provided presentations and claim charts to Comcast specifically identifying patents in Rovi’s portfolio, including the ’595 Patent, and showing an example of Comcast’s infringement of the ’595 Patent. In addition, Arris Group, Inc., on behalf of itself and all of its subsidiaries, and Scientific-Atlanta, Inc., a predecessor-in-interest of Technicolor, on behalf of itself and all of its subsidiaries, previously took licenses to Rovi patents, including the ’595 Patent. In addition, the Manufacturer Defendants have provided IPG products to Comcast, knowing, upon information and belief, that Comcast had a license to Rovi’s guidance portfolio, including the ’595 Patent. Defendants have provided the ’595 Accused Products to their customers and/or instructions to use the ’595 Accused Products in an infringing manner while being on notice of or willfully blind to the ’595 Patent and Defendants’ infringement. Therefore, on information and belief, Defendants knew or should have known of the ’595 Patent and of their own infringing acts, or deliberately took steps to avoid learning of those facts.

152. Comcast knowingly and intentionally encourages and aids at least (1) Comcast regional subsidiaries; (2) the Manufacturer Defendants; (3) end-user customers and (4) third

parties through Comcast's Xfinity TV Partner Program, to directly infringe the '595 Patent. Comcast's Xfinity TV Partner Program was officially launched after the filing of the original Complaint in this case, and after Comcast was put on notice of the '595 patent. Comcast has knowledge of the '595 Patent and actively encourages third parties to implement the X1 infringing services in their service offerings, with knowledge that such services will directly infringe the '595 Patent.

153. For example, Comcast provides the technical and business infrastructure, know-how, and other support to instruct and enable Comcast regional subsidiaries to make, use, sell/lease, and/or offer for sale/lease the '595 Accused Products. The subsidiaries directly infringe at least claim 17 of the '595 Patent at least by making, using, selling/leasing, and/or offering for sale/lease the '595 Accused Products. Comcast induces such infringement by providing the technical and business infrastructure, know-how, and other support to enable and facilitate such infringement, knowing of, or being willfully blind to the existence of, the '595 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 17 of the '595 Patent, or subjectively believes that its actions will result in infringement of the '595 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

154. In addition, upon information and belief, Comcast provides the specifications, know-how and technical support to instruct and enable the Manufacturer Defendants to make, use, sell/lease, offer for sale/lease, and/or import the '595 Accused Products. The Manufacturer Defendants directly infringe at least claim 17 of the '595 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the '595 Accused Products. Comcast induces such infringement by providing the specifications, know-how and technical support to

enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '595 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 17 of the '595 Patent, or subjectively believed that its actions will result in infringement of the '595 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

155. Comcast also provides the '595 Accused Products and instructions to end-user customers so that such customers will use the '595 Accused Products in an infringing manner. For example, Comcast's marketing materials promote the use of the multiple tuners features of the '595 Accused Products, explaining that "X1 AnyRoom DVR has six tuners, meaning you can record up to six programs simultaneously." It also explains that one of its X1 AnyRoom DVRs, "[t]he Pace XG1v1 has only five available tuners so you can record up to five shows at once or record four shows while watching another channel live."[31] Comcast end-user customers directly infringe at least claim 17 of the '595 Patent by using the '595 Accused Products in their intended manner to infringe. Comcast induces such infringement by providing the '595 Accused Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '595 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 17 of the '595 Patent, or subjectively believes that its actions will result in infringement of the '595 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

156. The Manufacturer Defendants knowingly and intentionally encourage or aid at least (1) Comcast and its subsidiaries and (2) end-user customers, to directly infringe the '595 Patent.

[31] Xfinity, *Xfinity TV: X1 AnyRoom DVR: Overview*, http://customer.xfinity.com/help-and-support/cable-tv/x1-anyroom-dvr-overview (last visited Mar. 28, 2016).

157. For example, the Manufacturer Defendants provide the '595 Accused Products and hardware and software components thereof to Comcast and/or its subsidiaries. Comcast and/or its subsidiaries directly infringe claims of the '595 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the '595 Accused Products. The Manufacturer Defendants induce such infringement by providing the '595 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '595 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the '595 Patent, or subjectively believe that their actions will result in infringement of the '595 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

158. The Manufacturer Defendants also induce end-user customers to infringe by providing the '595 Accused Products, which are specifically designed to infringe, knowing and intending they will be used by end-user customers to infringe. End-user customers directly infringe as set forth above. The Manufacturer Defendants induce such infringement by providing the '595 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '595 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the '595 Patent, or subjectively believe that their actions will result in infringement of the '595 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

159. Defendants contributorily infringe at least claim 17 of the '595 Patent by providing the '595 Accused Products and/or software or hardware components thereof, that embody a material part of the claimed inventions of the '595 Patent, that are known by Defendants to be specially made or adapted for use in an infringing manner, and are not staple

articles with substantial non-infringing uses. The ’595 Accused Products are specially designed to infringe at least the claim 17 of the ’595 Patent, and their accused components have no substantial non-infringing uses.

160. This Complaint will serve as further notice to Defendants of the ’595 Patent and its infringement, should Defendants contend that they did not previously have knowledge thereof.

161. Additional allegations regarding Defendants’ knowledge of the ’595 Patent and willful infringement—including, for example, through Comcast’s Xfinity TV Partner Program that it launched after the filing of the original Complaint in this case—will likely have evidentiary support after a reasonable opportunity for discovery.

162. Defendants’ infringement of the ’595 Patent was willful and deliberate, entitling Rovi to enhanced damages and attorneys’ fees.

163. Defendants’ infringement of the ’595 Patent is exceptional and entitles Rovi to attorneys’ fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

164. Rovi has been damaged by Defendants’ infringement of the ’595 Patent and will continue to be damaged unless Defendants are enjoined by this Court. Rovi has suffered and continues to suffer irreparable injury for which there is no adequate remedy at law. The balance of hardships favors Rovi, and public interest is not disserved by an injunction.

165. Rovi is entitled to recover from Defendants all damages that Rovi has sustained as a result of Defendants’ infringement of the ’595 Patent, including without limitation lost profits and not less than a reasonable royalty.

SECOND CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 8,755,666

166. Plaintiffs reallege and incorporate by reference the allegations of paragraphs 1-165 of this Complaint.

167. The ’666 Patent is valid and enforceable under United States Patent Laws.

168. Rovi Guides, Inc. owns by assignment, all right, title, and interest in and to the ’666 Patent, including the right to collect for past damages.

169. A copy of the ’666 Patent is attached hereto as Exhibit B.

170. The original provisional applications that led to the issuance of the ’666 Patent were filed on July 17, 1998 and August 21, 1998.

171. On October 5, 2015, a Notice of Allowance was mailed in the prosecution of U.S. Application No. 13/195,678 (now U.S. Patent No. 9,204,184), which claims the benefit of the same priority applications as the ’666 Patent.

I. THE ’666 PATENT

172. The ’666 Patent discloses, among other things, “[a]n interactive television program guide with remote access. . . [that] is implemented on interactive television program guide equipment,” and wherein “[a] remote program guide access device is connected to the interactive television program guide equipment by a remote access link to provide a user with remote access to program guide functions.” ’666 Patent at Abstract. “The remote access interactive television program guide may communicate with the [local] interactive television program guide that is implemented on interactive television program guide equipment” in order to, inter alia, remotely record a program on the local interactive television program guide equipment. ’666 Patent at 15:13-17; *see also id*. at 14:43-49.

173. Figure 1 of the '263 Patent "is a schematic block diagram of an illustrative system in accordance with the present invention." '666 Patent at 5:38-39.

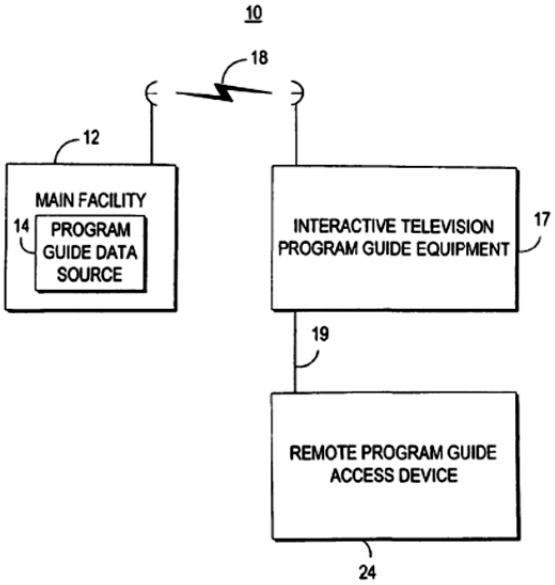

FIG. 1

174. "Main facility 12 provides interactive television program guide data from program guide data source 14 to interactive television program guide equipment 17 via communications link 18. There are preferably numerous pieces or installations of interactive television program guide equipment 17." '666 Patent at 7:20-26. The main facility 12 transmits program guide data to interactive television program guide equipment 17, which "may include television program listings data (e.g., program times, channels, titles, and descriptions)." '666 Patent at 7:30-35. The interactive television program guide equipment may be connected to remote program guide access device 24 via remote access link 19. '666 Patent at 7:39-43.

175. "FIGS. 2a-2d show illustrative arrangements for the interactive television program guide equipment and remote program guide access device of FIG. 1 in accordance with the principles of the present invention." '666 Patent at 5:40-43. As shown in, e.g., Figure 2b, the '666 Patent discloses that interactive television program guide equipment 17 may comprise a

television distribution facility with program guide distribution equipment 21 and a communications device 27 as well as user television equipment 22. '666 Patent at 7:44-55.

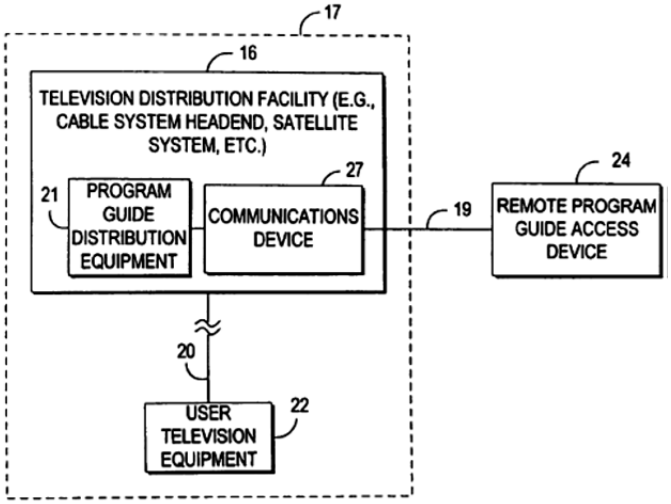

FIG. 2b

176. The "[t]elevision distribution facility 16 may distribute program guide data that it received from main facility 17 to multiple users via communications path 20." '666 Patent at 7:55-57.

177. In the system configuration of Figure 2b, for example, "remote program guide access device 24 is connected to television distribution facility 16 via communications device 27. In this approach television distribution facility 16 may distribute program guide data to remote program guide access device 24 directly. Television distribution facility 16 may also distribute additional data from user television equipment 22 that may be necessary for allowing remote program guide access device 24 to access various functions of the interactive program guide (e.g., reminder information, parental control settings, favorite channel settings, user profiles, etc.)." '666 Patent at 8:37-47. Alternatively, as shown in, for example, Figure 2d, the interactive television program guide equipment 17 and remote program guide access device 24 may employ "client-server based interactive program guide systems" wherein the "program guide distribution

equipment 21 may include program guide server 25." '666 Patent at 8:54-59. "[R]emote program guide access device 24 may, for example, communicate with program guide server 25 over remote access link 19 via communications device 27 as shown in FIG. 2d." '666 Patent at 9:16-19. "In practice, remote program guide access device 24 may be connected to user television equipment 22 (as shown in FIGS. 2a and 2c), television distribution facility 16 (as shown in FIG. 2b), connected to both (as indicated in FIG. 1), or may communicate with remote program guide server 25 (as shown in FIG. 2d) via remote access link 19." '666 Patent at 9:40-46.

178. "FIG. 5 is a schematic block diagram of an illustrative remote program guide access device in accordance with the principles of the present invention." '666 Patent at 5:50-52.

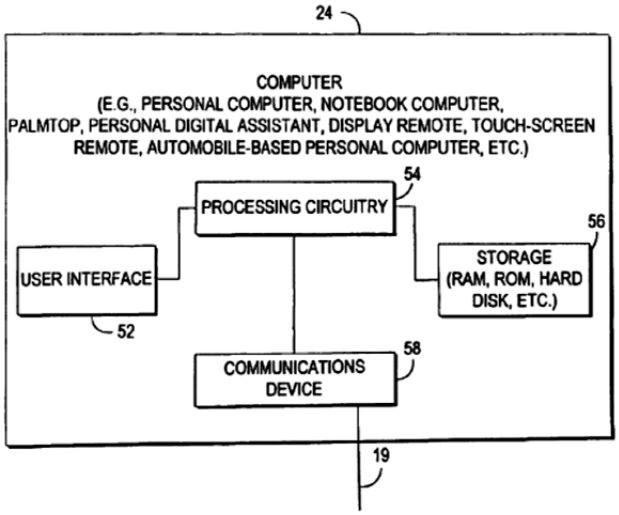

FIG. 5

179. The remote device may be a "personal computer (PC), portable computer (e.g., a notebook computer), palmtop computer, handheld personal computer (H/PC), display remote, touch-screen remote, automobile PC, personal digital assistant (PDA), or other suitable computer based device." '666 Patent at 12:33-40. The device "may have user interface 52, processing circuitry 54, storage 56, and communications device 58." '666 Patent at 12:40-42.

180. The communications device 58 supports "communications between remote program access device 24 and interactive television program guide equipment 17 over link 19," and may comprise a communications port, modem, network interface card, or wireless transceiver. '666 Patent at 12:54-65. For communications between the remote program guide access device 24 and interactive television program guide equipment 17 over link 19, the system may employ, for example, a "protocol stack which includes Sequenced Packet Exchange/Internetwork Packet Exchange (SPX/IPX) layers, Transmission Control Protocol/Internet Protocol (TCP/IP) layers," or other suitable protocols. '666 Patent at 13:20-31.

181. "Remote program guide access device 24 may establish an Internet session with Internet service system 61 and thereby obtain program guide data from or set program guide settings with (e.g., set reminders or notifications, view listings, schedule program recording, . . . etc.) the program guide running on interactive program guide equipment 17." '666 Patent at 13:57-14:5. The '666 Patent explains that, for example, "Internet service system 61 . . . may interact with user television equipment 22 directly or via program guide distribution equipment 21 when supporting communications between the program guide and the remote program guide access device. If the program guide implemented on interactive television program guide equipment 17 is a client-server guide as shown in FIG. 6b, Internet service system 61 may interact with program guide server 25 when supporting communications between the program guide and the remote program guide access device 24." '666 Patent at 14:7-23.

182. The '666 Patent provides an example scenario for a user employing this system: "the user at work may interact with the program guide on user television equipment 22 via Internet service system 61 to select programs for recording on the user's home videocassette recorder, or to schedule program reminders that will appear on the user's home television or

remote program guide access device just before a program is broadcast." '666 Patent at 14:43-49.

183. "Program guide information (e.g., reminder information, listings information, recording information, . . . [etc.]) may be exchanged, and settings set, between the two interactive television program guides over remote access link 19 using one or more access communications." '666 Patent at 15:35-43. Where an Internet link is used, "program guide functionality may be accessed by, for example, using the HyperText Transfer Protocol (HTTP). Remote program guide access device 24 and interactive television program guide equipment 17 may, for example, transfer program guide information as files using the File Transfer Protocol (FTP) or Trivial File Transfer Protocol (TFTP), running over a TCP/IP protocol stack." '666 Patent at 15:66-16:7.

184. The remote program access guide device 24 may "access stored program guide information or obtain program guide information from interactive television program guide equipment 17 via remote access link 19 . . . and generate an appropriate display screen for display using user interface 52." '666 Patent at 16:57-65. This can include "information on the user's preferences" obtained "from the local interactive television program guide," which information is "used by the local and remote access interactive program guides to navigate through favorite channels and display television program listings." '666 Patent at 19:55-20:6. These "[u]ser preference profiles may also be used to limit the amount of data provided to remote program guide access device 24 and thereby tend to minimize the bandwidth requirements of remote access link 19." '666 Patent at 20:21-24.

185. In view of the historical context and development of using a remote IPG implemented on a remote access device to instruct a local IPG to record a television program,

discussed below, a person of ordinary skill in the art would have understood that the '666 Patent's inventions provide unconventional solutions to solve the problems they address.

II. HISTORICAL CONTEXT OF THE '666 PATENT

186. The use of a method and system "to provide an interactive television program guide system in which the program guide may be remotely accessed by the user . . . [to] allow the user to access important features of the user's in-home program guide from a remote location and set program guide settings for those features" was not common or conventional at the time of the '666 Patent's invention, let alone for years thereafter. '666 Patent at 2:25-30.

187. At the time of the invention of the '666 Patent, the largest and most sophisticated Pay- TV providers did not offer anything resembling the claimed functionality. It was not until many years after the invention of the '666 Patent that providers began offering the ability to communicate programs to be recorded to a local program guide from a remote access device.

188. Indeed, according to AT&T, by November 2006, AT&T's U-verse service "was one of the first providers to introduce Web Remote Access to the DVR."[32] A 2007 AT&T press release describes this feature as "Web remote access to digital video recorder (DVR), which allows high speed Internet customers to schedule recordings using their AT&T Yahoo!® account. This feature is unique to AT&T among local providers."[33]

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[32] AT&T, *New iPhone and iPod Touch Application from AT&T Lets Customers Schedule U-verse TV DVR Recordings on the Go* (June 25, 2009), http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26877 (last visited Mar. 28, 2016).

[33] AT&T, *AT&T Introduces U-verse in Dallas-Fort Worth* (Mar. 6, 2007), http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=23483 (last visited Mar. 28, 2016).

189. AT&T first introduced a Mobile Remote Access feature similar to its Web Remote Access feature in April 2007, nearly nine years after the inventions of the '666 Patent.[34]

190. More than 10 years after the inventions of the '666 Patent, in 2009, AT&T lauded as "DVR enhancements" expanded functionality permitting users to "easily search U-verse TV program listings from the full program guide, view descriptions of selected programs, schedule program or series recordings, manage or edit scheduled recordings, and delete stored DVR content."[35]

191. In addition, Verizon did not offer remote program guide access until at least 2009. A November 2008 press release explained how "Verizon is also planning to launch several other new IMG [(Interactive Media Guide)] features in the future, including… Remote DVR Programming."36 This feature was introduced in January 2009, and allowed customers "to remotely control their Home Media DVRs either online or via select Verizon Wireless handsets."[37]

192. In an August 2009 press release, Verizon touted the introduction of an "advanced" feature, available to all FiOS TV DVR users who also subscribe to FiOS Internet, that "lets DVR subscribers use any Internet-enabled cell phone to remotely manage their

[34] AT&T, "AT&T U-verse Timeline" (2008), *available at* https://www.att.com/Common/merger/files/pdf/U-verse%20Timeline41907.pdf (last visited Mar. 28, 2016).

[35] AT&T, *New iPhone and iPod Touch Application from AT&T Lets Customers Schedule U-verse TV DVR Recordings on the Go* (June 25, 2009), http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26877 (last visited Mar. 28, 2016).

[36] Verizon, *Verizon Launches New Wave of Interactive Features for FiOS TV Customers in the Tampa Bay Area* (Nov. 12, 2008), http://www.verizon.com/about/news/press-releases/verizon-launches-new-wave-interactive-features-fios-tv-customers-tampa-bay-area (last visited Mar. 28, 2016).

[37] Verizon, *Verizon FiOS TV Customers Don't Miss a Thing With Remote DVR Programming* (Jan. 8, 2009), http://www.verizon.com/about/news/press-releases/verizon-fios-tv-customers-dont-miss-thing-remote-dvr-programming (last visited Mar. 28, 2016).

recorders, including reviewing, changing or adding recording requests; deleting recorded programs; browsing and searching TV and video-on-demand listings; setting parental controls; and more."[38]

193. Thus, accessing a user's in-home television equipment remotely to schedule recordings and to use other interactive program guide features was not available to consumers in the industry until years after the time of invention of the '666 Patent.

194. Moreover, the '666 Patent describes a remote access device that can interact with the user's local program guide equipment in order to schedule recordings through the local program guide. Remote interaction with the local program guide permits users to set in-home program reminders, adjust parental control settings, and select programs for recording. These features were absent from then-available alternatives to the in-home interactive program guide, such as program guides available through online programs and personal computers. '666 Patent at 1:42-47, 1:51-55, 2:12-24.

195. Neither did the largest and most sophisticated Pay- TV providers offer anything resembling this functionality through a mobile device. It was not until many years after the time of invention of the '666 Patent that providers began offering users the ability to use a mobile device (and corresponding mobile application) to remotely communicate programs to be recorded by local program guide equipment.

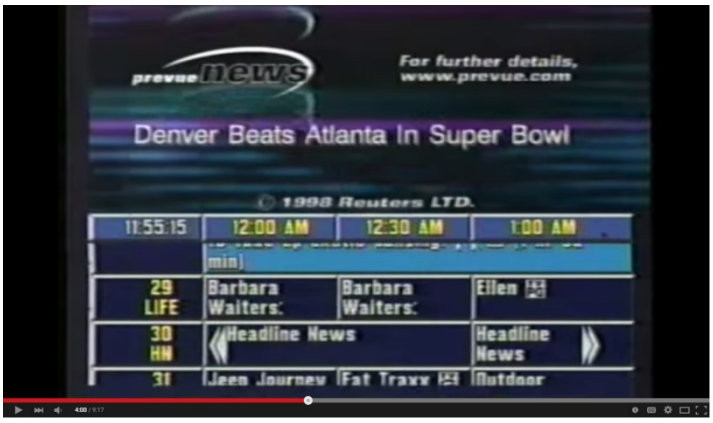
196. DirecTV did not release a mobile application allowing remote recording until March 2009.[39] DirecTV touted this ability "to easily set your home DVR from any cell phone or

[38] Verizon, *Advanced Multimedia and Remote DVR Features Now Available to FiOS TV DVR Customers* (Aug. 11, 2009), http://www.verizon.com/about/news/press-releases/advanced-multimedia-and-remote-dvr-features-now-available-fios-tv-dvr-customers (last visited Mar. 28, 2016).

computer" in a national television advertisement beginning in January 2009, over a decade after the inventions of the '666 Patent.[40]

197. Comcast did not offer the ability to schedule recordings using a mobile device until March 2010 with the release of Comcast Mobile 2.0.[41]

198. Furthermore, at the time of the invention of the '666 Patent, IPGs were still in their infancy. The interactive program guides discussed by the '666 Patent were not yet widely adopted by Pay-TV providers. Instead, still prevalent at the time were non-interactive programming schedules that scrolled through programming for all channels, as shown below:



Prevue Channel format from 1993 to 1999[42]

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[39] Mel Martin, *DirecTV beams down iPhone app*, ENGADGET (Mar. 30, 2009), http://www.engadget.com/2009/03/30/directv-beams-down-iphone-app/ (last visited Mar. 28, 2016).

[40] Justin Berka, *DirecTV releases remote recording application for iPhone*, ARS TECHNICA (Mar. 31, 2009, 12:01 PM), http://arstechnica.com/apple/2009/03/directv-releases-remote-recording-application-for-iphone/ (last visited Mar. 28, 2016); DirecTV – Hellboy – MethodStudios, ADFORUM, http://www.adforum.com/production/6658175/creative-work/34442420/hellboy/directv (last visited Mar. 28, 2016).

[41] Cathy Avgiris, *Comcast Mobile App Part 2.0 – Xfinity Voice, Video and Email Go Mobile* (Mar. 1, 2010), COMCAST, http://corporate.comcast.com/comcast-voices/comcast-mobile-app-part-20-xfinity-voice-video-and-email-go-mobile (last visited Mar. 29, 2016).

[42] *Prevue Becomes TV Guide Channel – Feb. 1, 1999*, YOUTUBE, https://www.youtube.com/watch?v=rLApAmSQQ5U (last visited Mar. 29, 2016).

199. Interactive program guides, to the extent they even were available, did not communicate with other interactive program guides implemented elsewhere in order to schedule recordings using an interactive program guide.

200. The '666 Patent discloses the use of a mobile computing device, a technology also in its infancy. Upon information and belief, the iPhone was not released until 2007, nine years after the time of invention of the '666 Patent. Competing smartphones using the Android operating system were not released until 2008. Even the earliest Blackberry smartphones did not exist at the time of invention of the '666 Patent.

201. Mobile devices at the time of invention of the '666 Patent were limited in terms of features and computing capacity. The Nokia 9000 Communicator, introduced in 1996, featured a monochromatic display and a full QWERTY keyboard, and had only 8 MB of RAM.43 As explained above, mobile phone applications with IPG functionality were still years away.

202. The '666 Patent claims cannot be performed in the human mind or using pen and paper. As noted above, the '666 Patent expressly states that it is drawn to address a specific, technical problem arising in the context of interactive program guides, which were generally implemented on in-home receivers that could not readily communicate with interactive program guides on remote devices (including mobile devices), and thus "require[d] that the user be physically present in the home to access important program guide features such as program reminders, parental control, and program recording." '666 Patent at 2:21-24. As described above, the patent specifically discloses embodiments using specific technologies for generating and displaying program listings, communications technology and protocols, and user computer equipment and portable electronic devices.

[43] Taylor Martin, *The evolution of the smartphone*, POCKETNOW (July 28, 2014, 8:01 PM), http://pocketnow.com/2014/07/28/the-evolution-of-the-smartphone (last visited Mar. 28, 2016).

203. This technical context is reflected in the '666 Patent's claims. For example, each of the claims requires local interactive television program guide equipment, on which a local interactive television program guide is implemented, and a remote interactive television program guide access device, which communicate over an Internet communications path. As another example, the '666 Patent's claims require that the remote access device program guide contain identifiers for program listings wherein the user can select an identifier corresponding to a program airing at a later scheduled time that the user wishes to record using local interactive program guide equipment; meanwhile, the local equipment is receiving programs and displaying an interactive program guide with its own identifiers for program listings corresponding to the programs being broadcast. These particular technical solutions address, inter alia, the technical problem of providing a seamless user-experience between a mobile device IPG and a local device IPG, as well as across a variety of mobile devices with differing memory and computing constraints.

204. A person having ordinary skill in the art at the time of the inventions of the '666 Patent would not have understood that the inventions could or would be performed solely in the human mind or using pen and paper. Using pen and paper would ignore the stated purpose of the '666 Patent and the problem it was specifically designed to address. Doing so would also run counter to the inventors' detailed description of the inventions and the language of the claims and be a practical impossibility.

III. '666 PATENT ALLEGATIONS

205. Defendants have infringed and are infringing, individually and/or jointly, either literally or under the doctrine of equivalents, the '666 Patent in violation of 35 U.S.C. § 271 et seq., directly and/or indirectly, by making, using, offering for sale/lease, selling or leasing in the United States, and/or importing into the United States without authority or license, set-top boxes,

including without limitation, one or more of the Accused DVR Products (hereafter "the '666 Accused Products") and associated software (including at least the Xfinity branded mobile IPG) that infringe or are used to infringe at least claim 10 of the '666 Patent. On information and belief after reasonable investigation, each of the '666 Accused Products is designed to be and is used with Comcast's Xfinity TV Remote App to enable a user to "Schedule a DVR recording with the XFINITY TV Remote App."[44]

206. Defendants have been, and currently are, active inducers of infringement of the '666 Patent under 35 U.S.C. § 271(b) and contributory infringers of the '666 Patent under 35 U.S.C. § 271(c).

207. Defendants knew of the '666 Patent, or should have known of the '666 Patent but were willfully blind to its existence. Upon information and belief, Defendants have had actual knowledge of the '666 Patent since at least as early as the filing and/or service of the original Complaint in this action. Further, prior to the filing this Complaint, Rovi provided presentations and claim charts to Comcast specifically identifying patents in Rovi's portfolio, including patents in the same family as the '666 Patent, and showing an example of Comcast's infringement of those patents. In addition, (a) Comcast Corporation, on behalf of itself and for its affiliates, (b) Arris Group, Inc., on behalf of itself and all of its subsidiaries, and (c) Scientific-Atlanta, Inc., a predecessor-in-interest of Technicolor, on behalf of itself and all of its subsidiaries, previously took licenses to Rovi patents, including the '666 Patent. Further, the Manufacturer Defendants have provided IPG products to Comcast, knowing, upon information and belief, that Comcast had a license to Rovi's guidance portfolio, including the '666 Patent. Defendants have provided

[44] Xfinity Apps: Schedule a DVR recording with the XFINITY TV Remote App, http://customer.xfinity.com/help-and-support/xfinity-apps/schedule-dvr-recordings-in-xfinity-apps/ (last visited Mar. 22, 2016).

the ’666 Accused Products to their customers and/or instructions to use the ’666 Accused Products in an infringing manner while being on notice of or willfully blind to the ’666 Patent and Defendants’ infringement. Therefore, on information and belief, Defendants knew or should have known of the ’666 Patent and of their own infringing acts, or deliberately took steps to avoid learning of those facts.

208. Comcast knowingly and intentionally encourages and aids at least (1) Comcast regional subsidiaries; (2) the Manufacturer Defendants; (3) end-user customers and (4) third parties through Comcast’s Xfinity TV Partner Program, to directly infringe the ’666 Patent. Comcast’s Xfinity TV Partner Program was officially launched after the filing of the original Complaint in this case, and after Comcast was put on notice of the ’666 Patent. Comcast has knowledge of the ’666 Patent and actively encourages third parties to implement the X1 infringing services in their service offerings, with knowledge that such services will directly infringe the ’666 Patent.

209. For example, Comcast provides the technical and business infrastructure, know-how, and other support to instruct and enable Comcast regional subsidiaries to make, use, sell/lease, and/or offer for sale/lease the ’666 Accused Products. The subsidiaries directly infringe at least claim 10 of the ’666 Patent at least by making, using, selling/leasing, and/or offering for sale/lease the ’666 Accused Products. Comcast induces such infringement by providing the technical and business infrastructure, know-how, and other support to enable and facilitate such infringement, knowing of, or being willfully blind to the existence of, the ’666 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 10 of the ’666 Patent, or subjectively believes that its actions will

result in infringement of the '666 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

210. In addition, upon information and belief, Comcast provides the specifications, know-how and technical support to instruct and enable the Manufacturer Defendants to make, use, sell/lease, offer for sale/lease, and/or import the '666 Accused Products. The Manufacturer Defendants directly infringe at least claim 10 of the '666 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the '666 Accused Products. Comcast induces such infringement by providing the specifications, know-how and technical support to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '666 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 10 of the '666 Patent, or subjectively believed that its actions will result in infringement of the '666 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

211. Comcast also provides the '666 Accused Products and instructions to end-user customers so that such customers will use the'666 Accused Products in an infringing manner. For example, Comcast markets the Xfinity TV Remote App to end-user customers by touting the ability to "Schedule a DVR recording with the XFINITY TV Remote App" as "a great way to make sure you don't miss your favorite shows." Comcast provides instructions to end-user customers on "How to do it," e.g., "From the Main Screen: Select The Guide. Review the grid of available programs. Select the program you want to record. You'll see an option to record the program on your DVR." [45] Comcast end-user customers directly infringe at least claim 15 of

[45] Xfinity, *Xfinity Apps: Schedule a DVR recording with the XFINITY TV Remote App*, http://customer.xfinity.com/help-and-support/xfinity-apps/schedule-dvr-recordings-in-xfinity-apps/ (last visited Mar. 28, 2016).

the ’666 Patent by using the ’666 Accused Products in their intended manner to infringe. Comcast induces such infringement by providing the ’666 Accused Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’666 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 10 of the ’666 Patent, or subjectively believes that its actions will result in infringement of the ’666 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

212. The Manufacturer Defendants knowingly and intentionally encourage or aid at least (1) Comcast and its subsidiaries and (2) end-user customers, to directly infringe the ’666 Patent.

213. For example, the Manufacturer Defendants provide the ’666 Accused Products and hardware and software components thereof to Comcast and/or its subsidiaries. Comcast and/or its subsidiaries directly infringe claims of the ’666 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the ’666 Accused Products. The Manufacturer Defendants induce such infringement by providing the ’666 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’666 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the ’666 Patent, or subjectively believe that their actions will result in infringement of the ’666 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

214. The Manufacturer Defendants also induce end-user customers to infringe by providing the ’666 Accused Products, which are specifically designed to infringe, knowing and intending they will be used by end-user customers to infringe. End-user customers directly

infringe as set forth above. The Manufacturer Defendants induce such infringement by providing the '666 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '666 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the '666 Patent, or subjectively believe that their actions will result in infringement of the '666 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

215. Defendants contributorily infringe at least claim 10 of the '666 Patent by providing the '666 Accused Products and/or software or hardware components thereof, that embody a material part of the claimed inventions of the '666 Patent, that are known by Defendants to be specially made or adapted for use in an infringing manner, and are not staple articles with substantial non-infringing uses. The '666 Accused Products are specially designed to infringe at least claim 10 of the '666 Patent, and their accused components have no substantial non-infringing uses.

216. This Complaint will serve as further notice to Defendants of the '666 Patent and its infringement, should Defendants contend that they did not previously have knowledge thereof.

217. Additional allegations regarding Defendants' knowledge of the '666 Patent and willful infringement—including, for example, through Comcast's Xfinity TV Partner Program that it launched after the filing of the original Complaint in this case—will likely have evidentiary support after a reasonable opportunity for discovery.

218. Defendants' infringement of the '666 Patent was willful and deliberate, entitling Rovi to enhanced damages and attorneys' fees.

219. Defendants' infringement of the '666 Patent is exceptional and entitles Rovi to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

220. Rovi has been damaged by Defendants' infringement of the '666 Patent and will continue to be damaged unless Defendants are enjoined by this Court. Rovi has suffered and continues to suffer irreparable injury for which there is no adequate remedy at law. The balance of hardships favors Rovi, and public interest is not disserved by an injunction.

221. Rovi is entitled to recover from Defendants all damages that Rovi has sustained as a result of Defendants' infringement of the '666 Patent, including without limitation lost profits and not less than a reasonable royalty.

THIRD CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 7,996,864

222. Plaintiffs reallege and incorporate by reference the allegations of paragraphs 1-221 of this Complaint.

223. The '864 Patent is valid and enforceable under United States Patent Laws.

224. Rovi Guides, Inc. owns, by assignment, all right, title, and interest in and to the '864 Patent.

225. A copy of the '864 Patent is attached as Exhibit C.

226. The original applications that led to the issuance of the '864 Patent were filed on August 31, 1994, September 27, 1994, January 5, 1995, April 17, 1995, June 7, 1995, and June 8, 2000.

I. THE '864 PATENT

227. The '864 Patent discloses, among other things, methods and systems for "display of program related information such as television program listings from a program schedule data

base in the background and moving, real time or stored video clip images of a program selected from the displayed listings in the PIP window." '864 Patent at Abstract.

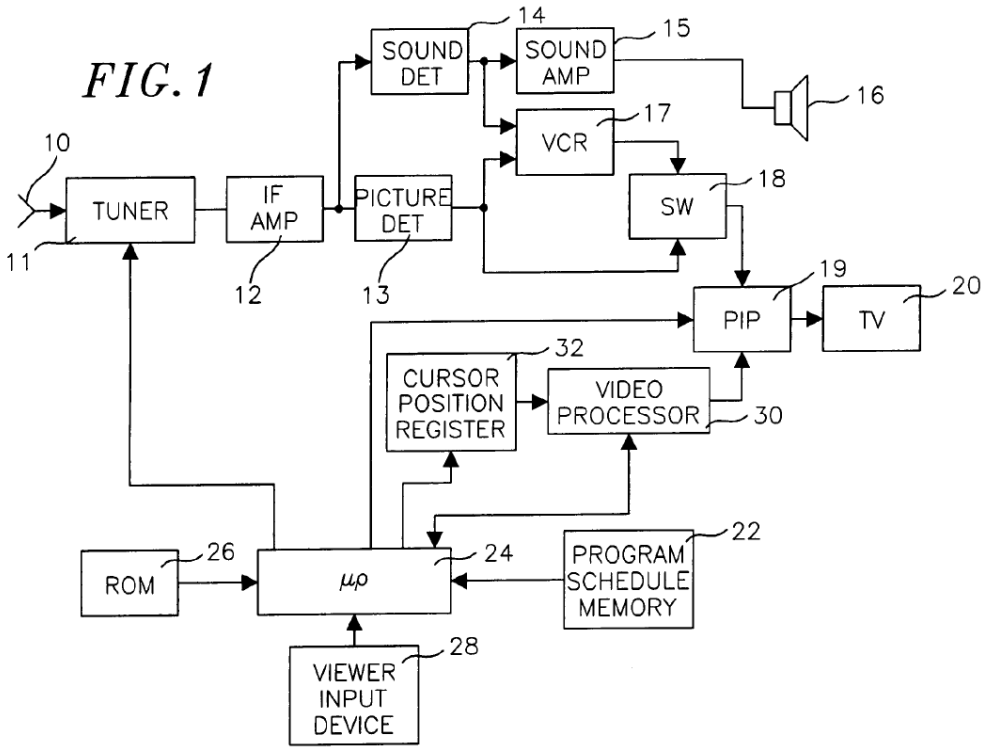
228. The '864 Patent explains that "[t]elevision program guides help television viewers select programs to watch. Such television program guides list the available television programs by day of the week, time of day, channel, and program title. For many years television program guides have been published in hard copy form. More recently as illustrated by Levine U.S. Pat. No. 4,908,713, television program guides have begun to take an electronic form. In other words, the schedule of program listings is stored in an electronic memory connected to the television receiver. The program listings are recalled from memory by the viewer on command for display on the television screen." '864 Patent at 1:44-54.

229. As the '864 Patent explains, "[d] espite the prevalence of television program guides, many viewers still make their program selections by switching the television tuner from channel to channel and observing on the screen what program is being received on the respective channels. This process is sometimes called 'grazing.'" '864 Patent at 1:55-59.

230. The '864 Patent provides a technological improvement for channel selection. The '864 Patent discloses, for example, that "[t]o facilitate channel grazing, a television viewer can use a PIP format for display of current television program listings from a program schedule data base in the background and moving, real time images of a program selected from the displayed listings in the PIP window. Specifically, as the viewer selects a particular program from the displayed current television program listings by means of a cursor or a code number, the corresponding program automatically appears in the PIP window. In this way, the viewer can channel graze by sequentially selecting the individual program listings in the background. When the viewer finds a program that the viewer wishes to watch, the viewer leaves the PIP format and

returns to full screen television viewing, the tuner already being set to the desired program. To do this the viewer can reverse the background and PIP window and then collapse the window, leaving the desired program on the full screen or apparatus can be configured to return to full screen viewing in a single step." '864 Patent at 2:20-36.

231. Figure 1 "is a schematic block diagram of a television receiver that has an electronic television program guide incorporating the principles of one embodiment of the invention." '864 Patent at 3:1-3.



232. As the '864 Patent discloses,

> With reference to FIG. 1, a source of television signals **10** such as a terrestrial antenna, or a cable is connected to a television tuner **11**. The output of tuner **11** is a modulated intermediate frequency signal containing video and audio television information. Tuner **11** is connected by an intermediate frequency amplifier (IF AMP) **12** to a picture detector (PICTURE DET) **13** and a sound detector (SOUND DET) **14**, which produce base band video and audio signals, respectively. The audio signal is coupled by a sound amplifier (SOUND AMP) **15** to a loudspeaker **16**. The video signal is coupled by a video amplifier not shown to one input of

a switch **18**. Sound detector **14** and picture detector **13** are connected to the audio and video inputs, respectively, of a video cassette recorder (VCR) **17**. (Alternatively, television signal source **10** could be directly connected to the RF input of VCR **17**, if its internal tuner and demodulating circuitry is to be utilized.) The output of VCR **17** is connected to the other input of switch **18**. The output of switch **18** is connected to one input of a conventional picture-in-picture (PIP) integrated circuit chip **19**. The output of PIP chip **19** is connected to the video input of a television receiver or monitor (TV) **20** having a screen (not shown).

An updatable data base of the schedule of program listings of all the available channels for a prescribed period of time, e.g. a day or a week, is electronically stored in a program schedule memory **22**. These program listings typically include for each program the title, a program description, the day of the week, the start time of the day, the program length, and the channel on which the program is transmitted and thus available for reception at source **10**. In a preferred embodiment of the invention, the period of time for which the program listings are stored is different for the guides, depending upon viewer priorities and preferences. For example, the information needed to display the TISPG and CSPG may be stored for one or two days and the information needed to display the TSPG may be stored for a week or more. The data base can be updated by a continuous data link in the vertical blanking interval (VBI) of one television channel broadcast to the television receiver in well known fashion. Alternatively, the data base can be updated by unplugging memory **22** and replacing it with a memory having the updated data base. Memory **22** is connected to a microprocessor **24** that is programmed to control the operation of the described equipment. An operating program for microprocessor **24** is stored in a read only memory (ROM) **26**. A viewer input device **28**, preferably in the form of a remote IR controller, is coupled to microprocessor **24** to provide commands from the viewer. A video processor **30** is coupled to microprocessor **24**. When the viewer wishes to see television program listings, microprocessor **24** recalls a portion of the program schedule data base from memory **22** and couples it to video processor **30**, where the program listings are formatted for display. Preferably, the information stored in video processor **30** is a bit map of what is displayed on the screen of television receiver **20**. Video processor **30** is connected to the other input of PIP chip **19**. Preferably, viewer input device **28** controls microprocessor **24** by cursor movement on the screen of television receiver **20**. To this end, microprocessor **24** and video processor **30** are coupled to a cursor position register **32**. (Alternatively, the viewer can select items of information displayed on the screen by keying into viewer input device **28** code numbers assigned to these items.) Microprocessor **24** is also coupled to tuner **11** for channel change, to VCR **17** for play/record selection and start/stop, to switch **18** for selection of

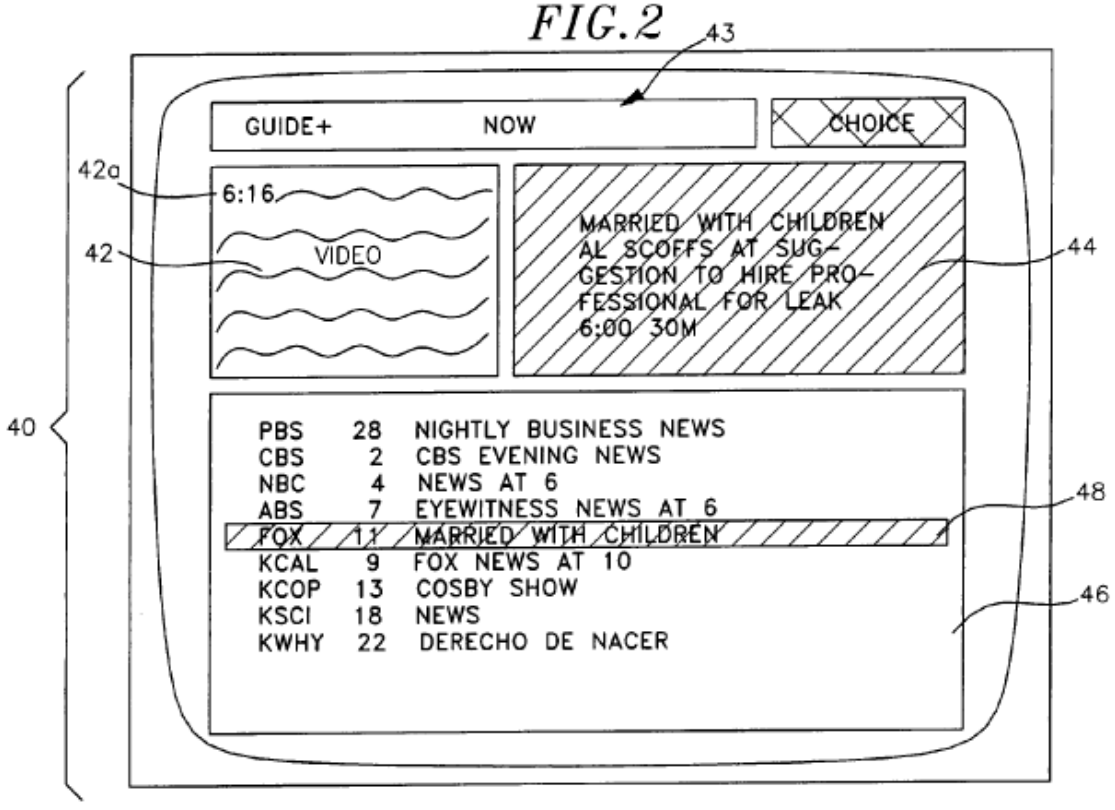
one of its inputs, and to PIP chip **19** for selection of the mode of PIP operation.

'864 Patent at 4:10-5:8.

233. The '864 Patent discloses that, "[i]n a preferred embodiment, the invention displays information about television program schedules and content in a tripartite electronic television program guide. One screen format is a time specific program guide (TISPG); another screen format is a channel specific program guide (CSPG); and the third screen format is a theme specific program guide (THSPG). In each case, the moving images of a currently broadcast television channel are displayed in real time in a PIP window." '864 Patent at 4:1-9.

234. Figure 2 shows "a version [of the TISPG screen format] that displays program listings of television programs being broadcast at the current time." '864 Patent at 5:30-32.

FIG. 2

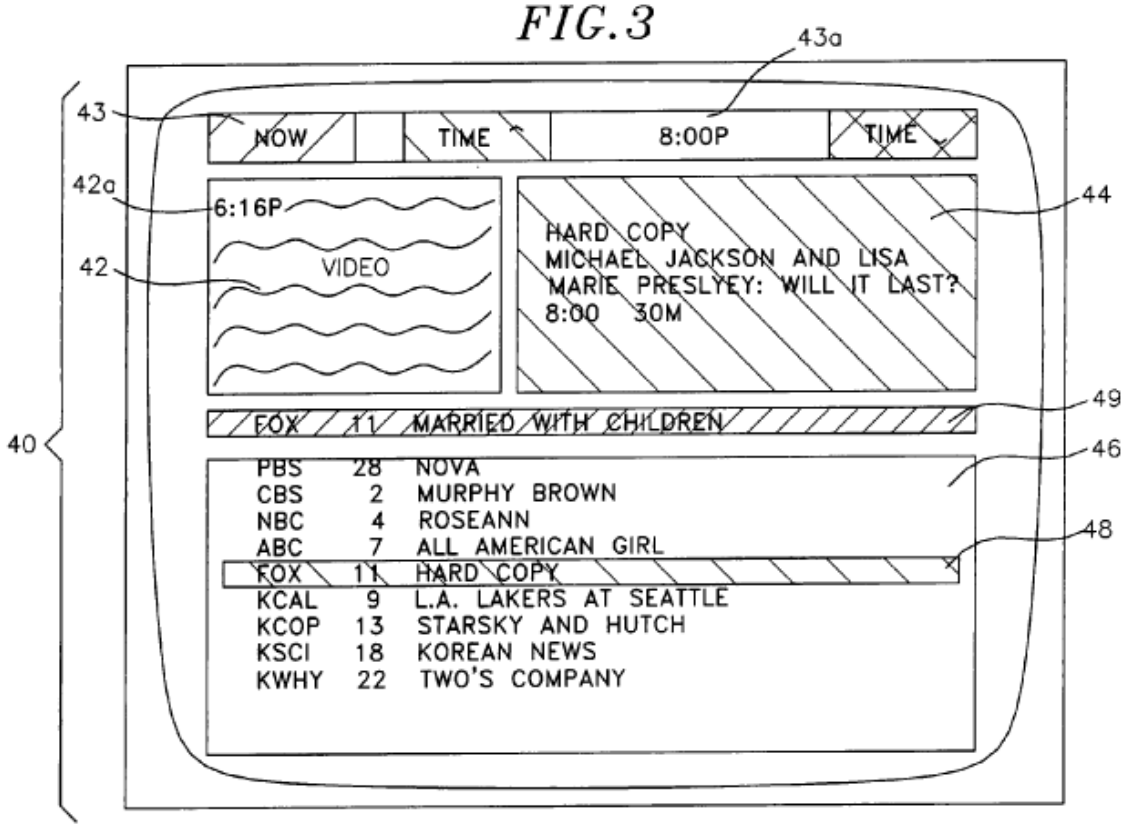


235. Each of the electronic program guide formats shown from Figures 2 through 5 "has a background area 40 and an overlaid PIP window 42 in the upper left-hand corner of the screen. The real time, i.e., 6:15 p.m., is displayed in a sub-area 42a PIP window 42. Background area 40 includes a banner and message prompting area 43 at the top of the screen, a program description area 44 in the upper right-hand corner of the screen adjacent to PIP window 42, and a program schedule area 46 below areas 42 and 44. Program description area 44 includes the start time and length (duration) of the program being described. The viewer can move a cursor 48 vertically to highlight one of the program listings displayed in area 46. The highlighted background of cursor 48 and the background of program description area 44 are the same color or shade. In each format, the complete, moving images of a currently broadcast television program in real time and the current time are displayed in PIP window 42 and the audio portion of the television program displayed in PIP window 42 is reproduced by the sound system of monitor 20. The information displayed in areas 43, 44, and 46 varies depending upon the format." '864 Patent at 5:9-29.

236. For the TISPG screen format shown in Figure 2, "[p]rogram schedule area 46 has a column for channel name or call letters, a column for channel number, and a column for program title; each line of area 46 represents a separate program listing. The moving, real time images of the current television program highlighted by cursor 48 are displayed in PIP window 42 and a brief program description of the highlighted program is displayed in area 44." '864 Patent at 5:34-41.

237. Figure 3 shows "another version of the TISP screen format [that] displays in area **46** program listings being broadcast at a future time, i.e., 8:00 p.m." ''864 Patent at 5:42-44.

FIG. 3



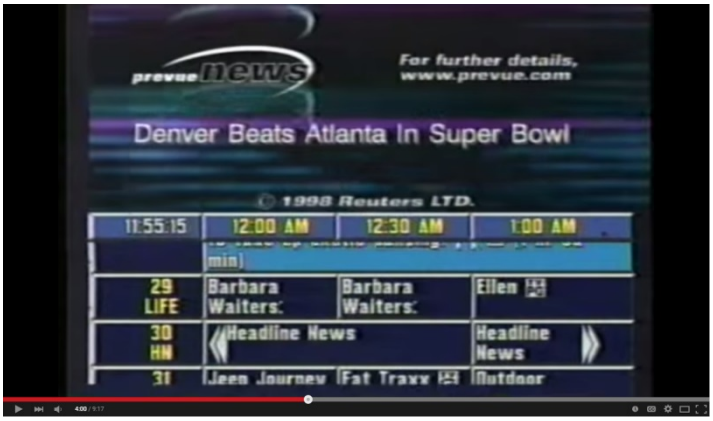
238. The '864 Patent discloses that for the program guide shown in Figure 3, "[t]he viewer can select the future time of the program listings to be displayed at intervals such as one-half hour. The selected future time, i.e., 8:00 p.m., for the program listings displayed in area **46** is shown in a sub-area **43***a* of area **43**. A brief program description of the program listing highlighted in area **46** by cursor **48** is displayed in area **44**. The current program being broadcast remains displayed in PIP window **42**, and a banner **49** which identifies the current program by channel name, channel number, and program title is displayed between PIP window **42** and area **46** on a background having a different color or shade than cursor **48**." '864 Patent at 5:45-56.

II. HISTORICAL CONTEXT OF THE '864 PATENT

239. Using picture-in-picture capabilities to display one television program while simultaneously displaying an interactive program guide and detailed program information was

not common or conventional at the time of invention of the '864 Patent, nor for many years thereafter.

240. At the time of the invention of the '864 Patent, IPGs were still in their infancy. The interactive program guides discussed by the '864 Patent were not yet widely adopted by Pay-TV providers. Instead, still prevalent at the time were non-interactive programming schedules that scrolled through programming for all channels, as shown below.



The above image displays the Prevue Channel format as it existed from 1993 to 1999.[46]

241. At the time of the invention in the '864 Patent, non-interactive electronic program guides themselves were relatively new, and development of such technology was still in its early stages. "The 1990s were a time of EPG innovation. StarSight Telecast, Inc. debuted an interactive on-screen guide service (IPG) in 1994 to accommodate the continually increasing amount of cable and satellite channels."[47] An image of the original StarSight Telecast guide is below.[48]

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[46] *Prevue Becomes TV Guide Channel – Feb. 1, 1999*, YOUTUBE, https://www.youtube.com/watch?v=rLApAmSQQ5U (last visited Mar. 29, 2016).

[47] *See, e.g.*, Brian Cameron, *The On-Screen EPG Industry: Past, Present and Future*, FYI TELEVISION BLOG (Feb. 24, 2014), http://blog.fyitelevision.com/2014/02/the-on-screen-epg-industry-past-present.html#sthash.XfuG6ltQ.dpbs (last visited Mar. 29, 2016).

[48] *Id.*

242. The StarSight Telecast guide was limited to a grid-like display of program titles, without the separate picture-in-picture video or detailed program information displayed by the inventions of the '864 Patent.

243. Thus, to address the existing IPG-based problems relating to the technical inability of IPG users to use "grazing" or channel-surfing behavior to select a program to watch, the '864 Patent discloses the unique IPG solutions using picture-in-picture functionality that are detailed above. Given the state of the art at the time, the '864 Patent invention was a novel, non-conventional solution that directly addressed problems arising in the field of television program guides.

244. As noted above, the '864 Patent is drawn to address a specific, technical problem arising in the context of IPGs. Consistent with the problem addressed being rooted in IPG and television technology, the '864 Patent's solutions naturally are also rooted in that same technology that cannot be performed with pen and paper or in the human mind. The '864 Patent

discloses the use of, inter alia, internal tuners, demodulating circuitry, a picture-in-picture integrated circuit chip, microprocessors, and computer memory for implementing the invention and, indeed, the video display of one program being telecast while simultaneously displaying program guide information through an IPG on a set-top box is not at all something that could be performed with pen and paper or in the human mind.

245. This technical context is reflected in the '864 Patent's claims. For example, each of the claims requires, inter alia, a television system having a tuner and a screen, an electronic program guide, and the formatting or manipulation of information displayed upon the screen. These limitations are neither non-technical nor abstract. They are rooted in specific television and IPG related technology.

246. The '864 Patent claims cannot be performed in the human mind or by using pen and paper. As noted above, the '864 Patent expressly states that it is drawn to address specific, technical problems arising in the context of electronic program guides and displaying of television programs.

247. A person having ordinary skill in the art at the time of the inventions of the '864 Patent would not have understood that the inventions could or would be performed solely in the human mind or using pen and paper. Using pen and paper would ignore the stated purpose of the '864 Patent and the problem it was specifically designed to address. Doing so would also run counter to the inventors' detailed description of the inventions and the language of the claims and be a practical impossibility.

III. '864 PATENT ALLEGATIONS

248. Defendants have infringed and are infringing, individually and/or jointly, either literally or under the doctrine of equivalents, the '864 Patent in violation of 35 U.S.C. § 271 et seq., directly and/or indirectly, by making, using, offering for sale/lease, selling or leasing in the

United States, and/or importing into the United States without authority or license, set-top boxes, including without limitation, one or more of the Accused DVR Products and Accused Non-DVR Products (hereafter "the '864 Accused Products") that infringe at least claim 16 of the '864 Patent. On information and belief after reasonable investigation, each of the '864 Accused Products is designed to enable a user to "Watch a Program While Browsing in the Guide."[49]

249. Defendants have been, and currently are, active inducers of infringement of the '864 Patent under 35 U.S.C. § 271(b) and contributory infringers of the '864 Patent under 35 U.S.C. § 271(c).

250. Defendants knew of the '864 Patent, or should have known of the '864 Patent but were willfully blind to its existence. Upon information and belief, Defendants have had actual knowledge of the '864 Patent since at least as early as the filing and/or service of the original Complaint in this action. In addition, (a) Comcast Corporation, on behalf of itself and for its affiliates, (b) Arris Group, Inc., on behalf of itself and all of its subsidiaries, and (c) Scientific-Atlanta, Inc., a predecessor-in-interest of Technicolor, on behalf of itself and all of its subsidiaries, previously took licenses to Rovi patents. Further, the Manufacturer Defendants have provided IPG products to Comcast, knowing, upon information and belief, that Comcast had a license to Rovi's guidance portfolio, including the '864 Patent. Defendants have provided the '864 Accused Products to their customers and/or instructions to use the '864 Accused Products in an infringing manner while being on notice of or willfully blind to the '864 Patent and Defendants' infringement. Therefore, on information and belief, Defendants knew or should

[49] Xfinity, *Xfinity TV: X1: Guide – Watch a Program While Browsing in the Guide*, http://customer.xfinity.com/help-and-support/cable-tv/x1-guide-watch-a-program-while-browsing (last visited Mar. 29, 2016).

have known of the ’864 Patent and of their own infringing acts, or deliberately took steps to avoid learning of those facts.

251. Comcast knowingly and intentionally encourages and aids at least (1) Comcast regional subsidiaries; (2) the Manufacturer Defendants; (3) end-user customers and (4) third parties through Comcast’s Xfinity TV Partner Program, to directly infringe the ’864 Patent. Comcast’s Xfinity TV Partner Program was officially launched after the filing of the original Complaint in this case, and after Comcast was put on notice of the ’864 Patent. Comcast has knowledge of the ’864 Patent and actively encourages third parties to implement the X1 infringing services in their service offerings, with knowledge that such services will directly infringe the ’864 Patent.

252. For example, Comcast provides the technical and business infrastructure, know-how, and other support to instruct and enable Comcast regional subsidiaries to make, use, sell/lease, and/or offer for sale/lease the ’864 Accused Products. The subsidiaries directly infringe at least claim 16 of the ’864 Patent at least by making, using, selling/leasing, and/or offering for sale/lease the ’864 Accused Products. Comcast induces such infringement by providing the technical and business infrastructure, know-how, and other support to enable and facilitate such infringement, knowing of, or being willfully blind to the existence of, the ’864 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 16 of the ’864 Patent, or subjectively believes that its actions will result in infringement of the ’864 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

253. In addition, upon information and belief, Comcast provides the specifications, know-how and technical support to instruct and enable the Manufacturer Defendants to make,

use, sell/lease, offer for sale/lease, and/or import the '864 Accused Products. The Manufacturer Defendants directly infringe at least claim 16 of the '864 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the '864 Accused Products. Comcast induces such infringement by providing the specifications, know-how and technical support to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '864 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 16 of the '864 Patent, or subjectively believed that its actions will result in infringement of the '864 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

254. Comcast also provides the '864 Accused Products and instructions to end-user customers so that such customers will use the'864 Accused Products in an infringing manner. For example, Comcast markets "Watch[ing] a Program While Browsing in the Guide" to end-user customers by touting that "You can view a scaled-down version of your program while browsing in the XFINITY on the X1 Entertainment Operating System. Comcast provides step-by-step instructions to end-user customers on how to "access the main guide," "open a scaled-down version of the program window," and "[b]rowse through the guide as normal," which includes an area for program listings and an area for detailed program listing information.[50] Comcast end-user customers directly infringe at least claim 16 of the '864 Patent by using the '864 Accused Products in their intended manner to infringe. Comcast induces such infringement by providing the '864 Accused Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '864 Patent. Upon

[50] Xfinity, *Xfinity TV: X1: Guide – Watch a Program While Browsing in the Guide*, http://customer.xfinity.com/help-and-support/cable-tv/x1-guide-watch-a-program-while-browsing (last visited Mar. 29, 2016).

information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 16 of the '864 Patent, or subjectively believes that its actions will result in infringement of the '864 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

255. The Manufacturer Defendants knowingly and intentionally encourage or aid at least (1) Comcast and its subsidiaries and (2) end-user customers, to directly infringe the '864 Patent.

256. For example, the Manufacturer Defendants provide the '864 Accused Products and hardware and software components thereof to Comcast and/or its subsidiaries. Comcast and/or its subsidiaries directly infringe claims of the '864 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the '864 Accused Products. The Manufacturer Defendants induce such infringement by providing the '864 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '864 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the '864 Patent, or subjectively believe that their actions will result in infringement of the '864 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

257. The Manufacturer Defendants also induce end-user customers to infringe by providing the '864 Accused Products, which are specifically designed to infringe, knowing and intending they will be used by end-user customers to infringe. End-user customers directly infringe as set forth above. The Manufacturer Defendants induce such infringement by providing the '864 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '864 Patent. Upon information and belief, the

Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the ’864 Patent, or subjectively believe that their actions will result in infringement of the ’864 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

258. Defendants contributorily infringe at least claim 16 of the ’864 Patent by providing the ’864 Accused Products and/or software or hardware components thereof, that embody a material part of the claimed inventions of the ’864 Patent, that are known by Defendants to be specially made or adapted for use in an infringing manner, and are not staple articles with substantial non-infringing uses. The ’864 Accused Products are specially designed to infringe at least claim 16 of the ’864 Patent, and their accused components have no substantial non-infringing uses.

259. This Complaint will serve as further notice to Defendants of the ’864 Patent and its infringement, should Defendants contend that they did not previously have knowledge thereof.

260. Additional allegations regarding Defendants’ knowledge of the ’864 Patent and willful infringement—including, for example, through Comcast’s Xfinity TV Partner Program that it launched after the filing of the original Complaint in this case—will likely have evidentiary support after a reasonable opportunity for discovery.

261. Defendants’ infringement of the ’864 Patent was willful and deliberate, entitling Rovi to enhanced damages and attorneys’ fees.

262. Defendants’ infringement of the ’864 Patent is exceptional and entitles Rovi to attorneys’ fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

263. Rovi has been damaged by Defendants’ infringement of the ’864 Patent and will continue to be damaged unless Defendants are enjoined by this Court. Rovi has suffered and

continues to suffer irreparable injury for which there is no adequate remedy at law. The balance of hardships favors Rovi, and public interest is not disserved by an injunction.

264. Rovi is entitled to recover from Defendants all damages that Rovi has sustained as a result of Defendants' infringement of the '864 Patent, including without limitation lost profits and not less than a reasonable royalty.

FOURTH CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 9,172,987

265. Plaintiffs reallege and incorporate by reference the allegations of paragraphs 1-264 of this Complaint.

266. The '987 Patent is valid and enforceable under United States Patent Laws.

267. Rovi Guides, Inc. owns, by assignment, all right, title, and interest in and to the '987 Patent.

268. A copy of the '987 Patent is attached as Exhibit D.

269. The original provisional application that led to the issuance of the '987 Patent was filed on July 7, 1998.

I. THE '987 PATENT

270. As described in the specification, at the time, some "user television equipment for receiving and processing [] television program listings and program listings information" could contain television program guides. '987 Patent at 2:5-7, 2:15-17. Generally, once they were installed on user devices, "interactive program guides, user screens (e.g., screens containing program listings) and program guide functionality [were] fixed. It [was] generally not possible to chan[g]e user screens or program guide functionality without downloading an entire new program guide application." '987 Patent at 1:40-44. Such user equipment devices were sold, leased, distributed, and used, without updates. The '987 Patent invention introduced the use of

"a markup language . . . to provide for the downloading [of] display characteristics of user screens and program guide functionality as plug-ins anytime, without modifying the code of the application." '987 Patent at 1:45-49.

271. According to the specification, "the program guide is supplied with markup language documents which assign program guide functionality to display items. The documents may be supplied as part of the initial programming of the program guide, or may be supplied by a main facility or television distribution facility when the program guide is updated. The documents are preferably of a widely accepted and standardized markup language, such as HTML, DHTML, or XML. . . . [T]he program guide interprets the markup language documents. . . . HTML, DHTML, or XML markup language documents may be interpreted. . . ." and finally, "[p]rogram guide functionality is selected for the display items . . . according to the markup language documents." '987 Patent at 10:39-53.

272. As described in the '987 Patent, a markup language document is a specialized file that contains code that a program guide uses to provide display elements or program guide functionality to users. The "program guide is programmed to interpret the markup language documents." '987 Patent at 2:37-38. As described in the '987 Patent specification, "[w]hen markup language documents are supplied to the interactive television program guide, the program guide interprets the documents and generates or modifies the appropriate program guide display screens and program guide functionality according to the documents without intervention by the user. The display characteristics of the display screens may be changed without the need for updating application code, and may be completed in real time and without ever involving the user in the update process." '987 Patent at 8:6-14.

273. The '987 Patent discloses how its inventions may be implemented. For example, Figures 7a and 7b "illustrate how different markup language documents may be used to arrange and style display elements and indicate and select program guide functionality." '987 Patent at 3:5-7. In particular, "FIG. 7a illustrates how markup language documents may be used initially to arrange and style display elements and to indicate and select program guide functionality using a markup language document that is initially supplied to the program guide." '987 Patent at 8:62-66. In addition,

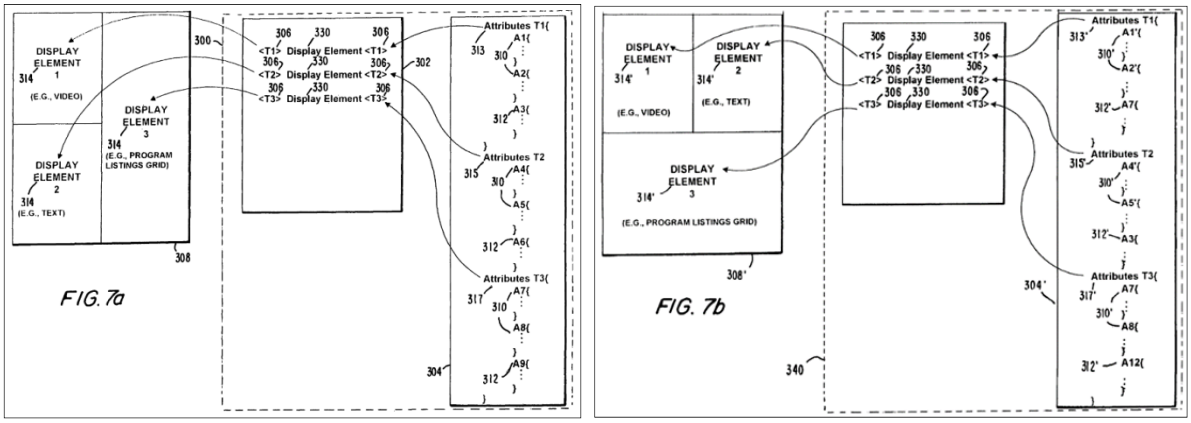
> FIG. 7*a* also illustrates how program guide functionality may be indicated and selected using markup language document **300**. The program guide may have been preprogrammed with a large number of actions. Portion 304 of markup language document 300 may be used to select from those actions the actions that are suitable for a particular display element. Attributes **312** may be included in the finite sets of attributes **313**, **315**, and **317** to indicate the selected actions. While a display element may have multiple associated actions (e.g., a menu), only one attribute **312** has been shown for each set to avoid overcomplicating the drawing. The actions may be assigned to display elements **314** as indicated in FIG. 7*a* using tags **306**.

'987 Patent at 9:28-40.

274. Figure 7b, in turn, "illustrates how the display characteristics of display screen **308** may be changed or modified by rearranging and restyling display elements **314** using a different markup language document, such as markup language document **340**." '987 Patent at 9:41-44. Further,

> FIG. 7*b* also illustrates how different actions for the display elements may be assigned and selected using markup language documents. Different actions may be included in the sets as illustrated when comparing sets **313**, **315**, and **317** of FIG. 7*a* with sets **313′**, **315′**, and **317′** of FIG. 7*c* [sic]. New actions may be indicated and previously indicated actions dropped, as illustrated by set 317′ and 315′, (e.g., A**12** and A**6**). In addition, the actions may be selected for different display elements as shown in set **313′** (e.g., A**7** was moved from set **317** of FIG. 7*a* to set **313′** of FIG. 7*b*).

'987 Patent at 9:60-10:2.



'987 Patent, Figures 7a and 7b

275. Figure 9 "illustrates steps involved in modifying program guide display screens. At step **450**, the program guide is supplied with markup language documents which may resize, reposition, or restyle the display elements. The documents are preferably of a widely accepted and standardized markup language, such as HTML, DHTML, XML, or any other suitable markup language. At step **460**, the program guide interprets the markup language documents. Particular types of markup language documents may be interpreted at substeps **462**, **464**, and **466** respectively. The display screens are modified at step **470**. This may include substeps **472**, **474**, and **476**, in which the display elements are resized, repositioned, and restyled respectively. At step **480**, the program guide displays the display screens according to the markup language documents." '987 Patent at 10:21-35.

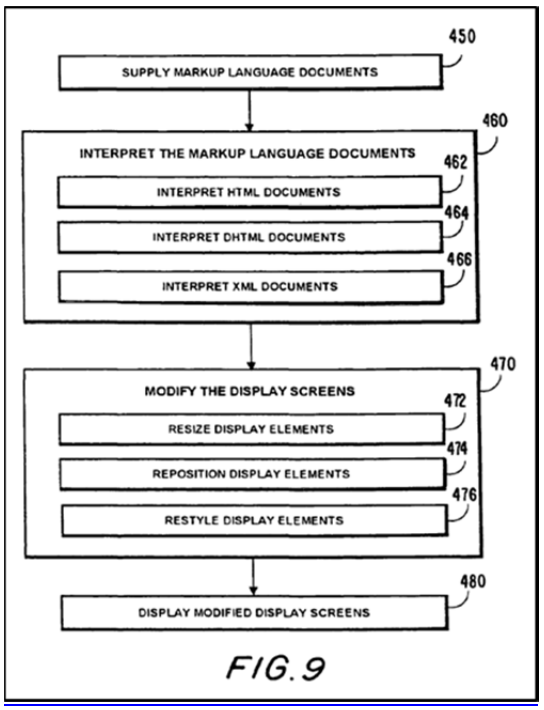


FIG. 9

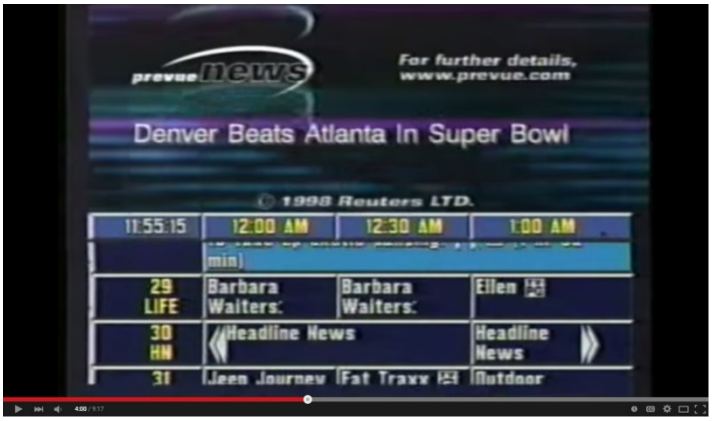
276. In view of the historical context and development of search technology discussed further below, a person of ordinary skill in the art would understand that the '987 Patent inventions provided unconventional solutions for updating electronic program guide functionality.

II. HISTORICAL CONTEXT OF THE '987 PATENT

277. At the time of invention, an interactive program guide system in which the program guide is "programmed to interpret [] markup language documents" and "programmed to generate display screens and select program guide functionality according to [] markup language documents" was neither generic nor conventional.

278. Historically, "user screens (e.g., screens containing program listings) and program guide functionality [were] fixed." '987 Patent at 1:40-42. At the time of the invention it was "generally not possible to chan[g]e user screens or program guide functionality without downloading an entire new program guide application." '987 Patent at 1:42-44. Still prevalent

at the time were non-interactive programming schedules that scrolled through programming for all channels, as shown below.



Prevue Channel format from 1993 to 1999[51]

279. Electronic program guides at the time faced unique challenges with respect to updating software. At the time of invention, connectivity to the Internet was limited. "As of December 1999, less than 2% of U.S. households had residential High Speed Internet service."[52] In 2000, dial-up via a telephone modem was the dominant form of Internet access, and at the time allowed "connections that transmit data at a maximum of 56 kbps [kilobytes per second]."[53]

280. Electronic program guides at the time were commonly installed on devices with limited user control outside of the user interface of the electronic program guide itself (e.g., no direct control over downloading update files or configuring the application, as one would have in a personal computer). In some cases, electronic program guides could not be updated at all

[51] *Prevue Becomes TV Guide Channel – Feb. 1, 1999,* YOUTUBE, https://www.youtube.com/watch?v=rLApAmSQQ5U (last visited Mar. 29, 2016).

[52] Peter F. Orazem, Ph.D., The Impact of High-Speed Internet Access on Local Economic Growth at 3 (Aug. 2005), *available at* https://business.ku.edu/sites/businessdev.drupal.ku.edu/files/images/general/Research/Internet%20and%20Growth.pdf.

[53] David Kleinbard, *Broadband access surges*, CNN MONEY (Nov. 1, 2000, 3:42 PM), http://cnnfn.cnn.com/2000/11/01/technology/fcc_dsl/index.htm (last visited Mar. 29, 2016).

without having to replace the user equipment entirely to obtain an updated EPG.[54] Even when updates could be downloaded, unlike a user downloading an update on a computer, an error occurring during an electronic program guide update could render the device non-functional, as the user would no longer be able to use the electronic program guide to interface with the device.[55]

281. These challenges are reflected in the specification of the '987 Patent, and in its prosecution history and that of U.S. Patent No. 8,010,979, which are hereby incorporated by reference in their entirety.

282. The '987 Patent represented a fundamental shift in how electronic program guides interacted with end user devices. As explained above, the '987 Patent uses markup language documents to update program guide functions. By using markup language documents for this purpose, the '987 Patent made it possible to change program guide functionality without downloading an entire new program guide application. This "flexible modification of program guide user screen layouts and program guide functionality," '987 Patent at 1:24-25, changed the end-user device from one that was sold and then depreciated in a fixed operational state into a connected device that could be easily updated and customized.

283. By using markup language documents to update program guide functionality, the '987 Patent also enabled a move from electronic program guides as thick client applications to more thin client applications, which in turn allowed electronic program guides to be

[54] Ryan Nakashima, *Cable Operators Buff Up Guides for Internet Age*, ASSOCIATED PRESS (June 10, 2013), *available at* https://www.yahoo.com/tv/s/cable-operators-buff-guides-internet-age-164708558.html?nf=1 (last visited Mar. 29, 2016).

[55] *See*, *e.g.*, Carly Page, *Sony owners fume as DVD Recorders are Plagued by Freeview glitch,* THE INQUIRER (July 22, 2013, 11:55 AM), http://www.theinquirer.net/inquirer/news/2283847/sony-owners-fume-as-dvd-recorders-are-plagued-by-freeview-glitch (last visited Mar. 29, 2016).

implemented on a greater array of client devices, in part because processing markup language documents required less computational power and resources than processing native application code. Comcast's ability to satisfactorily implement its electronic program guides on a large variety of client devices can be attributed, at least in part, to the claimed inventions of the '987 Patent.

284. Other media content suppliers also were slow to adopt the technology disclosed in the '987 Patent, but have similarly recognized its value. It was not until the early 2010s that cable providers began introducing electronic program guides that could be updated without changing the user device on which it was installed, as was observed in 2013: "Although using the Internet might seem like a no-brainer to the billions who use it worldwide, cable TV operators have been slow to adapt. For years, guides used the old X-Y axis, with channels on the left and times across the top. These were installed directly onto the set-top box. There was no way to change the format without replacing the box, which could take a year or more for all customers."[56]

285. The benefits that others now tout are the same goals that the '987 Patent achieved a decade earlier: "This invention relates to video systems, and more particularly, to interactive television program guide systems which provide for the flexible modification of program guide user screen layouts and program guide functionality. . . . With current interactive program guides, user screens (e.g., screens containing program listings) and program guide functionality are fixed. It is generally not possible to chan[g]e user screens or program guide functionality without downloading an entire new program guide application. Accordingly, it would be

[56] Ryan Nakashima, *Cable Operators Buff Up Guides for Internet Age*, ASSOCIATED PRESS (June 10, 2013), *available* at https://www.yahoo.com/tv/s/cable-operators-buff-guides-internet-age-164708558.html?nf=1 (last visited Mar. 29, 2016).

desirable if a markup language could be used to provide for the downloading display characteristics of user screens and program guide functionality as plug-ins anytime, without modifying the code of the application." '987 Patent at 1:22-49

286. The '987 Patent addressed user screen and program guide functionality updatability problems rooted in and arising from a particular computing technology: electronic program guides installed on set-top boxes and set-top boxes with preprogrammed functionality. As explained above, with this technology, unlike downloading an update on a computer, errors during an electronic program guide update could render the device non-functional57 if updating was even possible at all.58 The '987 Patent addressed a problem arising in the field of electronic program guides by allowing the program guide functionality to be flexibly modified at any time, including without user intervention.[59]

287. Given the state of the art at the time of invention and the much-later adoption of similar features in the market, the inventive concepts of the '987 Patent cannot be considered to have been conventional. The '987 Patent disclosed an unconventional, inventive solution to

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[57] *See e.g.*, Carly Page, *Sony owners fume as DVD recorders are plagued by Freeview glitch*, THE INQUIRER (July 22, 2013), http://www.theinquirer.net/inquirer/news/2283847/sony-owners-fume-as-dvd-recorders-are-plagued-by-freeview-glitch (last visited Mar. 29, 2016).

[58] Ryan Nakashima, *Cable Operators Buff Up Guides for Internet Age*, ASSOCIATED PRESS (June 10, 2013), *available at* https://www.yahoo.com/tv/s/cable-operators-buff-guides-internet-age-164708558.html?nf=1 (last visited Mar. 29, 2016).

[59] *See* '987 Patent at 1:56-59; *see* Ryan Nakashima, *Cable Operators Buff Up Guides for Internet Age*, ASSOCIATED PRESS (June 10, 2013), *available at* https://www.yahoo.com/tv/s/cable-operators-buff-guides-internet-age-164708558.html?nf=1 (last visited Mar. 29, 2016) ("By using Internet programming language and other tools common to the Web, newer boxes are far more flexible. These guides can now access software running on more powerful machines located elsewhere. They can make recommendations rather than simply show reams of show titles. Faster keyword searches are possible, and cover art brings life to what once were text-only program listings. The use of Internet programming language means smartphones and tablets can also be used to control the box.").

updating program guide display elements and program guide functionalities that overcome the unique challenges arising with electronic program guides.

288. The ’987 Patent claims cannot be performed in the human mind or by using pen and paper. As noted above, the ’987 Patent expressly states that it is drawn to address a specific, technical problem arising in the context of electronic program guides: “With current interactive program guides, user screens (e.g., screens containing program listings) and program guide functionality are fixed. It is generally not possible to chan[g]e user screens or program guide functionality without downloading an entire new program guide application.” ’987 Patent at 1:40-44.

289. Consistent with the problem addressed being rooted in set-top box and electronic program guide technology, the ’987 Patent’s solutions naturally were also rooted in that same technology that cannot be performed with pen and paper or in the human mind. The ’987 Patent disclosed the use of markup language documents that may contain “HyperText Markup Language (HTML), Dynamic HyperText Markup language (DHTML), or Extensible Markup Language (XML) code,” electronic program guides that are “programmed to interpret the markup language documents and generate the display screens and provide program guide functionality according to the documents,” which are resident on a “set-top box . . . television . . . or on a suitable analog or digital receiver connected to [a] television,” and “systems in which data is distributed to a program guide on user television equipment using . . . suitable distribution schemes, such as schemes involving data transmission over the Internet or the like.” ’987 Patent at 2:35-40; 4:49-52; 4:14-18.

290. This technical context is reflected in the ’987 Patent’s claims. For example, independent claim 1 requires a “program function [that] is preprogrammed on [a] set-top box,”

and "updat[ing] the set-top box based on the markup language document." It would be impossible to perform these steps in the mind or using pen and paper. Because the method claims require a software program resident on "user television equipment for receiving and processing the television program listings and program listings information," the claimed steps may be performed only by electronic files. '987 Patent at 2:15-17. There is no pen and paper analog.

291. A person having ordinary skill in the art at the time of the inventions of the '987 Patent would not have understood that the inventions could or would be performed solely in the human mind or using pen and paper. Using pen and paper would ignore the stated purpose of the '987 Patent and the problem it was specifically designed to address. Doing so would also run counter to the inventors' detailed description of the inventions and the language of the claims and be a practical impossibility.

III. '987 PATENT ALLEGATIONS

292. Defendants have infringed and are infringing, individually and/or jointly, either literally or under the doctrine of equivalents, the '987 Patent in violation of 35 U.S.C. § 271 *et seq.*, directly and/or indirectly, by making, using, offering for sale/lease, selling or leasing in the United States, and/or importing into the United States without authority or license, set-top boxes, including without limitation, one or more of the Accused DVR Products and Accused Non-DVR Products (hereafter "the '987 Accused Products") that infringe at least claim 9 of the '987 Patent. On information and belief after reasonable investigation, each of the '987 Accused Products comprises or is designed to be used in: a system comprising a set-top box with control circuitry configured to: generate for display a display item having a first program function, wherein the first program function is based on a non-markup language, and the first program function is preprogrammed on the set-top box; receive a markup language document from a remote source;

interpret the markup language document to determine that the markup language document assigns a second program function to the display item; update the set-top box based on the markup language document such that the display item has the second program function; and generate for display, the display item having the second program function.

293. Defendants have been, and currently are, active inducers of infringement of the '987 Patent under 35 U.S.C. § 271(b) and contributory infringers of the '987 Patent under 35 U.S.C. § 271(c).

294. Defendants knew of the '987 Patent, or should have known of the '987 Patent but were willfully blind to its existence. Upon information and belief, Defendants have had actual knowledge of the '987 Patent since at least as early as the filing and/or service of the original Complaint in this action. Further, prior to the filing this Complaint, Rovi provided presentations and claim charts to Comcast specifically identifying patents in Rovi's portfolio, including a patent in the same family as the '987 Patent, and showing an example of Comcast's infringement of that patent. In addition, (a) Comcast Corporation, on behalf of itself and for its affiliates, (b) Arris Group, Inc., on behalf of itself and all of its subsidiaries, and (c) Scientific-Atlanta, Inc., a predecessor-in-interest of Technicolor, on behalf of itself and all of its subsidiaries, previously took licenses to Rovi patents. Further, the Manufacturer Defendants have provided IPG products to Comcast, knowing that Comcast had a license to Rovi's guidance portfolio, including the '987 Patent. Defendants have provided the '987 Accused Products to their customers and/or instructions to use the '987 Accused Products in an infringing manner while being on notice of or willfully blind to the '987 Patent and Defendants' infringement. Therefore, on information and belief, all Defendants knew or should have known of the '987 Patent and of their own infringing acts, or deliberately took steps to avoid learning of those facts.

295. Comcast knowingly and intentionally encourages and aids at least (1) Comcast regional subsidiaries; (2) the Manufacturer Defendants; (3) end-user customers and (4) third parties through Comcast's Xfinity TV Partner Program, to directly infringe the '666 Patent. Comcast's Xfinity TV Partner Program was officially launched after the filing of the original Complaint in this case, and after Comcast was put on notice of the '987 Patent. Comcast has knowledge of the '987 Patent and actively encourages third parties to implement the X1 infringing services in their service offerings, with knowledge that such services will directly infringe the '987 Patent.

296. For example, Comcast provides the technical and business infrastructure, know-how, and other support to instruct and enable Comcast regional subsidiaries of Comcast to make, use, sell/lease, and/or offer for sale/lease the '987 Accused Products. The subsidiaries directly infringe at least claim 9 of the '987 Patent at least by making, using, selling/leasing, and/or offering for sale/lease the '987 Accused Products. Comcast induces such infringement by providing the technical and business infrastructure, know-how, and other support to enable and facilitate such infringement, knowing of, or being willfully blind to the existence of, the '987 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 9 of the '987 Patent, or subjectively believes that its actions will result in infringement of the '987 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

297. In addition, upon information and belief, Comcast provides the specifications, know-how and technical support to instruct and enable the Manufacturer Defendants to make, use, sell/lease, offer for sale/lease, and/or import the '987 Accused Products. The Manufacturer Defendants directly infringe at least claim 9 of the '987 Patent by making, using, selling/leasing,

offering for sale/lease, and/or importing the ’987 Accused Products. Comcast induces such infringement by providing the specifications, know-how and technical support to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’987 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 9 of the ’987 Patent, or subjectively believed that its actions will result in infringement of the ’987 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

298. Comcast also provides the ’987 Accused Products and instructions to end-user customers so that such customers will use the ’987 Accused Products in an infringing manner. For example, on information and belief, Comcast instructs end-users to update their interactive television program guides on their set-top boxes, which interpret mark-up language documents and generate display screens and select program guide functionality according to the markup language documents. Comcast end-user customers directly infringe at least claim 9 of the ’987 Patent by using the ’987 Accused Products in their intended manner to infringe. Comcast induces such infringement by providing the ’987 Accused Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’987 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 9 of the ’987 Patent, or subjectively believes that its actions will result in infringement of the ’987 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

299. The Manufacturer Defendants knowingly and intentionally encourage or aid at least (1) Comcast and its subsidiaries and (2) end-user customers, to directly infringe the ’987 Patent.

300. For example, the Manufacturer Defendants provide the '987 Accused Products and hardware and software components thereof to Comcast and/or its subsidiaries. Comcast and/or its subsidiaries directly infringe claims of the '987 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the '987 Accused Products. The Manufacturer Defendants induce such infringement by providing the '987 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '987 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the '987 Patent, or subjectively believe that their actions will result in infringement of the '987 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

301. The Manufacturer Defendants also induce end-user customers to infringe by providing the '987 Accused Products, which are specifically designed to infringe, knowing and intending they will be used by end-user customers to infringe. End-user customers directly infringe as set forth above. The Manufacturer Defendants induce such infringement by providing the '987 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '987 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the '987 Patent, or subjectively believe that their actions will result in infringement of the '987 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

302. Defendants contributorily infringe at least claim 9 of the '987 Patent by providing the '987 Accused Products and/or software or hardware components thereof, that embody a material part of the claimed inventions of the '987 Patent, that are known by Defendants to be specially made or adapted for use in an infringing manner, and are not staple articles with

substantial non-infringing uses. The ’987 Accused Products are specially designed to infringe at least claim 9 of the ’987 Patent, and their accused components have no substantial non-infringing uses.

303. This Complaint will serve as further notice to Defendants of the ’987 Patent and its infringement, should Defendants contend that they did not previously have knowledge thereof.

304. Additional allegations regarding Defendants’ knowledge of the ’987 Patent and willful infringement—including, for example, through Comcast’s Xfinity TV Partner Program that it launched after the filing of the original Complaint in this case—will likely have evidentiary support after a reasonable opportunity for discovery.

305. Defendants’ infringement of the ’987 Patent was willful and deliberate, entitling Rovi to enhanced damages and attorneys’ fees.

306. Defendants’ infringement of the ’987 Patent is exceptional and entitles Rovi to attorneys’ fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

307. Rovi has been damaged by Defendants’ infringement of the ’987 Patent and will continue to be damaged unless Defendants are enjoined by this Court. Rovi has suffered and continues to suffer irreparable injury for which there is no adequate remedy at law. The balance of hardships favors Rovi, and public interest is not disserved by an injunction.

308. Rovi is entitled to recover from Defendants all damages that Rovi has sustained as a result of Defendants’ infringement of the ’987 Patent, including without limitation lost profits and not less than a reasonable royalty.

FIFTH CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 7,895,218

309. Plaintiffs reallege and incorporate by reference the allegations of paragraphs 1-308 of this Complaint.

310. The ’218 Patent is valid and enforceable under United States Patent Laws.

311. Veveo, Inc. owns by assignment, all right, title, and interest in and to the ’218 Patent, including the right to collect for past damages.

312. A copy of the ’218 Patent is attached hereto as Exhibit E.

313. The original provisional applications that led to the issuance of the ’218 Patent were filed on November 9, 2004, and March 24, 2005.

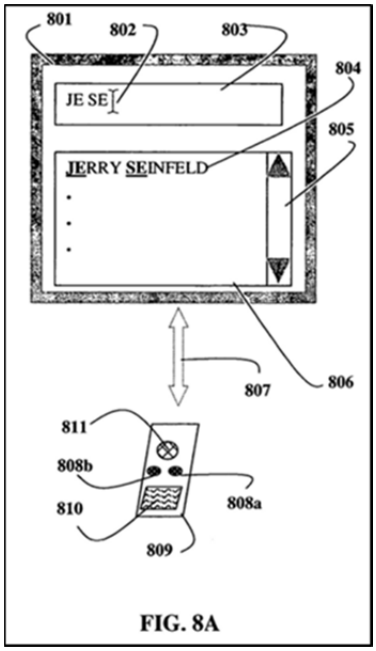
314. On May 8, 2015, a Notice of Allowance was mailed in the prosecution of U.S. Application No. 13/006,846 (now U.S. Patent No. 9,135,337), which claims the benefit of the same priority provisional applications as the ’218 Patent.

I. THE ’218 PATENT

315. The ’218 Patent discloses inventions “for performing searches for television content and, more particularly, to a method and system for performing searches with text entry by a user reduced to prefix substrings representing elements of a namespace containing a set of names composed of one or more words that are either ordered or unordered.” ’218 Patent at 1:19-25.

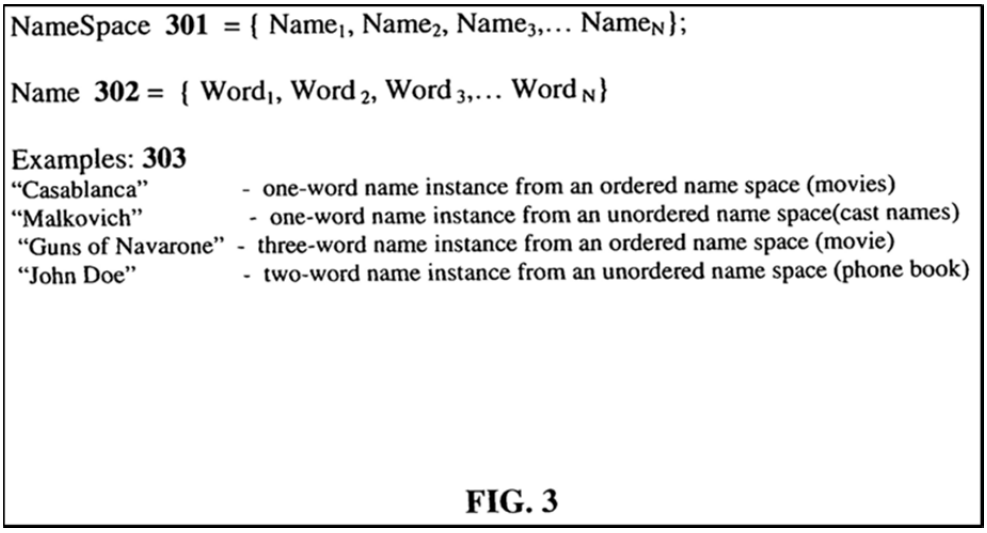
316. As summarized by the specification, “[t]he system receives from the television viewer a reduced text search entry directed at identifying the desired television content item. The search entry is a prefix substring of one or more words relating to the desired television content item.” ’218 Patent at 2:47-51. The specification describes the use of multiple prefixes in

a single search request, where a "prefix substring of a word in a name captures information from the word and can be a variable length string that contains fewer than all the characters making up the word." '218 Patent at 3:64-67. As an example, Figure 8A of the patent depicts a user's multi-prefix search substring, consisting of two words relating to the desired television content item: two prefixes, "JE" and "SE," and a returned result of "JERRY SEINFELD." '218 Patent at FIG. 8A, *see also* '218 Patent at 8:21-45.



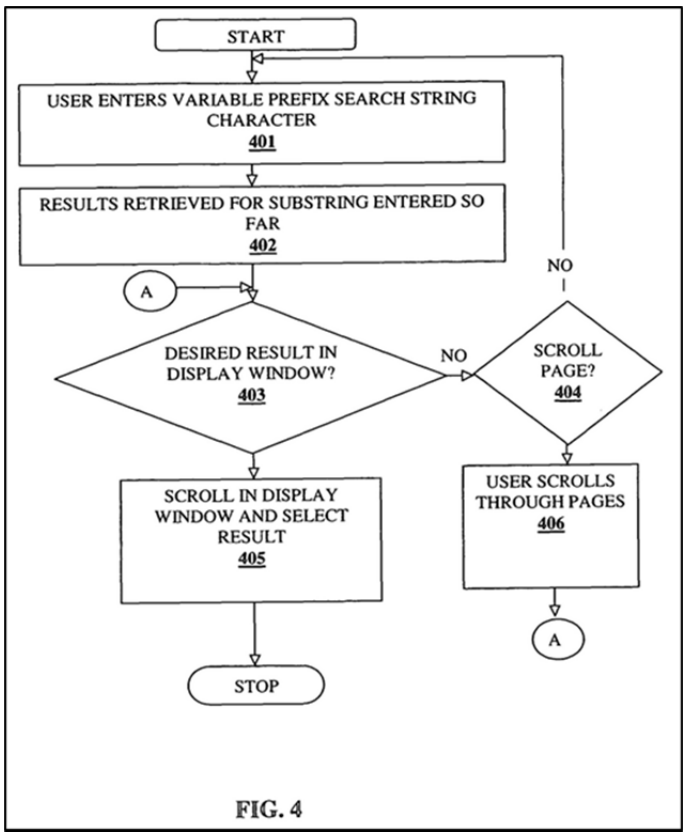
'218 Patent, Figure 8A

317. The '218 Patent discloses an exemplary data structure of a reduced text entry query. In reference to Figure 3, the specification explains that "[e]ach query can be composed of one or more words preferably delimited by a separator such as, e.g., a space character or a symbol. Adjacent words of the query may constitute an ordered name, e.g., 'Guns of Navarone' or an unordered name, e.g., 'John Doe' as illustrated in example 303. Individual words can also be part of a set of ordered or unordered names." '218 Patent at 5:12-25.



'218 Patent, Figure 3

318. The '218 Patent further discloses an exemplary process of a user starting a new search, entering characters and arriving at the desired result in accordance with one or more embodiments of the invention: "A user enters one or more search string characters at 401, which could be a variable size prefix of the intended query (e.g., to represent 'Brad Pitt', the user can enter B P, BR P, B PI etc.). Results are then preferably dynamically retrieved for the cumulative substring of characters entered up to that point at 402 and displayed." '218 Patent at 5:26-40. This process is depicted as a flow chart in Figure 4.



'218 Patent, Figure 4

319. The '218 Patent further discloses how multiple-prefix searching may be implemented by pre-indexing content items with prefix substring combinations. As described in the specification, "prefix substrings entered by a user are input to an algorithm that can dynamically generate results leveraging off the pre-indexed prefix substring combinations." '218 Patent at 4:11-14. The specification explains that pre-indexed prefix substring combinations can be advantageous because "where no records are pre-computed, and the search for any term is done dynamically by lookup of all possible terms matching the prefix query[,] . . . the runtime costs could be high due to a complete lookup during the search process especially for small prefixes that match with a large number of terms." '218 Patent at 7:19-24. Conversely, "where each record is pre-computed for all the terms[,] . . . [i]t may be impractical to implement this case since the memory requirements would be high even for search spaces of

modest size." '218 Patent at 7:15-18. Thus, "some balance between computational power, memory availability, and optionally bandwidth constraints of the system in which reduced text entry search is deployed." '218 Patent at 4:15-18.

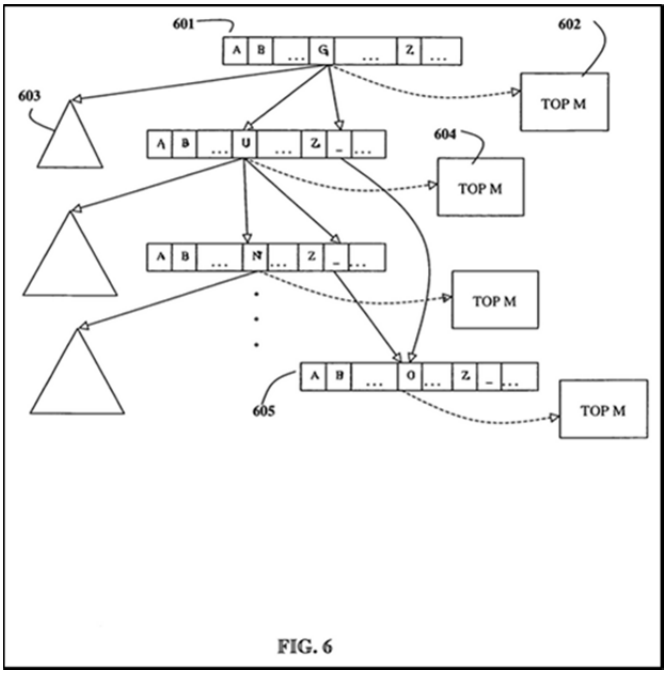
320. The '218 specification further discloses optimizing equations (shown below) for implementing searches via pre-indexed prefix substring combinations, explaining that "[a] practical implementation would choose a value of K and C that is a balance between available memory, computational power and in some usage scenarios bandwidth. For example, a practical implementation may choose K = 2 and C = 1." '218 Patent at 7:24-28. The '218 Patent provides:

> While computing I(T), there are a number of terms that are meant to recall entity names. Denote any such term 'T' of length N>=1 as
>
> > $T=W_{1\_}\ W_{2\_}\ W_{3\_}\ \ldots\ W_N$ where W_i denotes the i^{th} word and '_' denotes a space (which is an example of a word delimiter)
>
> For any integer 'k', let W^k denote the k-character prefix of word W. If k is greater than length of word W, W^k=W. Let W(K) denote the set of words W^k for 1<=k<=K, where K denotes the upper bound of the size of the prefix. For example, for the word "guns", W(2) consists of prefixes "g" and "gu". For any term T, its corresponding indexed set of I(T, K, C) of bounded multi-word prefix strings can be defined as follows
>
> $$I(T, K, C)=\{X_{1\_}\ X_{2\_}\ X_{3\_}\ X_{4\_}\ X_{5\_}\ \ldots\ X_{C\_}\ W_{C+1\_}\ \ldots\ W_N\}$$
>
> Where $X_i \epsilon W_i(K)$ and Wi is the i^{th} word in the term T, and where C denotes the number of words for which prefixes are pre-computed. In a preferred embodiment of the invention, the set I(T, K, C) (also denoted by I(T)) is the set of strings pre-computed on account of term T and tunable parameters K and C. The set I(T) represents the pre-computed records corresponding to the terms in T and is usually a proper subset of P(T). The computation method indexes only the set I(T) as a part of the pre-computation, though the user could input any string in P(T) (which possibly may not belong to I(T)) to efficiently retrieve the term T. This is done by performing some appropriate computation at runtime during the search process leveraging of the set I(T).

'218 Patent at 6:52-7:13.

321. In addition to multiple-prefix searching, the ’218 Patent further discloses the use of instant searching, whereby matching search results are dynamically displayed as a user enters characters rather than only upon entry of an entire search string. For example, the ’218 Patent describes a system that “dynamically identifies a group of one or more television content items from the set of television content items having one or more descriptors matching the search entry as the television viewer enters each character of the search entry. The system then transmits the names of the identified group of one or more television content items to be displayed on a device operated by the television viewer.” ’218 Patent at 2:51-59. In this way, “[r]esults are then preferably dynamically retrieved for the cumulative substring of characters entered up to that point . . . and displayed.” ’218 Patent at 5:32-34. Among other benefits, “[t]he dynamic update of results for each character entry enables the user to recover from an error during the text entry process itself, in contrast to discovering that no results match after typing the entire text.” ’218 Patent at 5:66-6:3.

322. The ’218 Patent also discloses an example of a data structure to enable dynamic search leveraging off pre-indexed substring prefixes in accordance with one or more embodiments of the invention. Figure 6 illustrates an exemplary data structure that enables searching using variable prefix strings:

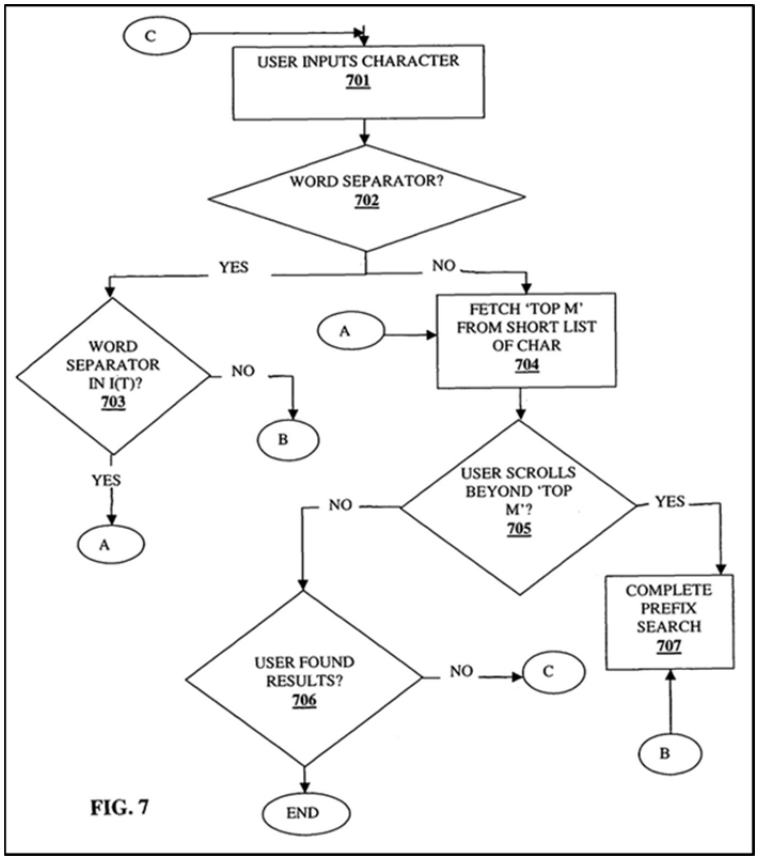


’218 Patent, Figure 6

> Each character in the trie 604 points to a set of top M 602 records that contains the most popular terms that begin with the prefix corresponding to the path from the root to that character. The ordering could be governed, *e.g.*, by popularity, temporal relevance, location relevance, and personal preference. Single word terms may be selectively given a boost in the ordering in order for it to be discovered quickly since it cannot leverage off the “K” factor or “C” factor. The TOP M records corresponding to every node in the trie may be placed in memory that enables quick access to them. The value of M may be determined by factors such as the display size of the devices from which search would be done and the available memory capacity of the server or client system where the search metadata is stored. Each character in the trie also points to a container 603 that holds all records following the TOP M.

’218 Patent 7:40-63.

323. The ’218 Patent also discloses an exemplary process of finding results using the variable prefix string scheme in accordance with one or more embodiments of the invention. Figure 7 depicts internal steps of search as each character is input in accordance with one or more embodiments of the invention:



'218 Patent, Figure 7

> When user inputs a character of a prefix string at 701, the system examines if it is a word separator at 702. If it is not a word separator, the system fetches the top M records at 704 for that character. If it is a word separator, system examines if the prefix with the word separator is in I(T) at 703. If it is in I(T), the system accesses the top M records for that node in the trie at 704. If the word separator is not in I(T), the system does a complete search at 707 for the records beginning with that prefix string. Also, after step 704, if user scrolls through the results list beyond top M results at 705, the system would perform a complete search at 707. If the user does not scroll beyond the top M results, and the user does not arrive at the result at 706, he can go back and enter another character at 701.

'218 Patent at 7:66-8:12.

324. In view of the historical context and development of search technology discussed below, a person of ordinary skill in the art would understand that the '218 Patent's inventions provided unconventional solutions to searching for content.

II. HISTORICAL CONTEXT OF THE '218 PATENT

325. Systems for "performing searches for television content and, more particularly, . . . for performing searches with text entry by a user reduced to prefix substrings representing elements of a namespace containing a set of names composed of one or more words that are either ordered or unordered" is not common or conventional today, let alone at the time of the '218 Patent's inventions. '218 Patent at 1:19-25.

326. At the time of the inventions of the '218 Patent, Google, already the world's number one search engine,[60] did not offer the inventive search features disclosed by the '218 Patent. At that time, Google.com did not utilize multi-prefix searching. Instead, Google's "Google Suggest" (known today as "autocomplete"), attempted to "guess[] what you're typing and offer[] suggestions in real time,"[61] and was limited to Google Labs, Google's "playground for [Google] engineers and for adventurous Google users."[62] It did not gain traction for some time,[63] and was not implemented as a default function within Google's main search engine on Google.com until 2008.[64]

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[60] *See* Paul R. La Monica, *Google Sets $2.7 Billion IPO: Popular search engine company files for its eagerly anticipated initial public offering.*, CNN MONEY (Apr. 30, 2004, 7:56 AM), http://money.cnn.com/2004/04/29/technology/google/ (last visited Mar. 29, 2016).

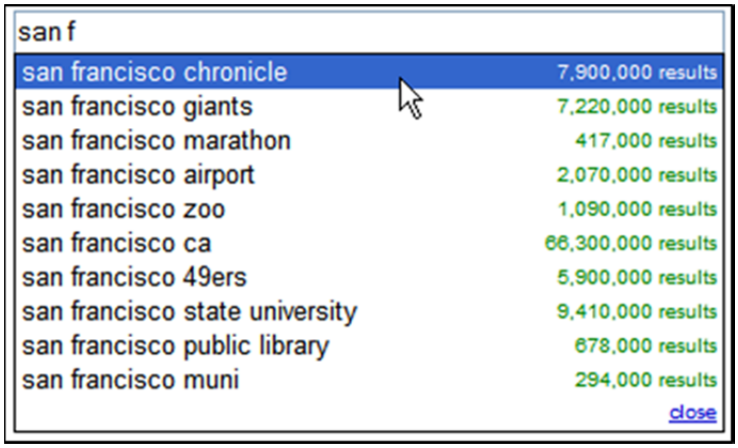
[61] Google Inc., Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 (Form 10-K), at 6 (Mar. 30, 2005) [hereinafter Google, Annual Report]; Kevin Gibbs, *I've Got a Suggestion*, GOOGLE OFFICIAL BLOG (Dec. 10, 2004), http://googleblog.blogspot.com/2004/12/ive-got-suggestion.html (last visited Mar. 29, 2016).

[62] Google, Annual Report, *supra* note 61, at 6.

[63] Google, Annual Report, *supra* note 61, at 6.

[64] *See* Liz Gannes, *Nearly a Decade Later, the Autocomplete Origin Story: Kevin Gibbs and Google Suggest*, ALL THINGS DIGITAL (Aug. 23, 2013, 6:00 AM), http://allthingsd.com/20130823/nearly-a-decade-later-the-autocomplete-origin-story-kevin-gibbs-and-google-suggest/ (last visited Mar. 29, 2016); Jennifer Liu, *At a Loss for Words?*, GOOGLE OFFICIAL BLOG (Aug. 25, 2008), http://googleblog.blogspot.com/2008/08/at-loss-for-words.html (last visited Mar. 29, 2016).

327. Notably, at the time of the 2008 release, Google Suggest appears to have performed an auto-complete function, and not a multiple prefix search, as is disclosed in the '218 Patent. For example, in the figure below depicting Google Suggest, typing in "san f" did not treat "san" as a separate term. Instead, "san" was treated as if were a completed first word and only "f" was treated as a to-be-completed prefix of a user's search query.



Google Suggest as it appeared in 2008[65]

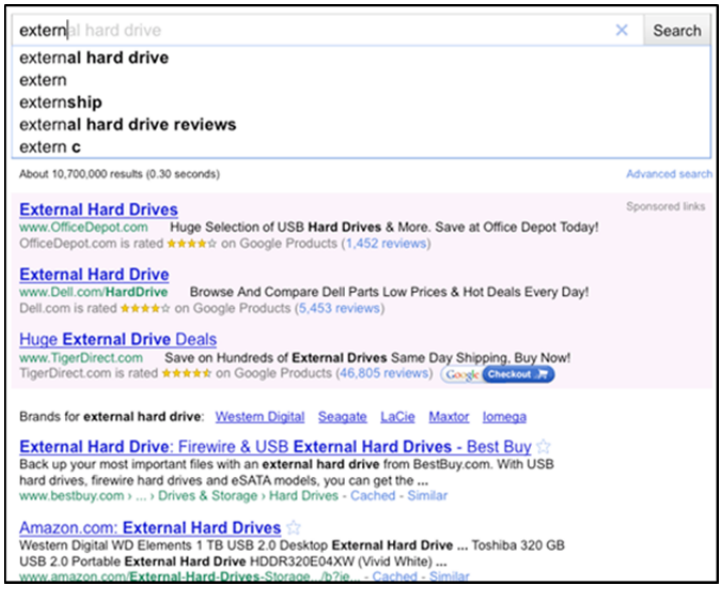
328. In 2005, Yahoo! tested auto-complete functionality similar to Google Suggest but the feature never went live on Yahoo!'s home page, as it was observed that users at that time were not ready for the technology and considered the feature "weird."[66]

329. Another Google product, known as Google Instant, was introduced in September 2010, half a decade after the priority date of the '218 Patent.[67] Google Instant provided users

[65] Jennifer Liu, *At a Loss for Words?*, GOOGLE OFFICIAL BLOG (Aug. 25, 2008), http://googleblog.blogspot.com/2008/08/at-loss-for-words.html (last visited Mar. 29, 2016).

[66] Nick Saint, *Yahoo: Big Deal, Google, We Had Instant Search Back in 2005*, BUSINESS INSIDER (Sept. 10, 2010, 4:44 PM), http://www.businessinsider.com/yahoo-big-deal-google-we-had-instant-search-back-in-2005-2010-9 (last visited Mar. 29, 2016); *see also* Shashi Seth, *Back to the Future: Innovation is Alive in Search*, YAHOO! SEARCH BLOG (Sept. 10, 2010, 1:10 PM), http://www.ysearchblog.com/2010/09/10/innovation-is-alive-in-search/ (last visited Mar. 29, 2016); *see also* Danny Sullivan, *New Yahoo Instant Search Gives Answers Directly – No Results Page Required*, SEARCH ENGINE WATCH (Sept. 14, 2005), http://searchenginewatch.com/sew/news/2061109/new-yahoo-instant-search-gives-answers-directly-no-results-page-required (last visited Mar. 29, 2016).

with another auto-complete search feature: predicted search terms from Google Suggest appeared in a drop-down box and, simultaneously, search results for the predicted search terms would appear below the drop-down box in real time.[68] Google Instant's predicted queries and search results would update continually as a user typed.[69] The results were displayed from the very first letter being typed.[70]



Example of Google Instant Search Results[71]

330. As with the earlier Google Suggest technology, Google Instant does not appear to incorporate the multi-prefix search features of the '218 Patent. Nonetheless, in 2010, Google

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[67] *See Our History in Depth*, GOOGLE COMPANY, http://www.google.com/about/company/history/#2010 (last visited Mar. 29, 2016).

[68] Matt McGee, *Google Instant Search: The Complete User's Guide*, SEARCH ENGINE LAND (Sept. 8, 2010, 3:43 PM), http://searchengineland.com/google-instant-complete-users-guide-50136 (last visited Mar. 29, 2016).

[69] *Id.*

[70] *Search News: Is Google Playing Head Games with Instant Search?*, REPRISE MEDIA (Sept. 8, 2010), http://www.reprisemedia.com/post/search-news-is-google-playing-head-games-with-instant-search/ (last visited Mar. 29, 2016).

[71] *Id.*

Instant was lauded as a "fundamental shift" in search,[72] a feature that "redefined how you use the Internet,"[73] and "promise[d] to change the way people search."[74]

331. Years before Google Instant was launched to such acclaim, the '218 Patent addressed computer-implemented search problems rooted in, and that arose from, a particular technology: devices with limited input and display capabilities, such as a remote control and a television. As the '218 Patent explained:

> Though progress has been made recently for PCs with full QWERTY keyboards to reduce the amount of text input needed to arrive at a desired result, the search input process is still grossly deficient and cumbersome when it comes to searching for desired information or content on a large ten-foot interface television environment or a hand-held device. In these usage scenarios, the text input is ordinarily made using keys that are typically overloaded with multiple characters. Of the various device interactions (key stroke, scroll, selection etc.) during a search process in these non-PC systems, text input remains a dominant factor in determining the usability of search. . . . Rich text input such as "natural language input" is generally precluded in the non-PC systems not by the limitations of search engines, but by the difficulty of entering text.

'218 Patent at 1:35-52.

332. As explained in the '218 Specification, the features of the '218 Patent invention were driven by the cumbersome input capabilities of hand-held devices, but could also be integrated into systems with both hand-held devices and standard full QWERTY keyboards. For example, the specification states:

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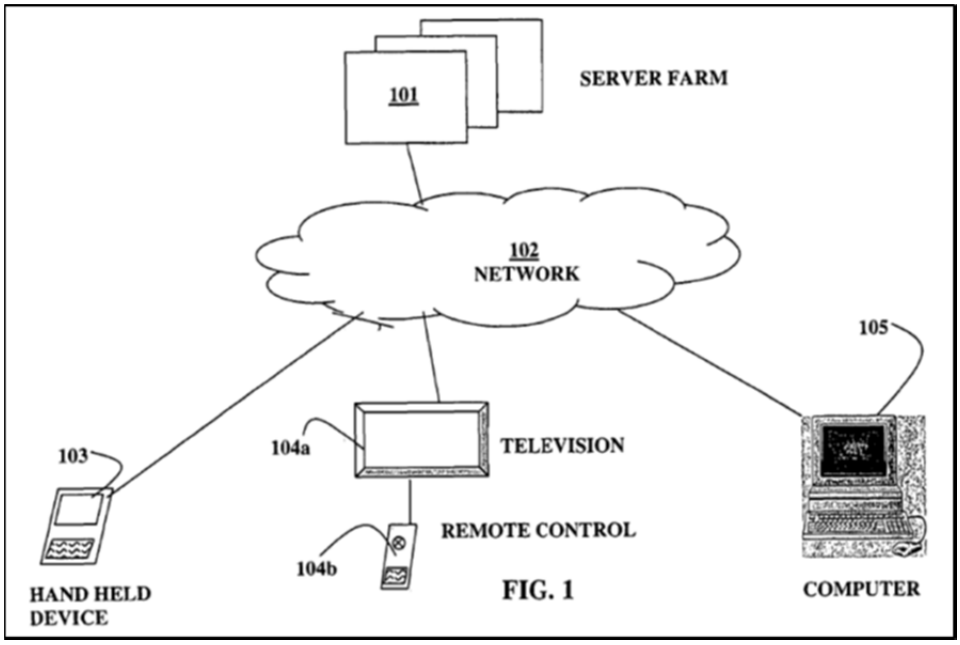
[72] Danny Sullivan, *Live Blogging The "Google Instant" Press Event & How to Watch Live*, SEARCH ENGINE LAND (Sept. 8, 2010, 9:17 AM), http://searchengineland.com/live-blogging-google-streaming-search-event-how-to-watch-live-50064 (last visited Mar. 29, 2016).

[73] Devin Connors, *Google Instant Tutorial: Search, Evolved!*, TOM'S GUIDE (Sept. 15, 2010, 5:40 PM), http://www.tomsguide.com/us/Google-Instant-YouTube,review-1581.html (last visited Mar. 29, 2016).

[74] Matt McGee, *Google Instant Search: The Complete User's Guide*, SEARCH ENGINE LAND (Sept. 8, 2010, 3:43 PM), http://searchengineland.com/google-instant-complete-users-guide-50136 (last visited Mar. 29, 2016).



'218 Patent, Figure 1

> The search devices could have a wide range of interface capabilities such as a hand-held device 103 (e.g., a phone or PDA) with limited display size and overloaded or small QWERTY or other keypad, a television 104*a* coupled with a remote control device 104*b* having an overloaded or small QWERTY or other keypad, and a Personal Computer (PC) 105 with a full QWERTY or other keyboard and a computer display.

'218 Patent at 4:44-51.

333. Such limitations gave rise to a particular problem with electronic program guides as the amount of available media content underwent an explosive increase through the 1990s and 2000s. In 1990, the average number of channels available to users was approximately 33;[75] users could simply "channel surf" the few channels within a few minutes to find their desired show, or could otherwise recall the time and station broadcasting the shows the user was interested in watching. By 2000, the average number of channels available to users had doubled,

[75] *See Television Audience 2008*, NIELSEN.COM, at 13, *available at* http://www.nielsen.com/content/dam/corporate/us/en/newswire/uploads/2009/07/tva_2008_071709.pdf (last visited Mar. 29 2016).

and by 2008, had doubled yet again to over 130 channels.[76] By 2012, there were approximately 800 programming networks in the United States.[77] This explosion in available television channels was accompanied by the growth of video-on-demand programming, which vastly increased the content available to consumers.

334. This increasing search space gave rise to problems within the electronic program guide field, including the challenge of providing users with quick, easy-to-use, and accurate means for locating desired content using input and display constrained devices, while at the same time minimizing the computational load on the system or systems involved so that available resources could be dedicated to providing other features, serving other users, or allowing content to be delivered and viewed at higher quality.

335. These challenges are reflected in the specification of the '218 Patent, and in its prosecution history, which is hereby incorporated by reference in its entirety. *See*, *e.g.*, '218 Patent at 1:26-52, 9:9-31; Appl. No. 11/136,261, File History, January 15, 2009 Office Action Reply at 8-9.

336. To address these problems, the '218 Patent discloses the unique solutions detailed above. Given the state of the art at the time of invention, the '218 Patent inventions were novel, unconventional solutions that directly addressed problems arising in the field of electronic program guides used on input- and display-constrained devices.

337. The '218 Patent claims cannot be performed in the human mind or by using pen and paper. There is no manual parallel to the simultaneous parallel prefix search method

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[76] *See Television Audience 2008*, NIELSEN.COM, at 13, *available at* http://www.nielsen.com/content/dam/corporate/us/en/newswire/uploads/2009/07/tva_2008_071709.pdf (last visited Mar. 29, 2016).

[77] *Cable's Story*, NCTA, https://www.ncta.com/who-we-are/our-story (last visited Mar. 29, 2016).

combined with relevance determination claimed in the '218 Patent. As noted above, the '218 Patent expressly states that it is drawn to address a specific, technical problem arising in the context of electronic text input and search using input and display constrained devices like a hand-held remote control and television: "[t]hough progress has been made recently for PCs with full QWERTY keyboards to reduce the amount of text input needed to arrive at a desired result, the search input process is still grossly deficient and cumbersome when it comes to searching for desired information or content on a large ten-foot interface television environment or a hand-held device." '218 Patent at 1:35-41.

338. Consistent with the problem addressed being rooted in IPG and electronic search technology, the '218 Patent's solutions naturally were also implementations rooted in that same technology that cannot be performed with pen and paper or in the human mind. The '218 Patent discloses use of a "server farm . . . as the source of search data and relevance updates with a network" and describes how the patent's solutions "balance[s] between available memory, computational power and in some usage scenarios bandwidth" of the system. '218 Patent at 4:38-39, 7:24-28. A person of ordinary skill in the art would also understand that each step in an incremental search process consumes additional read-write cycles, computer memory, and processing resources. The '218 Patent inventions help to decrease the computational load of a consumer's search for content because more relevant results are found faster and with less processing power than with alternative methods.

339. This technical context is reflected in the '218 Patent's claims. For example, independent claims 1 and 19 both require "receiving incremental text input entered by a user" and identifying content items from a "relatively large set of selectable television content items." Moreover, it was the identified limitations of input-constrained devices that drove the

development of the '218 invention. "Text input" performed in the human mind or using pen and paper would run counter to the purpose of the invention.

340. Moreover, the claims recite the identification and selection of television content items from a "relatively large set of selectable television content items." '218 Patent at Claims 1, 19. As discussed in the specification, in a random sampling of a movie space of 150,000 English movie titles, 99% of the search space would be covered by six characters with hash collections below 10. '218 Patent at 8:64-9:31. This translated into "300 million buckets to contain the collisions within 10." *Id.* This means that in order for a prefix search to return no more than 10 results (in 99% of cases) users had to enter at least six characters. There would be a bucket for each one of the permutations of the six entered characters that contain the results for that combination of six entered characters. Thus, to characterize 99% of the entire search space into buckets of no more than 10, there would need to be over 300 million buckets. Even in smaller search spaces (e.g., 29,500 names), the specification found that 300 million buckets would still be required to characterize 96.5% of the search space into buckets of no more than 10 items. *Id.* As a result, there is a high amount of computation and storage required to implement the invention.

341. During prosecution of the '218 Patent, the applicants noted that the Beach prior art reference (U.S. Pub. No. 2003/0014753) described an index of whole words, not strings of one or more descriptor prefixes. January 13, 2010 Office Action Reply at 8-9. By using the unconventional solution of strings of one or more descriptor prefixes, the '218 Patent's inventions require less memory allocation and thereby free up other, limited computing resources. In addition, a prior art Sanders reference (U.S. Pub. No. 2004/0194141), which the

examiner relied upon during prosecution, described a "brute force determination" "by performing a preliminary search on each normalized term in the search string," whereas:

> [T]he claimed method [of the '218 Patent] does not transform the user's text input into a set of query instructions. Rather, the method directly matches the prefix input entered by the user to a subset of content items. This feature avoids the computational complexity and burden of transforming the text input into query instructions and performing a search on each of the items in the collection of television content items. Thus, the claimed method allows relevant results to be returned relatively quickly and without the need for large computational resources.

January 15, 2009 Office Action Reply at 10.

342. In addition, the use of multiple incomplete prefixes to search for desired content was unconventional, as noted during prosecution of the '218 Patent.

343. A person having ordinary skill in the art at the time of the inventions of the '218 Patent would not have understood that the inventions could or would be performed solely in the human mind or using pen and paper. Using pen and paper would ignore the stated purpose of the '218 Patent and the problem it was specifically designed to address. Doing so would also run counter to the inventors' detailed description of the inventions and the language of the claims and be a practical impossibility.

III. '218 PATENT ALLEGATIONS

344. Defendants have infringed and are infringing, individually and/or jointly, either literally or under the doctrine of equivalents, the '218 Patent in violation of 35 U.S.C. § 271 *et seq.*, directly and/or indirectly, by making, using, offering for sale/lease, selling or leasing in the United States, and/or importing into the United States without authority or license, systems comprising networked servers controlled and operated by Comcast, and/or (or in combination with) set-top boxes (and any corresponding peripheral input devices, such as remote control units), including without limitation, one or more of the Accused DVR Products and Accused

Non-DVR Products capable of being used with Comcast's X1 Search feature (hereafter "the '218 Accused Products") that infringe at least claim 19 and 22 of the '218 Patent. On information and belief after reasonable investigation, each of the '218 Accused Products contains or is designed to be used with Comcast's X1 Search feature.

345. Defendants have been, and currently are, active inducers of infringement of the '218 Patent under 35 U.S.C. § 271(b) and contributory infringers of the '218 Patent under 35 U.S.C. § 271(c).

346. Defendants knew of the '218 Patent, or should have known of the '218 Patent but were willfully blind to its existence. Upon information and belief, Defendants have had actual knowledge of the '218 Patent since at least as early as the filing and/or service of the original Complaint in this action. In addition, Veveo filed a lawsuit in 2013 against Comcast for infringement of the '218 Patent, which suit was dismissed without prejudice based, at least in part, on Comcast's assurances that it would enter into an appropriate agreement with Veveo for Comcast's use of Veveo's patented technology. Upon information and belief, in light of their collaborations with Comcast, the Manufacturer Defendants had knowledge of that lawsuit. As a result, on information and belief, Defendants have had actual knowledge of the '218 patent since at least as early as the filing of that suit, as well as of Comcast's infringement thereof, but Comcast has not taken a license or ceased its infringing acts. In addition, (a) Comcast Corporation, on behalf of itself and for its affiliates, (b) Arris Group, Inc., on behalf of itself and all of its subsidiaries, and (c) Scientific-Atlanta, Inc., a predecessor-in-interest of Technicolor, on behalf of itself and all of its subsidiaries, previously took licenses to a portfolio of Rovi's patents. Further, Manufacturer Defendants have provided IPG products to Comcast, knowing, upon information and belief, that Comcast had been charged with infringement of the '218

Patent. Defendants have provided the '218 Accused Products to their customers and/or instructions to use the '218 Accused Products in an infringing manner while being on notice of or willfully blind to the '218 Patent and Defendants' infringement. Therefore, on information and belief, Defendants knew or should have known of the '218 Patent and of their own infringing acts, or deliberately took steps to avoid learning of those facts.

347. Comcast knowingly and intentionally encourages and aids at least (1) Comcast regional subsidiaries; (2) end-user customers and (3) third parties through Comcast's Xfinity TV Partner Program, to directly infringe the '218 Patent. Comcast's Xfinity TV Partner Program was officially launched after the filing of the original Complaint in this case, and after Comcast was put on notice of the '218 Patent. Comcast has knowledge of the '218 Patent and actively encourages third parties to implement the X1 infringing services in their service offerings, with knowledge that such services will directly infringe the '218 Patent.

348. For example, Comcast provides the technical and business infrastructure, know-how, and other support to instruct and enable Comcast regional subsidiaries to make, use, sell/lease, and/or offer for sale/lease the '218 Accused Products. The subsidiaries directly infringe at least claim 19 of the '218 Patent at least by making, using, selling/leasing, and/or offering for sale/lease the '218 Accused Products. Comcast induces such infringement by providing the technical and business infrastructure, know-how, and other support to enable and facilitate such infringement, knowing of, or being willfully blind to the existence of, the '218 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 19 of the '218 Patent, or subjectively believes that its actions will result in infringement of the '218 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

349. Comcast also provides the ’218 Accused Products and instructions to end-user customers so that such customers will use the’218 Accused Products in an infringing manner. For example, Comcast touts that it “gives you great search options to find the content you are looking for.” Comcast also provides instructions for incrementally searching using overloaded keys on the remote control “so you can get instant results with the entry of just a few characters,” and/or with the search bar, explaining that “[a]s you choose characters, they will appear at the top of the screen and the search will begin to suggest titles that match your entry so far.”[78] Comcast end-user customers directly infringe at least at least claim 19 of the ’218 Patent by using the ’218 Accused Products in their intended manner to infringe. Comcast induces such infringement by providing the ’218 Accused Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’218 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 19 of the ’218 Patent, or subjectively believes that its actions will result in infringement of the ’218 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

350. The Manufacturer Defendants knowingly and intentionally encourage or aid at least (1) Comcast and its subsidiaries and (2) end-user customers, to directly infringe the ’218 Patent

351. For example, the Manufacturer Defendants provide the ‘218 Accused Products and/or hardware and software components thereof (e.g., set-top boxes) to Comcast and/or its subsidiaries. Comcast and/or its subsidiaries directly infringe claims of the ’218 Patent by

[78] Xfinity TV: X1: Search Overview, http://customer.xfinity.com/help-and-support/cable-tv/x1-search-index/ (last visited Mar. 23, 2016); Xfinity TV: X1: Search Using the Search Bar, http://customer.xfinity.com/help-and-support/cable-tv/x1-search-using-the-search-bar/ (last visited Mar. 23, 2016).

making, using, selling/leasing, offering for sale/lease, and/or importing the '218 Accused Products to infringe. The Manufacturer Defendants induce such infringement by providing the '218 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '218 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the '218 Patent, or subjectively believe that their actions will result in infringement of the '218 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

352. The Manufacturer Defendants also induce end-user customers to infringe by providing the '218 Accused Products, which are specifically designed to be used in an infringing manner, knowing and intending they will be used by end-user customers to infringe. End-user customers directly infringe as set forth above. The Manufacturer Defendants induce such infringement by providing the '218 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '218 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the '218 Patent, or subjectively believe that their actions will result in infringement of the '218 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

353. Defendants contributorily infringe at least claim 19 of the '218 Patent by providing the '218 Accused Products and/or software or hardware components thereof (including set-top boxes with IPGs), that embody a material part of the claimed inventions of the '218 Patent, that are known by the Defendants to be specially made or adapted for use in an infringing manner, and are not staple articles with substantial non-infringing uses. The '218 Accused

Products are specially designed to infringe at least claim 19 of the ’218 Patent, and their accused components have no substantial non-infringing uses.

354. This Complaint will serve as further notice to Defendants of the ’218 Patent and its infringement, should Defendants contend that they did not previously have knowledge thereof.

355. Additional allegations regarding Defendants’ knowledge of the ’218 Patent and willful infringement—including, for example, through Comcast’s Xfinity TV Partner Program that it launched after the filing of the original Complaint in this case—will likely have evidentiary support after a reasonable opportunity for discovery.

356. Defendants’ infringement of the ’218 Patent was willful and deliberate, entitling Plaintiffs to enhanced damages and attorneys’ fees.

357. Defendants’ infringement of the ’218 Patent is exceptional and entitles Plaintiffs to attorneys’ fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

358. Plaintiffs have been damaged by Defendants’ infringement of the ’218 Patent and will continue to be damaged unless Defendants are enjoined by this Court. Plaintiffs do not have an adequate remedy at law.

359. Plaintiffs are entitled to recover from Defendants all damages sustained as a result of Defendants’ infringement of the ’218 Patent, including without limitation lost profits and not less than a reasonable royalty.

SIXTH CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 8,122,034

360. Plaintiffs reallege and incorporate by reference the allegations of paragraphs 1-359 of this Complaint.

361. The ’034 Patent is valid and enforceable under United States Patent Laws.

362. Veveo, Inc. owns by assignment, all right, title, and interest in and to the ’034 Patent, including the right to collect for past damages.

363. A copy of the ’034 Patent is attached hereto as Exhibit F.

364. The original provisional application that led to the issuance of the ’034 Patent was filed on June 30, 2005.

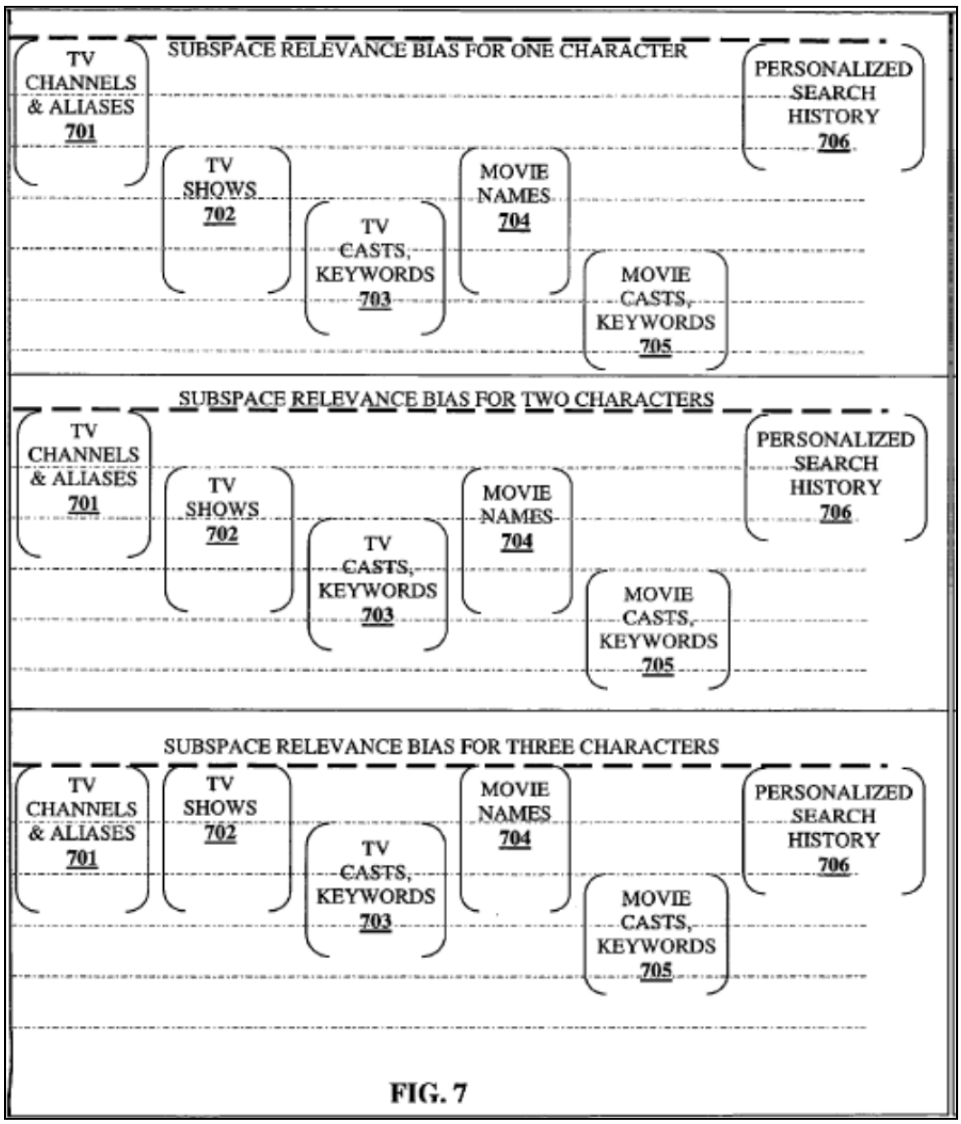
365. On January 13, 2015, a Notice of Allowance was mailed in the prosecution of U.S. Application No. 13/398,904 (now U.S. Patent No. 9,031,962), which claims the benefit of the same priority provisional application as the ’034 Patent.

I. THE ’034 PATENT

366. The ’034 Patent discloses inventions for performing “incremental searches with text entry reduced to delimited prefix substrings or acronyms where the relevance ordering of results is computed as a function of the number of characters entered by a user, where the characters represent one or more prefixes of the input query.” ’034 Patent at 2:39-45. Furthermore the ’034 Patent inventions “enable[] selective relevance boosting (or suppression) of subspaces via configurable parameters appropriate to the application context of the search, with the boosting (or suppression) of subspaces occurring as a function of the number of characters entered by the user.” ’034 Patent at 2:49-54.

367. As explained by the specification, the search space is divided into multiple subspaces with “selective biasing of different subspaces as a function of the number of characters

entered." '034 Patent at 7:63-65. As an example of such ordering, Figure 7 of the '034 Patent depicts "the dynamic adjustment of subspace biases as each character is entered." '034 Patent at 4:3-5.



'034 Patent, Figure 7

368. For example, when a user initially enters only one character, search results that fall within the channel subspace category under "TV Channels & Aliases" would receive a boost to relevance and those results would be displayed ahead of other subspace category results, such as TV shows. However, upon entering additional characters, "[t]he selective biasing of the

described embodiment enables the 'TV show' subspace to get a boost after the first character is entered so that it can contend and supersede the low popularity channel names, or even all the channel names, if the biasing is appropriately set." '034 Patent at 8:22-26.

369. The '034 Patent discloses an exemplary process of a user starting a new search, entering characters, and arriving at the desired result in accordance with one or more embodiments of the invention:

> A user enters a search string character at 401, which could be a variable size prefix of the intended query. For example, to represent "Brad Pitt," the user may enter B P, BR P, B PI etc.). The system dynamically retrieves results at 402 for the cumulative substring of characters the user enters and orders the collected results based on (i) the relevance of the matched terms (explained in further detail below), and (ii) the number of characters the user entered. The results are displayed in the results window.

'034 Patent at 6:7-16. "The ordering of results in the display window is governed by a relevance function that is a domain specific combination of relevance (e.g., popularity, temporal relevance, and location relevance) and the number of characters entered by the user." '034 Patent at 6:21-25.

370. One of the stated goals of the invention is to avoid requiring the user to scroll down to see additional results—a more significant handicap in the context of input and display-constrained devices. In contrast to the '034 Patent, "[a] static character count independent of any subspace biasing would relegate some subspaces to always be occluded by results from the boosted subspace results." '034 Patent at 8:12-15. In such a case, the user would see the same order of results as additional characters are entered, despite the fact that the user is continuing to enter characters because the desired content has not yet appeared (at least without scrolling). The '034 Patent solves this problem. The '034 Patent discloses:

> Consider an example in which the user enters a prefix string $P=C_1, C_2, C_3, \ldots C_i \ldots C_N$. where $1 \leqq i \leqq N$. One or more of the characters C_i $(1 \leqq i \leqq N)$, could be a word separator (e.g., space character)—the query string could thus be a multi-

> prefix query string. Let P_i denote a multi-prefix string where $1 \leqq i \leqq N$. Let the subspaces be $S_1, S_2, \ldots S_M$ and the initial bias of the subspaces be $Si^{min} \geqq Sj^{max}$, $1 \leqq i,j \leqq M$, i.e., the lowest relevance element in Si has a higher relevance than the most relevant element in S_j. Consider the display space size to be D_{max}. The user would have to scroll down if the number of results exceeds D_{max}.
>
> ***
>
> Case 2: $P_i (1 \leqq i < N)$ has a match with strings from subspaces S1, . . . SK−1 (Match[Pi,Sj]=$\{m_j^1, m_j^2 \ldots m_j^r\}$ where $1 \leqq r \leqq n(S_j)$, n standing for the cardinality of S_j and $1 \leqq j \leqq K-1$) and P_{i+1} has a match with strings from Subspace S_K (Match[P_{i+1},S_K]=$\{m_K^1, M_K^2 \ldots m_K^r\}$ where $1 \leqq r \leqq n(S_K)$, n standing for the cardinality of S_K). In this case if $\Sigma\, n(\text{Match}[P_i,S_j]) \geqq D_{max} (1 \leqq j \leqq K-1)$, then the result from SK would be occluded by the matched elements from the subspace $S_1, \ldots S_{K-1}$ (note it may be occluded even for a value of $j<K-1$, if multiple results from a subspace match). The user would have to scroll down to view the result from S_K. It is this occlusion that character count based biasing in accordance with one or more embodiments of the invention addresses. The biasing allows for selective occlusion for a certain number of initial characters, and then makes the relevance space a level playing field for all subspaces gradually as the entered character count increases. By modifying the subspace biasing for each character, in this case, by increasing the bias of S_K, the result of S_K has some likelihood of showing up within the top D_{max} results. This promotion to the display list, might have happened at the exclusion of a result from one of the subspaces $S_1, \ldots S_{K-1}$. This may be a preferred behavior, i.e., no result is allowed to hold on to the precious display estate beyond a particular character count. As the subspaces are all made equal with the increase in character count, preference could be given for the results from the new subspaces, since the others would have been monopolizing the display space in this scenario. Also note that an excluded result that fell from its position in the top displayed set, would work its way back again into view if sufficient characters that form a larger prefix of that result is entered. This reclamation of lost position will naturally occur, with the entry of more characters—the uniqueness of the string would help bring it back up.

’034 Patent at 8:36-9:20.

371. In view of the historical context and development of search technology discussed further below, a person of ordinary skill in the art would understand that the ’034 inventions provided unconventional solutions to searching for content.

II. HISTORICAL CONTEXT OF THE ’034 PATENT

372. Systems for conducting “incremental searches with text entry reduced to delimited prefix substrings or acronyms where the relevance ordering of results is computed as a

function of the number of characters entered by a user, where the characters represent one or more prefixes of the input query" are not common or conventional today, let alone at the time of the '034 Patent's inventions. '034 Patent at 2:39-54.

373. At the time of the inventions of the '034 Patent, Google, already the world's number one search engine,[79] did not offer the inventive search features disclosed and claimed by the '034 Patent. At that time, Google.com did not utilize a character count based relevance bias value to boost or suppress search results. Instead, Google's "Google Suggest" (known today as "autocomplete") attempted to "guess[] what you're typing and offer[] suggestions in real time,"[80] and was limited to Google Labs, Google's "playground for [Google] engineers and for adventurous Google users."[81] It did not gain traction for some time,[82] and was not implemented as a default function within Google's main search engine on Google.com until 2008.[83]

374. In 2005, Yahoo! tested auto-complete functionality similar to Google Suggest but the feature never went live on Yahoo!'s home page, as it was observed that users at that time were not ready for the technology and considered the feature "weird."[84]

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[79] *See* Paul R. La Monica, *Google Sets $2.7 Billion IPO: Popular search engine company files for its eagerly anticipated initial public offering.*, CNN MONEY (Apr. 30, 2004, 7:56 AM), http://money.cnn.com/2004/04/29/technology/google/.

[80] Google, Annual Report, *supra* note 61, at 6; Kevin Gibbs, *I've Got a Suggestion*, GOOGLE OFFICIAL BLOG (Dec. 10, 2004), http://googleblog.blogspot.com/2004/12/ive-got-suggestion.html.

[81] Google, Annual Report, *supra* note 61, at 6.

[82] Google, Annual Report, *supra* note 61, at 6.

[83] *See Nearly a Decade Later, the Autocomplete Origin Story: Kevin Gibbs and Google Suggest*, ALL THINGS DIGITAL (Aug. 23, 2013, 6:00 AM), http://allthingsd.com/20130823/nearly-a-decade-later-the-autocomplete-origin-story-kevin-gibbs-and-google-suggest/; Jennifer Liu, *At a Loss for Words?*, GOOGLE OFFICIAL BLOG (Aug. 25, 2008), http://googleblog.blogspot.com/2008/08/at-loss-for-words.html#links.

[84] Nick Saint, *Yahoo: Big Deal, Google, We Had Instant Search Back in 2005*, BUSINESS INSIDER (Sept. 10, 2010, 4:44 PM), http://www.businessinsider.com/yahoo-big-deal-google-we-had-

375. Another Google product, known as Google Instant, was introduced in September 2010, half a decade after the priority date of the '034 patent.[85] Google Instant provided users with another auto-complete search feature: predicted search terms from Google Suggest appeared in a drop-down box and, simultaneously, search results for the predicted search terms would appear below the drop-down box in real time.[86] Google Instant's predicted queries and search results would update continually as a user typed.[87] The results were displayed from the very first letter being typed.[88]

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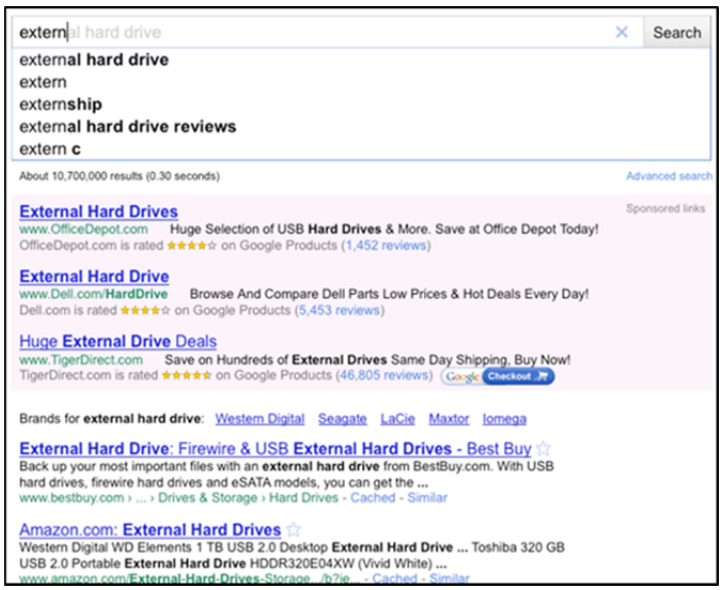
instant-search-back-in-2005-2010-9; s*ee also* Shashi Seth, *Back to the Future: Innovation is Alive in Search*, YAHOO! SEARCH BLOG (Sept. 10, 2010, 1:10 PM), http://www.ysearchblog.com/2010/09/10/innovation-is-alive-in-search/; s*ee also* Danny Sullivan, *New Yahoo Instant Search Gives Answers Directly – No Results Page Required*, SEARCH ENGINE WATCH (Sept. 14, 2005), http://searchenginewatch.com/sew/news/2061109/new-yahoo-instant-search-gives-answers-directly-no-results-page-required.

[85] *See Our History in Depth*, GOOGLE COMPANY, http://www.google.com/about/company/history/#2010 (last visited Mar. 16, 2016).

[86] Matt McGee, *Google Instant Search: The Complete User's Guide*, SEARCH ENGINE LAND (Sept. 8, 2010, 3:43 AM), http://searchengineland.com/google-instant-complete-users-guide-50136.

[87] *Id.*

[88] *Search News: Is Google Playing Head Games with Instant Search?*, REPRISE MEDIA (Sept. 8, 2010), http://www.reprisemedia.com/post/search-news-is-google-playing-head-games-with-instant-search/.



Example of Google Instant Search Results[89]

376. As with the earlier Google Suggest technology, Google Instant does not appear to incorporate a character count based relevance bias value to boost or suppress search results. Nonetheless, in 2010, Google Instant was lauded as a "fundamental shift" in search,[90] a feature that "redefined how you use the Internet,"[91] and "promise[d] to change the way people search."[92]

377. Years before Google Instant was launched to such acclaim, the '034 Patent addressed computer-implemented search problems rooted in, and that arose from, a particular

[89] *See Search News: Is Google Playing Head Games with Instant Search?*, REPRISE MEDIA (Sept. 8, 2010), http://www.reprisemedia.com/post/search-news-is-google-playing-head-games-with-instant-search/.

[90] Danny Sullivan, *Live Blogging The "Google Instant" Press Event & How to Watch Live*, SEARCH ENGINE LAND (Sept. 8, 2010, 9:17 AM), http://searchengineland.com/live-blogging-google-streaming-search-event-how-to-watch-live-50064.

[91] Devin Connors, *Google Instant Tutorial: Search, Evolved!*, TOM'S GUIDE (Sept. 15, 2010, 5:40 PM), http://www.tomsguide.com/us/Google-Instant-YouTube,review-1581.html.

[92] Matt McGee, *Google Instant Search: The Complete User's Guide*, SEARCH ENGINE LAND (Sept. 8, 2010, 3:43 PM), http://searchengineland.com/google-instant-complete-users-guide-50136.

technology: devices with limited input and display capabilities, such as a remote control and a television. As the '034 Patent explained:

> Television, PDA devices and other devices with limited input capabilities and display constraints (the display space on a television is insufficient given the large fonts needed to be visible at a distance) pose a challenge to create an easy interface like the desktop-based search, where text entry can be done using a QWERTY keyboard. Text input limitations for television-based search makes it important to facilitate reduced text entry. Furthermore support for dynamic retrieval of results for each character entered is important for increasing the likelihood of a user arriving at desired result without having to enter the full search text.

'034 Patent at 2:11-22.

378. Such limitations gave rise to a particular problem with electronic program guides as the amount of available media content underwent an explosive increase through the 1990s and 2000s. In 1990, the average number of channels available to users was approximately 33.[93] At that time, "[t]elevision viewers could tune to a channel to locate desired content by entering a channel number or clicking channel navigation (up/down) buttons on the television or on a remote control device;" users could simply "channel surf" the few channels. '034 Patent at 1:28-31. By 2000, the average number of channels available to users had doubled, and by 2008, had doubled yet again to over 130 channels.[94] By 2012, there were approximately 800 programming networks in the United States.[95] This explosion in available television channels was accompanied by the growth of video-on-demand programming, which vastly increased the content available to consumers.

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[93] *See Television Audience 2008*, NIELSEN.COM, at 13, *available at* http://www.nielsen.com/content/dam/corporate/us/en/newswire/uploads/2009/07/tva_2008_071709.pdf (last visited Mar. 16, 2016).

[94] *Id.*

[95] *Cable's Story*, NCTA, https://www.ncta.com/who-we-are/our-story (last visited Mar. 16, 2016).

379. The inventors recognized this problem: "There has been significant recent proliferation in content choices for television viewers. The increase in content choices has resulted largely from channel proliferation, content disaggregation, and an increase in content source options. With this proliferation of content choices, conventional user interfaces, particularly EPGs, have proven inadequate in helping users quickly and easily find channels and content of interest." '034 Patent at 1:36-43. This increasing search space gave rise to a particular problem of effectively locating and ordering desired content using the specific input and display constraints of, for example, remote controls and televisions.

380. This technical context gave rise to distinct problems specifically tied to input- and display-constrained devices, as described above.

381. Google's 2004 10-K statement recognized the distinct challenges of input- and display-constrained devices.[96]

382. In addition to the problems attending the use of input-constrained devices and a dramatic increase in content, displays for televisions and hand-held devices "cannot accommodate more than a few results at any point in time, in order to remain non-intrusive." '034 Patent at 2:26-29. "The display space constraint increases the importance of personalizing the results retrieval so that the user can get to the results with significantly reduced

[96] Google, Annual Report, *supra* note 61, at 57-58 ("More individuals are using non-PC devices to access the Internet, and versions of our web search technology developed for these devices may not be widely adopted by users of these devices. The number of people who access the Internet through devices other than personal computers, including mobile telephones, hand-held calendaring and email assistants, and television set-top devices, has increased dramatically in the past few years. The lower resolution, functionality and memory associated with alternative devices make the use of our products and services through such devices difficult. If we are unable to attract and retain a substantial number of alternative device users to our web search services or if we are slow to develop products and technologies that are more compatible with non-PC communications devices, we will fail to capture a significant share of an increasingly important portion of the market for online services.").

effort." '034 Patent at 2:31-34. As a result, the inventors directed their efforts at addressing the particular problem arising with electronic program guides on televisions and hand-held devices where it was particularly important to have "[t]he correct relevance of ordering … to avoid the user from having to scroll down to see additional results." '034 Patent at 2:29-31.

383. To address these problems, the '034 Patent discloses the unique solutions detailed above. Given the state of the art at the time, the '034 Patent inventions were novel, unconventional solutions that directly addressed problems arising in the field of electronic program guides used on input- and display-constrained devices.

384. During prosecution of the '034 Patent, the prosecution history of which is hereby incorporated by reference in its entirety, applicants noted that the prior art cited by the examiner did not disclose the unconventional features of their invention. For example, applicants noted that U.S. Patent No. 6,480,837 to Dutta describes adjusting popularity weights depending on whether the item was selected from a list of possible search results, and U.S. Patent Publication No. 2005/0256846 to Zigmond describes retrieving different indices based on the number of characters entered, but neither discloses adjusting a relevance value based on the number of characters entered by a user.

385. The '034 Patent claims cannot be performed in the human mind or by using pen and paper. There is no manual parallel to the simultaneous parallel prefix search method combined with relevance adjustments as claimed in the '034 Patent. As noted above, the '034 Patent expressly states that it is drawn to address a specific, technical problem arising in the context of electronic text input and search using input and display constrained devices like a hand-held remote control and television. For example,

> Television, PDA devices and other devices with limited input capabilities and display constraints (the display space on a television is insufficient given the large

> fonts needed to be visible at a distance) pose a challenge to create an easy interface like the desktop-based search, where text entry can be done using a QWERTY keyboard. Text input limitations for television-based search makes it important to facilitate reduced text entry. . . .
>
> This problem is even more challenging when designing a non-intrusive search interface for television where the results display cannot accommodate more than a few results at any point in time, in order to remain non-intrusive. The correct relevance of ordering is important in this case to avoid the user from having to scroll down to see additional results. The display space constraint increases the importance of personalizing the results retrieval so that the user can get to the results with significantly reduced effort."

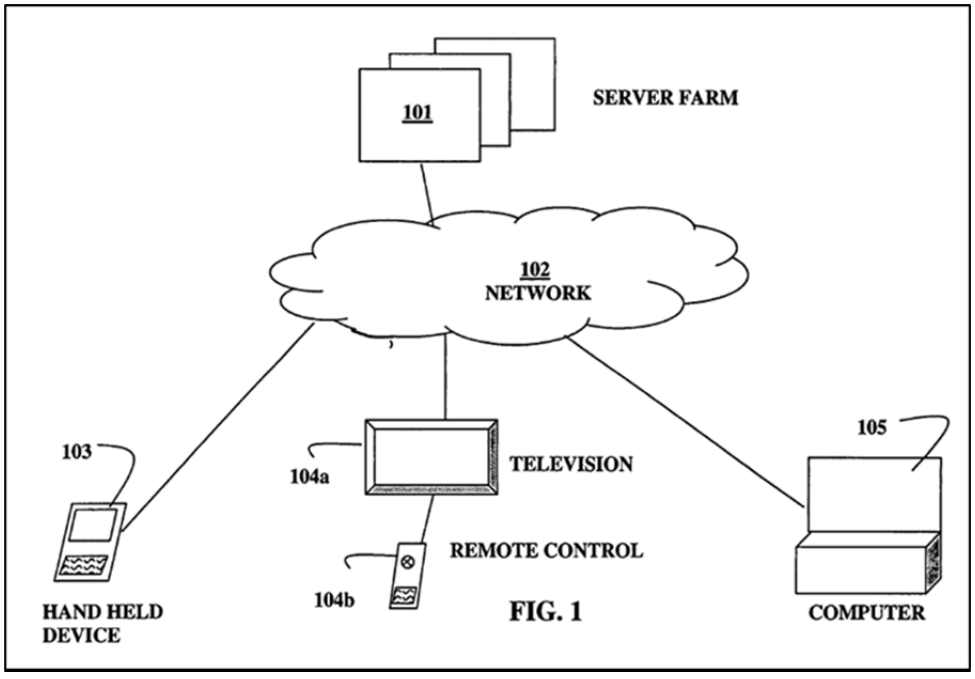
'034 Patent at 2:11-34. *See also* Appl. No. 11/246,432, File History, Amendment dated Nov. 12, 2008 at 11-12 ("[O]rdering the search results based only on their popularities causes highly popular results to monopolize the most desirable positions in the presentation order, thereby 'occluding' less popular results. This occurs despite the fact that the user has been presented with the popular results, has elected not to select the popular results, and continues to enter additional characters in the search text. This problem is especially troublesome when the search results are being presented on hand-held, display-constrained device[s] (e.g., PDA or mobile telephone)").

386. Consistent with the problem addressed being rooted in IPG and electronic search technology, the '034 Patent's solutions naturally were also rooted in that same technology that cannot be performed with pen and paper or in the human mind. The '034 Patent discloses use of a "[s]erver farm . . . as a source of search data and relevance updates." '034 Patent at 4:58-59. The '034 Patent discloses a number of embodiments each of which were implementations that cannot be performed with pen and paper or in the human mind, such as a "hand-held device would include remote connectivity . . . to submit the query to a server . . . and retrieve results from the server" and another in which "the search device . . . may not include remote connectivity" for which "the search database may be locally resident on a local persistent

storage." '034 Patent at 5:18-26. A person of ordinary skill in the art would also understand that each step in an incremental search process consumes additional read-write cycles, computer memory, and processing resources. The '034 Patent inventions help to decrease the computational load of a consumer's search for content because more relevant results are found faster: "[B]y basing the ordering of the search results on the number of text characters received from the user, search results desired by the user can be found with less text entered by the user." Appl. No. 11/246,432, File History, Amendment dated Nov. 12, 2008 at 12.

387. This technical context is reflected in the '034 Patent's claims. For example, each of the claims requires that the text be received by a "hand-held text input device."

388. As explained in the '034 specification, the features of the '034 invention were driven by the cumbersome input capabilities of hand-held devices, but could also be integrated into systems with both hand-held devices and standard full QWERTY keyboards. For example, the specification states:



'034 Patent, Figure 1

> The search devices could have a wide range of interface capabilities such as a hand-held device 103 (e.g., a phone, PDA or other mobile device) with limited display size and overloaded or small QWERTY keypad, a television 104 a coupled with a remote 104 b having an overloaded or small QWERTY keypad, and a Personal Computer (PC) 105 with a full QWERTY keyboard and large display.

'034 Patent at 4:67-5:7.

389. A person having ordinary skill in the art at the time of the inventions of the '034 Patent would not have understood that the inventions could or would be performed solely in the human mind or using pen and paper. Using pen and paper would ignore the stated purpose of the '034 Patent and the problem it was specifically designed to address. Doing so would also run counter to the inventors' detailed description of the inventions and the language of the claims and be a practical impossibility.

III. '034 PATENT ALLEGATIONS

390. Defendants have infringed and are infringing, individually and/or jointly, either literally or under the doctrine of equivalents, the '034 Patent in violation of 35 U.S.C. § 271 et seq., directly and/or indirectly, by making, using, offering for sale/lease, selling or leasing in the United States, and/or importing into the United States without authority or license, systems comprising networked servers controlled and operated by Comcast, and/or (or in combination with) set-top boxes (and any corresponding peripheral input devices, such as remote control units), including without limitation, one or more of the Accused DVR Products and Accused Non-DVR Products capable of being used with Comcast's X1 Search feature (hereafter "the '034 Accused Products") that infringe at least claim 16 of the '034 Patent. On information and belief after reasonable investigation, each of the '034 Accused Products contains or is designed to be used with Comcast's X1 Search feature.

391. Defendants have been, and currently are, active inducers of infringement of the ’034 Patent under 35 U.S.C. § 271(b) and contributory infringers of the ’034 Patent under 35 U.S.C. § 271(c).

392. Defendants knew of the ’034 Patent, or should have known of the ’034 Patent but were willfully blind to its existence. Upon information and belief, Defendants have had actual knowledge of the ’034 Patent since at least as early as the filing and/or service of the original Complaint in this action. Further, prior to the filing this Complaint, Rovi provided presentations and claim charts to Comcast specifically identifying patents in Rovi’s portfolio, including the ’034 Patent, and showing an example of Comcast’s infringement of the ’034 Patent. In addition, (a) Comcast Corporation, on behalf of itself and for its affiliates, (b) Arris Group, Inc., on behalf of itself and all of its subsidiaries, and (c) Scientific-Atlanta, Inc., a predecessor-in-interest of Technicolor, on behalf of itself and all of its subsidiaries, previously took licenses to a portfolio of Rovi’s patents. Further, the Manufacturer Defendants have provided IPG products to Comcast, knowing that Comcast had a license to Rovi’s guidance portfolio. Defendants have provided the ’034 Accused Products to their customers and/or instructions to use the ’034 Accused Products in an infringing manner while being on notice of or willfully blind to the ’034 Patent and Defendants’ infringement. Therefore, on information and belief, Defendants knew or should have known of the ’034 Patent and of their own infringing acts, or deliberately took steps to avoid learning of those facts.

393. Defendants knowingly and intentionally encourage and aid at least (1) Comcast regional subsidiaries; and (2) end-user customers, to directly infringe the ‘034 Patent.

394. For example, Comcast provides the technical and business infrastructure, know-how, and other support to instruct and enable Comcast regional subsidiaries to make, use,

sell/lease, and/or offer for sale/lease the '034 Accused Products. The subsidiaries directly infringe at least claim 16 of the '034 Patent at least by making, using, selling/leasing, and/or offering for sale/lease the '034 Accused Products. Comcast induces such infringement by providing the technical and business infrastructure, know-how, and other support to enable and facilitate such infringement, knowing of, or being willfully blind to the existence of, the '034 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 16 of the '034 Patent, or subjectively believes that its actions will result in infringement of the '034 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

395. Comcast also provides the '034 Accused Products and instructions to end-user customers so that such customers will use the'034 Accused Products in an infringing manner. For example, Comcast touts that it "gives you great search options to find the content you are looking for." Comcast also provides instructions for incrementally searching using overloaded keys on the remote control "so you can get instant results with the entry of just a few characters," and/or with the search bar, explaining that "[a]s you choose characters, they will appear at the top of the screen and the search will begin to suggest titles that match your entry so far."[97] Comcast end-user customers directly infringe at least claim 16 of the '034 Patent by using the '034 Accused Products in their intended manner to infringe. Comcast induces such infringement by providing the '034 Accused Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '034 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of

[97] Xfinity TV: X1: Search Overview, http://customer.xfinity.com/help-and-support/cable-tv/x1-search-index/ (last visited Mar. 23, 2016); Xfinity TV: X1: Search Using the Search Bar, http://customer.xfinity.com/help-and-support/cable-tv/x1-search-using-the-search-bar/ (last visited Mar. 23, 2016).

at least claim 16 of the ’034 Patent, or subjectively believes that its actions will result in infringement of the ’034 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

396. The Manufacturer Defendants knowingly and intentionally encourage or aid at least (1) Comcast and its subsidiaries and (2) end-user customers, to directly infringe the ’034 Patent

397. For example, the Manufacturer Defendants provide the ’034 Accused Products and/or hardware and software components thereof (e.g., set-top boxes) to Comcast and/or its subsidiaries. Comcast and/or its subsidiaries directly infringe claims of the ’034 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the ’034 Accused Products to infringe. The Manufacturer Defendants induce such infringement by providing the ’034 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’034 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the ’034 Patent, or subjectively believe that their actions will result in infringement of the ’034 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

398. The Manufacturer Defendants also induce end-user customers to infringe by providing the ’034 Accused Products, which are specifically designed to be used in an infringing manner, knowing and intending they will be used by end-user customers to infringe. End-user customers directly infringe as set forth above. The Manufacturer Defendants induce such infringement by providing the ’034 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’034 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in

infringement of claims of the ’034 Patent, or subjectively believe that their actions will result in infringement of the ’034 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

399. Defendants contributorily infringe at least claim 16 of the ’034 Patent by providing the ’034 Accused Products and/or software or hardware components thereof, that embody a material part of the claimed inventions of the ’034 Patent, that are known by the Defendants to be specially made or adapted for use in an infringing manner, and are not staple articles with substantial non-infringing uses. The ’034 Accused Products are specially designed to infringe at least at least claim 16 of the ’034 Patent, and their accused components have no substantial non-infringing uses.

400. This Complaint will serve as further notice to Defendants of the ’034 Patent and its infringement, should Defendants contend that they did not previously have knowledge thereof.

401. Additional allegations regarding Defendants’ knowledge of the ’034 Patent and willful infringement—including, for example, through Comcast’s Xfinity TV Partner Program that it launched after the filing of the original Complaint in this case—will likely have evidentiary support after a reasonable opportunity for discovery.

402. Defendants’ infringement of the ’034 Patent was willful and deliberate, entitling Plaintiffs to enhanced damages and attorneys’ fees.

403. Defendants’ infringement of the ’034 Patent is exceptional and entitles Plaintiffs to attorneys’ fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

404. Plaintiffs have been damaged by Defendants' infringement of the '034 Patent and will continue to be damaged unless Defendants are enjoined by this Court. Plaintiffs do not have an adequate remedy at law.

405. Plaintiffs are entitled to recover from Defendants all damages sustained as a result of Defendants' infringement of the '034 Patent, including without limitation lost profits and not less than a reasonable royalty.

SEVENTH CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 8,433,696

406. Plaintiffs reallege and incorporate by reference the allegations of paragraphs 1-405 of this Complaint.

407. The '696 Patent is valid and enforceable under United States Patent Laws.

408. Veveo, Inc. owns by assignment, all right, title, and interest in and to the '696 Patent, including the right to collect for past damages.

409. A copy of the '696 Patent is attached hereto as Exhibit G.

410. The original provisional applications that led to the issuance of the '696 Patent were filed on August 26, 2005 and September 12, 2005.

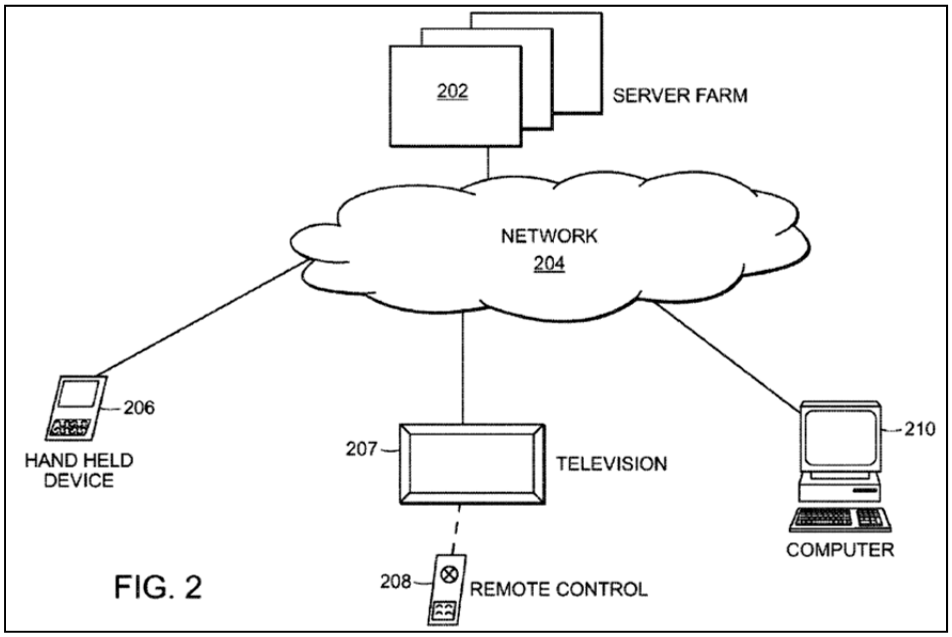
411. On May 22, 2015, a Notice of Allowance was mailed in the prosecution of U.S. Application No. 13/854,690 (now U.S. Patent No. 9,177,081), which claims the benefit of the same priority provisional applications as the '696 Patent.

I. THE '696 PATENT

412. The '696 Patent discloses inventions for "processing a search query entered by a user of a device having a text input interface with overloaded keys" (e.g., a key having more than one alpha-numeric character, such as a number pad where each key has corresponding letters as well) wherein the query is directed at identifying a content item from a set of items, each item

having "one or more associated descriptors." '696 Patent at 2:8-12, Fig. 1. The search query using the overloaded keys comprises a "prefix substring" for words relating to the desired item, and the query is disambiguated by the system, which "dynamically identifies a group of one or more items from the set of items having one or more descriptors matching the search query as the user enters each character of the search query." '696 Patent at 2:12-21.

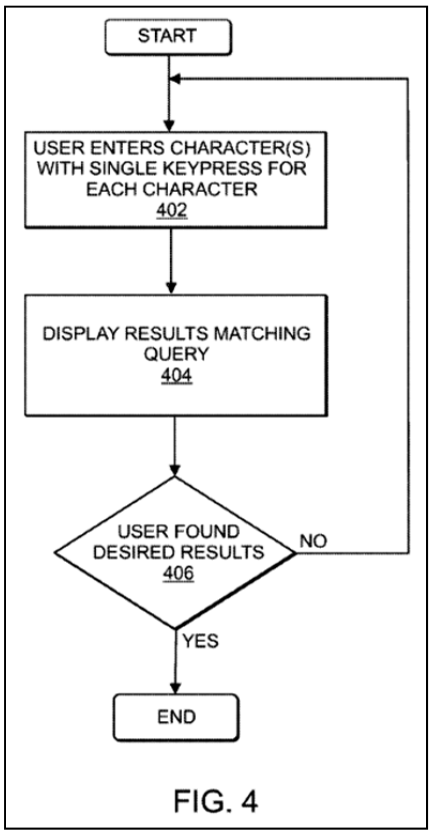
413. The '696 Patent specification explains that the inventions can be incorporated, for example, into a television application with a system that includes a set-top box and a "remote control device 208 having an overloaded keypad." '696 Patent at 3:8-12, 4:26-28, 4:62-64, Figs. 1-2. The system may also comprise a server farm that processes search queries and is the source of or is linked to a source of some of the available content. '696 Patent at 4:2-13. A "network 204 functions as the distribution framework for transmitting data from the server 202 to the devices." '696 Patent at 4:14-16. Figure 2 shows the make-up of possible systems for implementing the inventions of the '696 Patent:



'696 Patent, Figure 2

414. The content items for which the user searches can be television content items such as movies or television shows, and the associated descriptors can include information on the title, cast, directors, and other keywords or descriptions of the content item. *See* '696 Patent at 3:8-12. The user enters an "ambiguous search query directed at identifying a desired item," which comprises a "prefix substring of a word [that] is a variable length string of characters that contains fewer than all the characters making up the word." '696 Patent at 3:13-18. In response to the query, the system dynamically identifies and presents content items matching the search query, as each character is entered. '696 Patent at 3:18-23. The content items are "preferably displayed in an order of expected interest to the user." '696 Patent at 3:23-25.

415. The specification describes an embodiment for the processes described in the '696 Patent in conjunction with Figure 4:

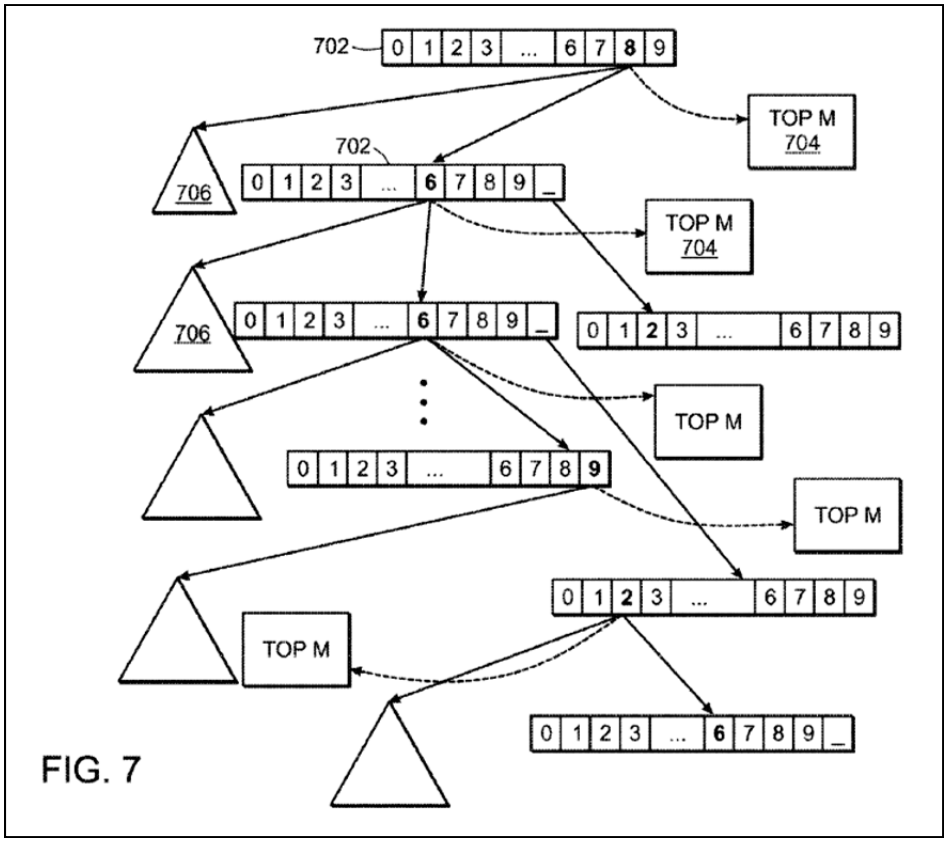


'696 Paten, Figure 4

> At step 402, the user enters a character using an ambiguous text input interface, e.g., using a keypad with overloaded keys where a single key press is performed for each character entered. At 404, an incremental search system determines and displays results that match the input character entered at 402. Since the input is ambiguous, the match of results would include the matches for all the ambiguous input characters represented by the single key press. To address this increased set of matches, an ordering scheme is preferably used to order the results to improve accessibility to results expected to be more of interest to the user. The ordering of results can be based on a variety of criteria including, e.g., temporal relevance, location relevance, popularity and personal preferences (that may have been determined implicitly or explicitly) or some combination of these criteria. . . . For example, if the user entered NBA, then the system would list the games in order of temporal relevance such as those in progress or are scheduled to begin in the near future are listed at the higher on the list. . . . .
>
> * * * *
>
> If the user does not find the desired results at 406, he or she can continue to enter more characters to the search query at step 402. Then at step 404, the system will perform the search based on the cumulative substring of characters of the search query entered by the user up to that point.

'696 Patent at 5:4-59.

416. The '696 Patent discloses an exemplary trie data structure that can be used for identifying search results in Figure 7:



’696 Patent, Figure 7

> Each node 702 of the structure has numerical values from 0-9. Each node has the top M records 704 (determined from some ordering criteria) preferably in “in-memory” storage, which can be a memory that permits quick retrieval. These records are returned immediately to user based on the match string. The illustrated diagram shows the layout of the data structure for the terms “TOMMY BOY”. The number of prefix terms and the size of the prefix terms used for pre-computing the trie index are determined by the memory availability and computational capabilities of the system. . . . In the FIG. 7 example, the size of the prefix terms used is 2 and the number of terms for pre computing the trie index is 2. So when the user enters any of the search queries, “8 269”(T BOY),“86 269”(TO BOY), “8 2”(T B), “86 2”(T BO), the results would be retrieved from the top M records 704 if present there. If it is beyond the top M records, the records are retrieved from the secondary storage structure 706 if it is present there.

’696 Patent at 6:24-63.

417. The ’696 Patent further discloses how the disclosed prefix substring searching using overloaded keys may be implemented by pre-indexing content items with prefix substring

combinations by directly mapping from an alphanumeric terms space to a numeric string space. As described in the specification, "[t]he exemplary terms 'TOON', 'TOM', 'TOMMY', which can be search terms entered by a television viewer to identify television content, are mapped to the numeric equivalents of their prefix strings: 'T'(8), 'TO'(86), 'TOO'(866), 'TOON'(8666), 'TOMMY'(86669)." '696 Patent at 5:50-65. The '696 Patent explains that "[t]his many-to-many mapping scheme enables incremental search processing by enabling even a single character entered by the user to retrieve relevant results. This many-to-many mapping is done during an indexing phase for all terms that can be used to discover a result." '696 Patent at 5:66-6:4. When the inventions of the '696 Patent are implemented, incremental search results such as those provided in Figures 8A-C are dynamically provided to the user (in this example, where the user is looking for "Tom and Jerry" television programs):

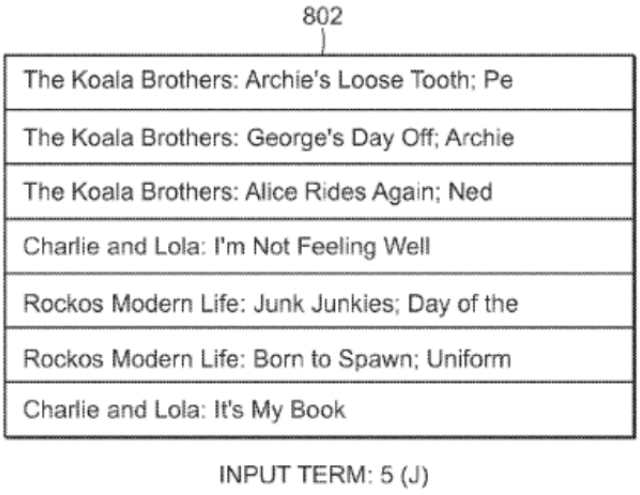


FIG. 8A

'696 Patent, Figure 8A (user has pressed the "5" button, corresponding to "jkl")

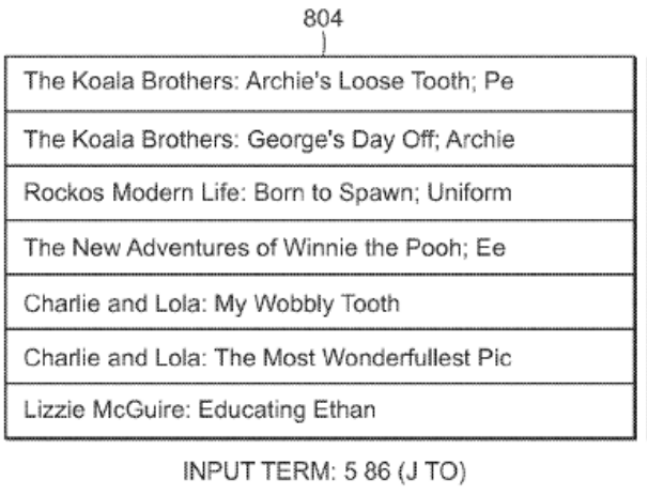


FIG. 8B

'696 Patent, Figure 8B (user has now pressed "5 86" for multiple terms, corresponding to "jkl," "tuv," and "mno").

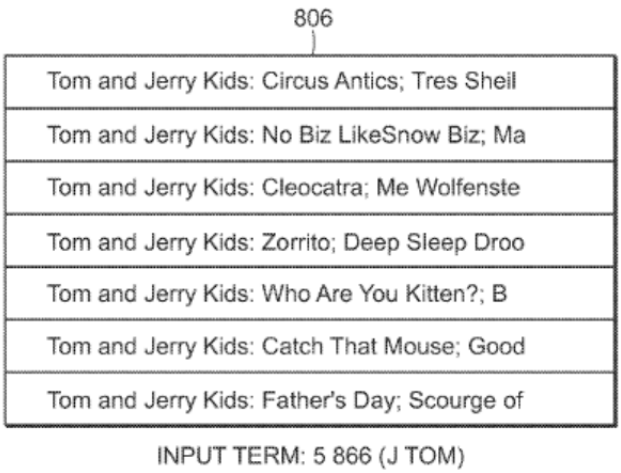


FIG. 8C

'696 Patent, Figure 8C (user has now pressed "5 866" for multiple terms, corresponding to "jkl," "tuv," and "mno"(x2)). *See also* '696 Patent at 7:6-33. As can be seen, by Figure 8C, the user has located the desired programs.

418. In view of the historical context and development of search technology discussed below, a person of ordinary skill in the art would understand that the '696 Patent's inventions provided unconventional solutions to searching for content.

II. HISTORICAL CONTEXT OF THE '696 PATENT

419. Systems for dynamically processing a prefix substring search query for content items using a device having overloaded keys, wherein descriptors about the content items are pre-indexed with a direct mapping to overloaded key entries, is not common or conventional today, let alone at the time of the '696 Patent's inventions. *See* '696 Patent at 2:7-30, 3:1-25, 5:4-6:4.

420. At the time of the inventions of the '696 Patent, Google, already the world's number one search engine,[98] did not offer the inventive search features disclosed by the '696 Patent. At that time, Google.com did not utilize multi-prefix searching. Instead, Google's "Google Suggest" (known today as "autocomplete"), attempted to "guess[] what you're typing and offer[] suggestions in real time,"[99] and was limited to Google Labs, Google's "playground for [Google] engineers and for adventurous Google users."[100] It did not gain traction for some time,[101] and was not implemented as a default function within Google's main search engine on Google.com until 2008.[102]

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[98] *See* Paul R. La Monica, *Google Sets $2.7 Billion IPO: Popular search engine company files for its eagerly anticipated initial public offering*, CNN MONEY (Apr. 30, 2004, 7:56 AM), http://money.cnn.com/2004/04/29/technology/google/.

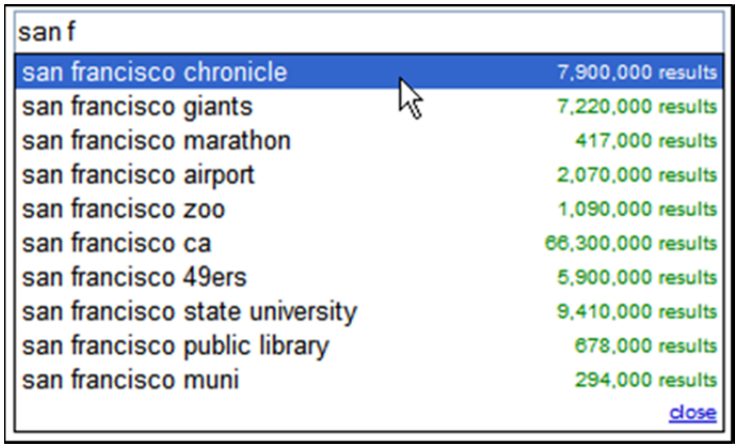
[99] Google, Annual Report, *supra* note 61, at 6; Kevin Gibbs, *I've Got a Suggestion*, GOOGLE OFFICIAL BLOG (Dec. 10, 2004), http://googleblog.blogspot.com/2004/12/ive-got-suggestion.html.

[100] Google, Annual Report, *supra* note 61, at 6.

[101] Google, Annual Report, *supra* note 61, at 6.

[102] *See Nearly a Decade Later, the Autocomplete Origin Story: Kevin Gibbs and Google Suggest*, ALL THINGS DIGITAL (Aug. 23, 2013, 6:00 AM), http://allthingsd.com/20130823/nearly-a-decade-later-the-autocomplete-origin-story-kevin-gibbs-and-google-suggest/; Jennifer Liu, *At a Loss for Words?*, GOOGLE OFFICIAL BLOG (Aug. 25, 2008), http://googleblog.blogspot.com/2008/08/at-loss-for-words.html#links.

421. Notably, at the time of the 2008 release, Google Suggest appears to have performed an auto-complete function, and not a multiple prefix search. For example, in the figure below depicting Google Suggest, typing in "san f" did not treat "san" as a separate term. Instead, "san" was treated as if were a completed first word and only "f" was treated as a to-be-completed prefix of a user's search query.



Google Suggest as it appeared in 2008[103]

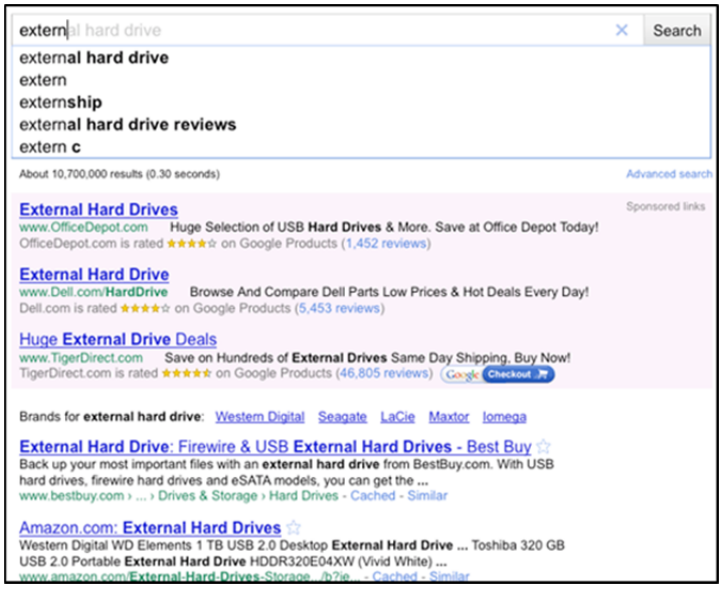
422. In 2005, Yahoo! tested auto-complete functionality similar to Google Suggest but the feature never went live on Yahoo!'s home page, as it was observed that users at that time were not ready for the technology and considered the feature "weird."[104]

423. Another Google product, known as Google Instant, was introduced in September 2010, half a decade after the priority date of the '696 patent.[105] Google Instant provided users

[103] Jennifer Liu, *At a Loss for Words?*, GOOGLE OFFICIAL BLOG (Aug. 25, 2008), http://googleblog.blogspot.com/2008/08/at-loss-for-words.html#links.

[104] Nick Saint, *Yahoo: Big Deal, Google, We Had Instant Search Back in 2005*, BUSINESS INSIDER (Sept. 10, 2010, 4:44 PM), http://www.businessinsider.com/yahoo-big-deal-google-we-had-instant-search-back-in-2005-2010-9; *see also* Shashi Seth, *Back to the Future: Innovation is Alive in Search*, YAHOO! SEARCH BLOG (Sept. 10, 2010, 1:10 PM), http://www.ysearchblog.com/2010/09/10/innovation-is-alive-in-search/; *see also* Danny Sullivan, *New Yahoo Instant Search Gives Answers Directly – No Results Page Required*, SEARCH ENGINE WATCH (Sept. 14, 2005), http://searchenginewatch.com/sew/news/2061109/new-yahoo-instant-search-gives-answers-directly-no-results-page-required.

with another auto-complete search feature: predicted search terms from Google Suggest appeared in a drop-down box and, simultaneously, search results for the predicted search terms would appear below the drop-down box in real time.[106] Google Instant's predicted queries and search results would update continually as a user typed.[107] The results were displayed from the very first letter being typed.[108]



Example of Google Instant Search Results[109]

424. As with the earlier Google Suggest technology, Google Instant does not appear to incorporate the multi-prefix search features of the '696 Patent. Nonetheless, in 2010, Google

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[105] *See Our History in Depth*, GOOGLE COMPANY, http://www.google.com/about/company/history/#2010 (last visited Mar. 16, 2016).

[106] Matt McGee, *Google Instant Search: The Complete User's Guide*, SEARCH ENGINE LAND (Sept. 8, 2010, 3:43 AM), http://searchengineland.com/google-instant-complete-users-guide-50136.

[107] *Id.*

[108] *Search News: Is Google Playing Head Games with Instant Search?*, REPRISE MEDIA (Sept. 8, 2010), http://www.reprisemedia.com/post/search-news-is-google-playing-head-games-with-instant-search/.

[109] *Id.*

Instant was lauded as a "fundamental shift" in search,[110] a feature that "redefined how you use the Internet,"[111] and "promise[d] to change the way people search."[112]

425. Years before Google Instant was launched to such acclaim, the '696 Patent addressed computer-implemented search problems rooted in, and that arose from, a particular technology: devices with limited input capabilities, such as a remote control for a television. The '696 Patent explains several downsides to existing overloaded-key search technology at the time. The '696 Patent, for example, explains the cumbersome nature of entering text on typically small devices that have a small keypad with only a small number of keys overloaded with numbers and letters. '696 Patent at 1:33-40. Furthermore, text entry on such overloaded keys causes ambiguities because, for example, multiple letters may be associated with a single key (such as "abc" on the "2" key), requiring disambiguation. '696 Patent at 1:46-50.

426. As the '696 Patent explains, prior art solutions disclosed, for example, the option of pressing a single key a particular number of times (such as pressing "2" twice to input "c"), as well as "T9" predictive text technology to "provide vocabulary based completion choices for each word entered." '696 Patent at 1:50-58. These prior art methods, however, had problems because, for example, they required too many key strokes, or they required the additional step of choosing from a list of possible words, or they required the user to perform a word completion action before moving onto the next word. '696 Patent at 1:60-2:3.

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[110] Danny Sullivan, *Live Blogging The "Google Instant" Press Event & How to Watch Live*, SEARCH ENGINE LAND (Sept. 8, 2010, 9:17 AM), http://searchengineland.com/live-blogging-google-streaming-search-event-how-to-watch-live-50064.

[111] Devin Connors, *Google Instant Tutorial: Search, Evolved!*, TOM'S GUIDE (Sept. 15, 2010, 5:40 PM), http://www.tomsguide.com/us/Google-Instant-YouTube,review-1581.html.

[112] Matt McGee, *Google Instant Search: The Complete User's Guide*, SEARCH ENGINE LAND (Sept. 8, 2010, 3:43 PM), http://searchengineland.com/google-instant-complete-users-guide-50136.

427. The '696 Patent, on the other hand, discloses unique technological solutions for solving the prior art problems, allowing for prefix substring searching where the searched items are pre-indexed with a direct mapping of the substrings to descriptors about the searched-for items. See, e.g., '696 Patent at 2:7-30, 3:1-25, 5:4-6:4. The inventions of the '696 Patent thus reduce the amount of text and steps needed to be input in order to enter a query (especially for a multiple word search) and dynamically retrieve results. *See* '696 Patent at 3:46-49, 6:15-19. The '696 Patent inventions also teach a system that "significantly reduces the size of the result space compared to other search techniques in which any query substring could match with results." '696 Patent at 6:15-19.

428. Limitations on the effectiveness and efficiency in searching for content items gave rise to a particular problem with electronic program guides, as the amount of available media content underwent an explosive increase through the 1990s and 2000s. In 1990, the average number of channels available to users was approximately 33;[113] users could simply "channel surf" the few channels within a few minutes to find their desired show, or could otherwise recall the time and station broadcasting the shows the user was interested in watching. By 2000, the average number of channels available to users had doubled, and by 2008, had doubled yet again to over 130 channels.[114] By 2012, there were approximately 800 programming networks in the United States.[115] This explosion in available television channels was

[113] *See Television Audience 2008*, NIELSEN.COM, at 13, *available at* http://www.nielsen.com/content/dam/corporate/us/en/newswire/uploads/2009/07/tva_2008_071709.pdf (last visited Mar. 16, 2016).

[114] *Id.*

[115] *Cable's Story*, NCTA, https://www.ncta.com/who-we-are/our-story (last visited Mar. 16, 2016).

accompanied by the growth of video-on-demand programming, which vastly increased the content available to consumers.

429. This increasing search space gave rise to problems within the electronic program guide field, including the challenge of providing users with quick, easy-to-use, and accurate means for locating desired content using input-constrained devices, while at the same time minimizing the computational load on the system or systems involved so that available resources could be dedicated to providing other features, serving other users, or allowing content to be delivered and viewed at higher quality.

430. These challenges are reflected in the specification of the ’696 Patent, and in its prosecution history, which is hereby incorporated by reference in its entirety. See, e.g., ’696 Patent at 2:7-30, 3:1-25, 3:46-49, 5:4-6:4, 6:15-19; Appl. No. 12/869,991, File History, December 11, 2012 Office Action Reply at 8-9.

431. To address these problems, the ’696 Patent discloses the unique solutions detailed above. Given the state of the art at the time of invention, the ’696 Patent inventions were novel, unconventional solutions that directly addressed problems arising in the field of electronic program guides used on input-constrained devices.

432. The ’696 Patent claims cannot be performed in the human mind or by using pen and paper. There is no manual parallel to associating content items corresponding to overloaded keypad entry prefix substrings by directly mapping the corresponding strings to the overloaded keys, ranking the content items according to ordering criteria, and then incrementally and dynamically searching, and presenting results for the directly-mapped content items based on overloaded key prefix substring entries, as claimed in the ’696 Patent. As noted above, the ’696 Patent expressly states that it is drawn to address a specific, technical problem arising in the

context of electronic text input and searching for content items using input-constrained devices like a hand-held remote control.

433. Consistent with the problem addressed being rooted in IPG and electronic search technology, the '696 Patent's solutions naturally were also rooted in that same technology that cannot be performed with pen and paper or in the human mind. The '696 Patent discloses use of a server farm that processes the search queries and is the source of available content data, and explains how the system "significantly reduces the size of the result space compared to other search techniques in which any query substring could match with results." '696 Patent at 4:2-12, 6:15-19. A person of ordinary skill in the art would also understand that each step in an incremental search process consumes additional read-write cycles, computer memory, and processing resources. The '696 Patent inventions help to decrease the computational load of a consumer's search for content because more relevant results are found faster and with less processing power than with alternative methods.

434. This technical context is reflected in the '696 Patent's claims. For example, independent claims 1 and 15 both require, prior to any search queries, directly mapping overloaded key substrings to content item descriptors, as well as ranking the content items according to ordering criteria, and receiving text "entry of a first overloaded key." The identified limitations of input-constrained devices was one of the driving factors behind the development of the '696 Patent's inventions. Text "entry of a[n] [] overloaded key," where a search is performed based on a pre-programmed direct mapping of the content items, performed in the human mind or using pen and paper would run counter to the purpose of the invention.

435. During prosecution of the '696 Patent, the applicants noted that the Verbeck prior art reference (U.S. Pub. No. 2006/0167859) described disambiguating an ambiguous search

string to one or more potential word matches—not directly mapping (prior to searching) content items to the various permutations of overloaded key substrings. June 25, 2012 Office Action Reply at 10. By using the unconventional solution of direct mapping overloaded key strings to descriptors of content items, the '696 Patent's inventions requires less size for the search result space, thereby freeing up other computing resources. In addition, a prior art Ortega reference (U.S. Pat. No. 6,564,213) that the examiner relied upon during prosecution described an autocompletion search method where suggested search queries are presented, the user selects a suggested term or phrase, and the search is initiated based on the selection. December 11, 2012 Office Action Reply at 9. Again, there was no direct mapping of the content items to corresponding strings of one or more overloaded keys. *Id.*

436. A person having ordinary skill in the art at the time of the inventions of the '696 Patent would not have understood that the inventions could or would be performed solely in the human mind or using pen and paper. Using pen and paper would ignore the stated purpose of the '696 Patent and the problem it was specifically designed to address. Doing so would also run counter to the inventors' detailed description of the inventions and the language of the claims and be a practical impossibility.

III. '696 PATENT ALLEGATIONS

437. Defendants have infringed and are infringing, individually and/or jointly, either literally or under the doctrine of equivalents, the '696 Patent in violation of 35 U.S.C. § 271 et seq., directly and/or indirectly, by making, using, offering for sale/lease, selling or leasing in the United States, and/or importing into the United States without authority or license, systems comprising networked servers controlled and operated by Comcast, and/or (or in combination with) set-top boxes (and any corresponding peripheral input devices, such as remote control units), including without limitation, one or more of the Accused DVR Products and Accused

Non-DVR Products capable of being used with Comcast's X1 Search feature (hereafter "the '696 Accused Products") that infringe at least claim 15 of the '696 Patent. On information and belief after reasonable investigation, each of the '696 Accused Products contains or is designed to be used with Comcast's X1 Search feature.

438. Defendants have been, and currently are, active inducers of infringement of the '696 Patent under 35 U.S.C. § 271(b) and contributory infringers of the '696 Patent under 35 U.S.C. § 271(c).

439. Defendants knew of the '696 Patent, or should have known of the '696 Patent but were willfully blind to its existence. Upon information and belief, Defendants have had actual knowledge of the '696 Patent since at least as early as the filing and/or service of the original Complaint in this action. In addition, Veveo filed a lawsuit in 2013 against Comcast for infringement of the '696 Patent, which suit was dismissed without prejudice based, at least in part, on Comcast's assurances that it would enter into an appropriate agreement with Veveo for Comcast's use of Veveo's patented technology. Upon information and belief, in light of their collaborations with Comcast, the Manufacturer Defendants had knowledge of that lawsuit. As a result, on information and belief, Defendants have had actual knowledge of the '696 patent since at least as early as the filing of that suit, as well as of Comcast's infringement thereof, but Comcast has not taken a license or ceased its infringing acts. In addition, (a) Comcast Corporation, on behalf of itself and for its affiliates, (b) Arris Group, Inc., on behalf of itself and all of its subsidiaries, and (c) Scientific-Atlanta, Inc., a predecessor-in-interest of Technicolor, on behalf of itself and all of its subsidiaries, previously took licenses to a portfolio of Rovi's patents. Further, Manufacturer Defendants have provided IPG products to Comcast, knowing, upon information and belief, that Comcast had been charged with infringement of the '696

Patent. Defendants have provided the '696 Accused Products to their customers and/or instructions to use the '696 Accused Products in an infringing manner while being on notice of or willfully blind to the '696 Patent and Defendants' infringement. Therefore, on information and belief, Defendants knew or should have known of the '696 Patent and of their own infringing acts, or deliberately took steps to avoid learning of those facts.

440. Comcast knowingly and intentionally encourages and aids at least (1) Comcast regional subsidiaries; (2) end-user customers and (3) third parties through Comcast's Xfinity TV Partner Program, to directly infringe the '696 Patent. Comcast's Xfinity TV Partner Program was officially launched after the filing of the original Complaint in this case, and after Comcast was put on notice of the '696 Patent. Comcast has knowledge of the '696 Patent and actively encourages third parties to implement the X1 infringing services in their service offerings, with knowledge that such services will directly infringe the '696 Patent.

441. For example, Comcast provides the technical and business infrastructure, know-how, and other support to instruct and enable Comcast regional subsidiaries to make, use, sell/lease, and/or offer for sale/lease the '696 Accused Products. The subsidiaries directly infringe at least the claim 15 of the '696 Patent at least by making, using, selling/leasing, and/or offering for sale/lease the '696 Accused Products. Comcast induces such infringement by providing the technical and business infrastructure, know-how, and other support to enable and facilitate such infringement, knowing of, or being willfully blind to the existence of, the '696 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of claim 15 of the '696 Patent, or subjectively believes that its actions will result in infringement of the '696 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

442. Comcast also provides the '696 Accused Products and instructions to end-user customers so that such customers will use the'696 Accused Products in an infringing manner. For example, Comcast touts that it "gives you great search options to find the content you are looking for." Comcast also provides instructions for incrementally searching using overloaded keys on the remote control "so you can get instant results with the entry of just a few characters," and/or with the search bar, explaining that "[a]s you choose characters, they will appear at the top of the screen and the search will begin to suggest titles that match your entry so far."[116] Comcast end-user customers directly infringe at least claim 15 of the '696 Patent by using the '696 Accused Products in their intended manner to infringe. Comcast induces such infringement by providing the '696 Accused Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '696 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 15 of the '696 Patent, or subjectively believes that its actions will result in infringement of the '696 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

443. The Manufacturer Defendants knowingly and intentionally encourage or aid at least (1) Comcast and its subsidiaries and (2) end-user customers, to directly infringe the '696 Patent.

444. For example, the Manufacturer Defendants provide the '696 Accused Products and/or hardware and software components thereof (e.g., set-top boxes) to Comcast and/or its subsidiaries. Comcast and/or its subsidiaries directly infringe claims of the '696 Patent by

[116] Xfinity TV: X1: Search Overview, http://customer.xfinity.com/help-and-support/cable-tv/x1-search-index/ (last visited Mar. 23, 2016); Xfinity TV: X1: Search Using the Search Bar, http://customer.xfinity.com/help-and-support/cable-tv/x1-search-using-the-search-bar/ (last visited Mar. 23, 2016).

making, using, selling/leasing, offering for sale/lease, and/or importing the ‘696 Accused Products to infringe. The Manufacturer Defendants induce such infringement by providing the ‘696 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’696 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the ’696 Patent, or subjectively believe that their actions will result in infringement of the ’696 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

445. The Manufacturer Defendants also induce end-user customers to infringe by providing the ’696 Accused Products, which are specifically designed to be used in an infringing manner, knowing and intending they will be used by end-user customers to infringe. End-user customers directly infringe as set forth above. The Manufacturer Defendants induce such infringement by providing the ’696 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’696 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the ’696 Patent, or subjectively believe that their actions will result in infringement of the ’696 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

446. Defendants contributorily infringe at least claim 15 of the ’696 Patent by providing the ’696 Accused Products and/or software or hardware components thereof, that embody a material part of the claimed inventions of the ’696 Patent, that are known by the Defendants to be specially made or adapted for use in an infringing manner, and are not staple articles with substantial non-infringing uses. The ’696 Accused Products are specially designed

to infringe at least claim 15 of the '696 Patent, and their accused components have no substantial non-infringing uses.

447. This Complaint will serve as further notice to Defendants of the '696 Patent and its infringement, should Defendants contend that they did not previously have knowledge thereof.

448. Additional allegations regarding Defendants' knowledge of the '696 Patent and willful infringement—including, for example, through Comcast's Xfinity TV Partner Program that it launched after the filing of the original Complaint in this case—will likely have evidentiary support after a reasonable opportunity for discovery.

449. Defendants' infringement of the '696 Patent was willful and deliberate, entitling Plaintiffs to enhanced damages and attorneys' fees.

450. Defendants' infringement of the '696 Patent is exceptional and entitles Plaintiffs to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

451. Plaintiffs have been damaged by Defendants' infringement of the '696 Patent and will continue to be damaged unless Defendants are enjoined by this Court. Plaintiffs do not have an adequate remedy at law.

452. Plaintiffs are entitled to recover from Defendants all damages sustained as a result of Defendants' infringement of the '696 Patent, including without limitation lost profits and not less than a reasonable royalty.

EIGHTH CLAIM FOR RELIEF

INFRINGEMENT OF U.S. PATENT NO. 6,725,281

453. Plaintiffs reallege and incorporate by reference the allegations of paragraphs 1-452 of this Complaint.

454. The ’281 Patent is valid and enforceable under United States Patent Laws.

455. Rovi Technologies Corp. owns by assignment, all right, title, and interest in and to the ’281 Patent, including the right to collect for past damages.

456. A copy of the ’281 Patent is attached hereto as Exhibit H.

457. The original provisional applications that led to the issuance of the ’666 Patent were filed on June 11, 1999 and October 18, 1999.

I. THE ’281 PATENT

458. The ’281 Patent discloses, among other things, “dynamic connectivity among distributed devices and services, and more particularly relates to providing a capability to access device- or service-specific operational information and perform remote automation and control of embedded computing devices using a data-driven remote programming model.” ’281 Patent at 1:13-19.

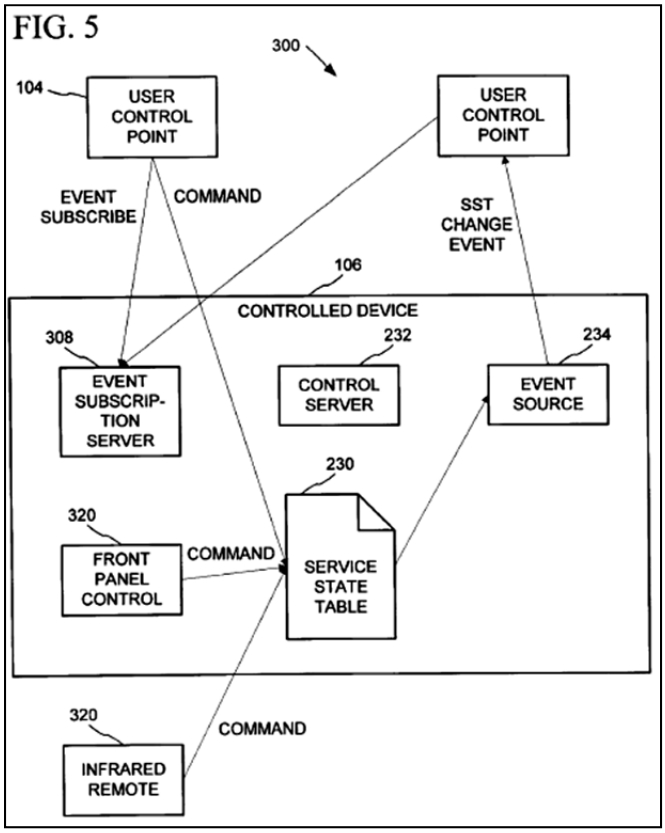
459. Specifically, the ’281 Patent concerns “controlled devices in a device control model maintain a state table representative of their operational state,” wherein remote devices with a “user interface or user control point for the controlled device obtain the state table . . . and may also obtain presentation data defining presentation of the remote[] user interface . . . and device control protocol data defining commands and data messaging to effect control of the controlled device.” ’281 Patent at 1:66-2:7. The “user control point devices also subscribe to notifications of state table changes, which are distributed from the controlled device according to an eventing model.” ’281 Patent at 2:7-10. Thus, “upon any change to the controlled device’s

operational state caused by user inputs from any user control point device . . . , the device's state as represented in the state table is synchronized across all the[] user control point devices." '281 Patent at 2:10-16.

460. The '281 Patent specification describes that the "User Control Point" (or "UCP") may contain "modules" that communicate with the "Controlled Device." '281 Patent at 6:26-27. The '281 Patent states that a "module" is "[a] component of a device, software program, or system that implements some 'functionality', which can be embodied as software, hardware, firmware, electronic circuitry, or etc." '281 Patent at 6:22-25. The "User Control Points initiate discovery and communication with Controlled Devices, and receive Events from Controlled Devices. User Control Points are typically implemented on devices that have a user interface . . . [that] is used to interact with Controlled Devices over [a] network." '281 Patent at 6:27-32. The UCP may include an "Event Subscription Client" that allows the UCP to subscribe to receiving updates to the operating state of the Controlled Device. '281 Patent at 6:34-35, 11:22-24. And the '281 Patent explains that a UCP may be, among other things, a "smart mobile phone, and the like." '281 Patent at 6:41-44.

461. The '281 Patent specification describes the "Controlled Device" (or "CD") as also containing modules that communicate with the UCP. '281 Patent at 6:48-40. The "Controlled Devices respond to discovery requests, accept incoming communications from User Control Points and may send Events to User Control Points." '281 Patent at 6:49-52. The CD may include an "Event Subscription Server" that allows updates of the operating state of the CD to be sent to UCPs that subscribed to receive them. '281 Patent at 6:56-57, 11:14-21. And the '281 Patent explains that a CD may be, among other things, a "VCR, DVD player or recorder, . . . PC,

and the like." '281 Patent at 6:59-62. Figure 5 of the '281 Patent, for example, shows an embodiment of the system for implementing the inventions of the '281 Patent:



'281 Patent, Figure 5

462. The '281 Patent explains that, "[a]fter the initial communication, User Control Points can receive events from Controlled Devices," which "are responsible for storing the state of Services" and wherein "User Control Points are required to synchronize to the state on Controlled Devices." '281 Patent at 12:56-64. The UCPs "typically have user [a] user interface that is used to access one or more Controlled Devices." '281 Patent at 12:65-67. CDs have "one or more Services 210-217 (FIG. 3) that can be controlled remotely" by a "message exchange between a User Control Point 104 and the [controlled] device 106." '281 Patent at 19:60-65. The "Services" refer to functions of the Controlled Device, such as, for example, controlling the tuner of a VCR to change the channel to which it is tuned. '281 Patent at 15:8-14, 27:43-67.

463. The ’281 Patent also explains that the CD has a “Service State Table (SST) 230, which represents the current state of the Service.” ’281 Patent at 13:57-60. The SST “represent[s] the operational mode of [the controlled] device.” ’281 Patent at 13:61-63. For example, “[t]he SST of a VCR 254 (FIG. 4) could represent the current transport mode, tuner channel selection, input and output switch selections, audio and video decoding format and current timer program.” ’281 Patent at 13:63-66, 16:47-53.

464. According to the ’281 Patent, an “event” occurs when an incoming command for a Service in the Controlled Device is “completed successfully, [and] the SST is updated.” ’281 Patent at 14:13-20. The ’281 describes an event as “[a]n unsolicited message generated by a Controlled Device and delivered to one or more User Control Points.” ’281 Patent at 9:22-23. The purpose of ’281 Patent’s events is “to maintain a consistent view of the state of Service across all interested User Control Points.” ’281 Patent at 9:23-25. In other words, “every change to an SST generate a corresponding event to announce the change to [all the] User Control Points.” ’281 Patent at 17:2-5.

465. In view of the historical context and development of using and syncing a remote device to control operation of an IPG on a receiver, a person of ordinary skill in the art would understand that the ’281 Patent’s inventions provided unconventional solutions to dynamic connectivity among distributed devices and services.

II. HISTORICAL CONTEXT OF THE ’281 PATENT

466. Systems for operating a controlled device remotely with a user control point mobile device that is synchronized with the controlled device’s operating state was not common or conventional at the time of the ’281 Patent’s invention, let alone for years thereafter. Moreover, the ’281 Patent describes a “user control point” device that controls the operation of the “controlled device” that has a “service state table,” wherein changes to the operation of

controlled device ("events") are communicated to the user control point device to synchronize the state of the controlled device with all user control points, and wherein the controlled device has data defining a presentation of the user interface of the user control point device.

467. The inventions of the '281 Patent "enable dynamic and automatic synchronization of the device state among all interested controllers that subscribe to notifications of the controlled device's state upon a change in the controlled device's state," and do so "whether the device commands that cause a change in device state originate from other user control point devices or directly through [the] front panel or infrared remote of the controlled device." '281 Patent at 2:17-24. Furthermore, the "user control point devices [] present a consistent and correct depiction of the controlled device's state in their user interface[s]," which allows the user "to interact appropriately to the actual current state of the [controlled] device." '281 Patent at 2:27-32. Accordingly, the controlled device "is able to truly remote its direct front panel/infrared remote user interface as a virtual user interface on other user control point devices in a distributed network." '281 Patent at 2:32-35.

468. At the time of the invention of the '281 Patent, the largest and most sophisticated Pay- TV providers did not offer anything resembling the claimed functionality of the '281 Patent.

469. For example, remotely controlling the operation of an interactive program guide and receiver to, inter alia, change channels or schedule recordings and use other controls was not available to consumers in the industry until years after the time of invention of the '281 Patent.

470. Further, the largest and most sophisticated Pay-TV providers did not offer anything resembling the claimed functionality through a mobile device. It was not until many years after the time of invention of the '281 Patent that providers began offering users the ability

to use a mobile device (and corresponding mobile application) to remotely communicate with local program guide equipment, such as changing the channel or indicating programs to be recorded.

471. DirecTV did not release a mobile application allowing remote recording until March 2009.[117] DirecTV touted this ability "to easily set your home DVR from any cell phone or computer" in a national television advertisement beginning in January 2009, over a decade after the inventions of the '666 Patent.[118]

472. Comcast did not offer a mobile application until 2009,[119] and did not offer the ability to schedule recordings using a mobile device until March 2010 with the release of Comcast Mobile 2.0.[120]

473. The '281 Patent claims cannot be performed in the human mind or using pen and paper. As noted above, the '281 Patent expressly states that it is drawn to address a specific, technical problem arising in the context of "controlled devices" in communication with, and being synchronized with, remote "user control point" devices that can control the operation of controlled devices. As described above, the patent specifically discloses embodiments using

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[117] Mel Martin, *DirecTV beams down iPhone app*, Engadget (Mar. 30, 2009), http://www.engadget.com/2009/03/30/directv-beams-down-iphone-app/.

[118] Justin Berka, *DirecTV releases remote recording application for iPhone*, Ars Technica (Mar. 31, 2009), http://arstechnica.com/apple/2009/03/directv-releases-remote-recording-application-for-iphone/; DirecTV – Hellboy – MethodStudios, Adforum.com, http://www.adforum.com/production/6658175/creative-work/34442420/hellboy/directv (last visited Mar. 16, 2016).

[119] Scott McNulty, *Comcast Mobile for iPhone/iPod Touch* (July 16, 2009), http://corporate.comcast.com/comcast-voices/comcast-mobile-for-iphoneipod-touch.

[120] Comcast, *Comcast Mobile App Part 2.0 – Xfinity Voice, Video and Email Go Mobile* (Mar. 1, 2010), http://corporate.comcast.com/comcast-voices/comcast-mobile-app-part-20-xfinity-voice-video-and-email-go-mobile.

specific technologies for controlling operation of the controlled device and synchronizing its operation across mobile user control point devices.

474. This technical context is reflected in the ’281 Patent’s claims. For example, claims of the ’281 Patent require a “controlled computing device” having a “state table . . . representing an operational state of the controlled computing device,” as well as a “user controller device” that can “effect a change in the operational state of the controlled computing device.” The user controller device has a “user control point module” that obtains a copy of the state table and subscribes to change notifications of the state table; and the controlled computing device has an “event source module” that distributes the change notifications to the user controller device. These particular technical solutions address, inter alia, the technical problem of synchronizing a remote device with a controlled device wherein the remote device can control the operation of the controlled device and is kept updated with changes in the operating state of the controlled device based on the receipt of event notifications. These concepts are specific technological requirements and certainly cannot be performed in the mind or using pen and paper.

475. A person having ordinary skill in the art at the time of the inventions of the ’281 Patent would not have understood that the inventions could or would be performed solely in the human mind or using pen and paper. Using pen and paper would ignore the stated purpose of the ’281 Patent and the problem it was specifically designed to address. Doing so would also run counter to the inventors’ detailed description of the inventions and the language of the claims and be a practical impossibility.

III. ’281 PATENT ALLEGATIONS

476. Defendants have infringed and are infringing, individually and/or jointly, either literally or under the doctrine of equivalents, the ’281 Patent in violation of 35 U.S.C. § 271 *et*

seq., directly and/or indirectly, by making, using, offering for sale/lease, selling or leasing in the United States, and/or importing into the United States without authority or license, set-top boxes, including without limitation, one or more of the Accused DVR Products (hereafter "the '281 Accused Products") that infringe at least claim 1 of the '281 Patent. On information and belief after reasonable investigation, each of the '281 Accused Products comprises or is designed to be used with: a controlled computing device; a state table maintained by the controlled computing device and representing an operational state of the controlled computing device; a user controller device having user input/output capability for presenting a user perceptible device control interface for remote user interaction with the controlled computing device to effect a change in the operational state of the controlled computing device represented in the state table; a user control point module in the user controller device operating to obtain a copy of the state table of the user controller device and subscribe to change notifications of the state table; and an event source module in the controlled computing device operating according to an eventing model to distribute the change notifications to any subscribing user controller device upon a change to the state table representing the operational state of the controlled computing device, wherein the change notifications represent the respective change in the state table, so as to thereby synchronize the user perceptible device control interface with the changed operational state among said any subscribing user controller device.

477. Defendants have been, and currently are, active inducers of infringement of the '281 Patent under 35 U.S.C. § 271(b) and contributory infringers of the '281 Patent under 35 U.S.C. § 271(c).

478. Defendants knew of the '281 Patent, or should have known of the '281 Patent but were willfully blind to its existence. Upon information and belief, Defendants have had actual

knowledge of the ’281 Patent since at least as early as the filing and/or service of the original Complaint in this action. Further, prior to the filing this Complaint, Rovi provided presentations and claim charts to Comcast specifically identifying patents in Rovi’s portfolio, including the ’281 Patent, and showing an example of Comcast’s infringement of the ’281 Patent. In addition, (a) Comcast Corporation, on behalf of itself and for its affiliates, (b) Arris Group, Inc., on behalf of itself and all of its subsidiaries, and (c) Scientific-Atlanta, Inc., a predecessor-in-interest of Technicolor, on behalf of itself and all of its subsidiaries, previously took licenses to a portfolio of Rovi’s patents. In addition, the Manufacturer Defendants have provided IPG products to Comcast, knowing, upon information and belief, that Comcast had a license to Rovi’s guidance portfolio. Defendants have provided the ’281 Accused Products to their customers and/or instructions to use the ’281 Accused Products in an infringing manner while being on notice of or willfully blind to the ’281 Patent and Defendants’ infringement. Therefore, on information and belief, Defendants knew or should have known of the ’281 Patent and of their own infringing acts, or deliberately took steps to avoid learning of those facts.

479. Comcast knowingly and intentionally encourages and aids at least (1) Comcast regional subsidiaries; (2) end-user customers; and (3) third parties through Comcast’s Xfinity TV Partner Program, to directly infringe the ’281 Patent. Comcast’s Xfinity TV Partner Program was officially launched after the filing of the original Complaint in this case, and after Comcast was put on notice of the ’281 Patent. Comcast has knowledge of the ’281 Patent and actively encourages third parties to implement the X1 infringing services in their service offerings, with knowledge that such services will directly infringe the ’281 Patent.

480. For example, Comcast provides the technical and business infrastructure, know-how, and other support to instruct and enable Comcast regional subsidiaries to make, use,

sell/lease, and/or offer for sale/lease the ’281 Accused Products. The subsidiaries directly infringe at least claim 1 of the ’281 Patent at least by making, using, selling/leasing, and/or offering for sale/lease the ’281 Accused Products. Comcast induces such infringement by providing the technical and business infrastructure, know-how, and other support to enable and facilitate such infringement, knowing of, or being willfully blind to the existence of, the ’281 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 1 of the ’281 Patent, or subjectively believes that its actions will result in infringement of the ’281 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

481. In addition, upon information and belief, Comcast provides the specifications, know-how and technical support to instruct and enable the Manufacturer Defendants to make, use, sell/lease, offer for sale/lease, and/or import the ’281 Accused Products. The Manufacturer Defendants directly infringe at least claim 1 of the ’281 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the ’281 Accused Products. Comcast induces such infringement by providing the specifications, know-how and technical support to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’281 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 1 of the ’281 Patent, or subjectively believed that its actions will result in infringement of the ’281 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

482. Comcast also provides the ’281 Accused Products and instructions to end-user customers so that such customers will use the ’281 Accused Products in an infringing manner. For example, Comcast markets the Xfinity TV Remote App to end-user customers by touting the

ability to "Schedule a DVR recording with the XFINITY TV Remote App" as "a great way to make sure you don't miss your favorite shows." Comcast provides instructions to end-user customers on "How to do it," e.g., "From the Main Screen: Select The Guide. Review the grid of available programs. Select the program you want to record. You'll see an option to record the program on your DVR."[121] Comcast provides a tutorial for using the Xfinity TV Remote App showing instructions on how to record or change channels, or perform other functions, and shows that the App is synchronized with the set-top box's interactive program guide.[122] Comcast end-user customers directly infringe at least claim 1 of the '281 Patent by using the '281 Accused Products in their intended manner to infringe. Comcast induces such infringement by providing the '281 Accused Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '281 Patent. Upon information and belief, Comcast specifically intends that its actions will result in infringement of at least claim 1 of the '281 Patent, or subjectively believes that its actions will result in infringement of the '281 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

483. The Manufacturer Defendants knowingly and intentionally encourage or aid at least (1) Comcast and its subsidiaries and (2) end-user customers, to directly infringe the '281 Patent.

484. For example, the Manufacturer Defendants provide the '281 Accused Products and hardware and software components thereof to Comcast and/or its subsidiaries. Comcast

[121] Xfinity, *Xfinitiy Apps: Schedule a DVR recording with the XFINITY TV Remote App*, http://customer.xfinity.com/help-and-support/xfinity-apps/schedule-dvr-recordings-in-xfinity-apps/ (last visited Mar. 28, 2016).

[122] Xfinity, *Xfinity Apps: XFINITY TV Remote App, Use the XFINITY TV Remote App on Mobile Apple and Android Devices*, http://customer.xfinity.com/help-and-support/xfinity-apps/browsing-and-tuning-cable-tv-app (last visited Mar. 30, 2016).

and/or its subsidiaries directly infringe claims of the ’281 Patent by making, using, selling/leasing, offering for sale/lease, and/or importing the ’281 Accused Products. The Manufacturer Defendants induce such infringement by providing the ’281 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’281 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the ’281 Patent, or subjectively believe that their actions will result in infringement of the ’281 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

485. The Manufacturer Defendants also induce end-user customers to infringe by providing the ‘281 Accused Products, which are specifically designed to infringe, knowing and intending they will be used by end-user customers to infringe. End-user customers directly infringe as set forth above. The Manufacturer Defendants induce such infringement by providing the ‘281 Accused Products to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the ’281 Patent. Upon information and belief, the Manufacturer Defendants specifically intend that their actions will result in infringement of claims of the ’281 Patent, or subjectively believe that their actions will result in infringement of the ’281 Patent but took deliberate actions to avoid learning of those facts, as set forth above.

486. Defendants contributorily infringe at least claim 1 of the ’281 Patent by providing the ’281 Accused Products and/or software or hardware components thereof, that embody a material part of the claimed inventions of the ’281 Patent, that are known by Defendants to be specially made or adapted for use in an infringing manner, and are not staple articles with substantial non-infringing uses. The ’281 Accused Products are specially designed to infringe at

least the claim 1 of the ’281 Patent, and their accused components have no substantial non-infringing uses.

487. This Complaint will serve as further notice to Defendants of the ’281 Patent and its infringement, should Defendants contend that they did not previously have knowledge thereof.

488. Additional allegations regarding Defendants’ knowledge of the ’281 Patent and willful infringement—including, for example, through Comcast’s Xfinity TV Partner Program that it launched after the filing of the original Complaint in this case—will likely have evidentiary support after a reasonable opportunity for discovery.

489. Defendants’ infringement of the ’281 Patent was willful and deliberate, entitling Rovi to enhanced damages and attorneys’ fees.

490. Defendants’ infringement of the ’281 Patent is exceptional and entitles Rovi to attorneys’ fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

491. Rovi has been damaged by Defendants’ infringement of the ’281 Patent and will continue to be damaged unless Defendants are enjoined by this Court. Rovi has suffered and continues to suffer irreparable injury for which there is no adequate remedy at law. The balance of hardships favors Rovi, and public interest is not disserved by an injunction.

492. Rovi is entitled to recover from Defendants all damages that Rovi has sustained as a result of Defendants’ infringement of the ’281 Patent, including without limitation lost profits and not less than a reasonable royalty.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs pray for a judgment in its favor and against Defendants and respectfully requests the following relief:

1. A judgment declaring that Defendants have infringed one or more claims of each of the Asserted Patents in this litigation pursuant to 35 U.S.C. §§ 271(a), 271(b) and/or 271(c);

2. A preliminary injunction pursuant to 35 U.S.C. § 283 in accordance with the principles of equity preventing the Comcast Defendants, their officers, directors, attorneys, agents, servants, employees, parties in privity with, and all persons in active concert or participation with any of the foregoing, from continued selling or offering for sale the X1 IPG Product to any cable operator or any Pay-TV provider that is not licensed by Rovi to make use or sell any product offered by Comcast that practices, provides, or contains any method, apparatus, or system covered by one or more of the Asserted Patents;

3. A preliminary injunction pursuant to 35 U.S.C. § 283 in accordance with the principles of equity preventing the Comcast Defendants, their officers, directors, attorneys, agents, servants, employees, parties in privity with, and all persons in active concert or participation with any of the foregoing, from selling, offering or providing to any of its cable customers and consumer end users any IPG product solution that practices, provides, or contains any method, apparatus, or system covered by one or more of the Asserted Patents commencing on a date ninety (90) days following the entry of the preliminary injunction;

4. An injunction pursuant to 35 U.S.C. § 283 permanently enjoining Defendants, their officers, directors, attorneys, agents, servants, employees, parties in privity with, and all persons in active concert or participation with any of the foregoing, from continued acts of

infringement, contributory infringement, or inducing infringement of the Asserted Patents in this litigation;

5. A judgment requiring Defendants to make an accounting of damages resulting from Defendants' infringement of the Asserted Patents in this litigation;

6. A judgment awarding damages resulting from Defendants' infringement of the Asserted Patents in this litigation, and increasing such damages pursuant to 35 U.S.C. § 284 because of the willful and deliberate nature of Defendants' conduct;

7. A judgment requiring Defendants to pay Plaintiffs' costs, expenses, and pre-judgment and post-judgment interest for Defendants' infringement of each of the Asserted Patents in this litigation;

8. A judgment finding that this is an exceptional case and awarding Plaintiffs' attorney's fees pursuant to 35 U.S.C. § 285; and

9. Such other relief as the Court deems just and proper.

Dated: April 25, 2016

Respectfully submitted,

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DEMAND FOR JURY TRIAL

In accordance with Rule 38 of the Federal Rules of Civil Procedure and Local Rule CV-38, Plaintiffs respectfully demand a jury trial of all issues triable to a jury.

Dated: April 25, 2016

/s/ Douglas A. Cawley

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CERTIFICATE OF SERVICE

I hereby certify that counsel of record who are deemed to have consented to electronic service are being served with a copy of this document via the court's CM/ECF system per Local Rule CV-5(a)(3), on April 25, 2016.

/s/ Douglas A. Cawley
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