

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Michael Sheppard et al.
U.S. Patent No.: 11,856,250 Attorney Docket No.: 57824-0001IP1
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Title: METHODS AND APPARATUS TO DETERMINE A
DURATION OF MEDIA PRESENTATION BASED ON
TUNING SESSION DURATION

DECLARATION OF TIM A. WILLIAMS

TABLE OF CONTENTS

I.	INTRODUCTION	19
II.	LEGAL PRINCIPLES.....	21
	A. Claim Interpretation.....	21
	B. Anticipation	22
	C. Obviousness.....	22
III.	LEVEL OF ORDINARY SKILL IN THE ART	24
IV.	MATERIALS CONSIDERED AND RELIED UPON	25
V.	OVERVIEW OF THE '250 PATENT	27
	A. Brief Description	27
	B. Prosecution History	29
VI.	OVERVIEW OF CONCLUSIONS FORMED	30
VII.	OVERVIEW OF THE CITED REFERENCES	30
	A. Pecjak	30
	B. Mirisola.....	35
	C. Shankar	36
VIII.	APPLICATION OF THE CITED REFERENCES TO THE CHALLENGED CLAIMS	38
	A. [GROUND 1A] – Claims 1-8, 11-13, and 15-21 are rendered obvious by Pecjak and Mirisola	38
	1. A POSITA would have combined Pecjak and Mirisola.....	38
	2. Claim Analysis	42
	B. [GROUND 1B] – Claims 9-10, 14, and 22-23 are rendered obvious by Pecjak, Mirisola, and Shankar	113
	1. A POSITA would have combined Pecjak-Mirisola and Shankar	113
	2. Claim Analysis	117
IX.	ADDITIONAL REMARKS	122

LISTING OF CHALLENGED CLAIMS

Claim 1	
[1.pre]	A computing system comprising:
[1.1]	machine readable instructions; and
[1.2]	processor circuitry to execute the machine readable instructions to at least:
[1.3]	access respective tuning session data from a plurality of media presentation devices,
[1.4]	corresponding ones of the plurality of media presentation devices in respective ones of media presentation environments,
[1.5]	the respective ones of the media presentation environments including at least one media output device to present media from a corresponding one of the media presentation devices,
[1.6]	the respective tuning session data from respective ones of the media presentation devices indicative of a tuning session having a tuning session duration,
[1.7]	wherein the tuning session duration is indicative of an amount of time between interactions with a corresponding one of the plurality of media presentation devices,

[1.8]	wherein presentation session data is available for a first subset of the media presentation environments,
[1.9]	and wherein presentation session data is not available for a second subset of the media presentation environments;
[1.10]	access, for ones of the first subset of the media presentation environments, respective presentation session data indicative of a presentation session duration during which media corresponding to a respective tuning session was presented on the respective at least one media output device by the media presentation device within a respective tuning session duration;
[1.11]	generate a model relating the respective tuning session durations to corresponding presentation session durations from ones of the first subset of the media presentation environments;
[1.12]	based on the model, determine, for a given one of the media presentation environments in the second subset of the media presentation environments, an expected presentation session duration for a given tuning session having a given tuning session duration; and
[1.13]	output the expected presentation session duration for the given tuning session from the given one of the media presentation environments.

Claim 2	
[2.1]	The computing system of claim 1, wherein the processor circuitry is to: access, from the first subset of the media presentation environments, additional tuning session data and additional media presentation data indicative of additional tuning session durations and additional media presentation session durations, respectively; and
[2.2]	update the model with the additional tuning session durations and additional media presentation data.
Claim 3	
[3.1]	The computing system of claim 2, wherein the processor circuitry is to: subsequent to determining the expected the presentation session duration, based on the model, for the given tuning session having the given tuning session duration, determine, for another given one of the media presentation environments in the second subset of the media presentation environments, another expected presentation session duration for another given tuning session having another given tuning session duration based on the updated model; and

[3.2]	output the other expected presentation session duration for the other given tuning session from the other given one of the media presentation environments.
Claim 4	
[4]	The computing system of claim 1, wherein the processor circuitry is to determine the expected presentation session duration for the given tuning session based on the model by determining the expected presentation session duration based on multiple ones of the tuning session durations and corresponding ones of the presentation session durations of the ones of the first subset of the media presentation environments, the multiple ones of the tuning session durations being within a threshold extent of similarity of the given tuning session duration.
Claim 5	
[5]	The computing system of claim 4, wherein the threshold extent of similarity is a threshold of time similarity in which each of the tuning session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments are within a time threshold of the given tuning session duration.

Claim 6	
[6]	The computing system of claim 5, wherein the expected presentation session duration for the given presentation session is a weighted average of the presentation session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments.
Claim 7	
[7]	The computing system of claim 5, wherein the time threshold is four minutes.
Claim 8	
[8]	The computing system of claim 4, wherein the expected presentation session duration for the given presentation session is a conditional probability of the presentation session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments, indicated by the model.
Claim 9	
[9.1]	The computing system of claim 1, wherein the processor circuitry is to: determine that a number of tuning session durations related by the model to corresponding presentation session durations from the first

	subset of the media presentation environments is at least a threshold number of tuning session durations, and
[9.2]	determine the expected presentation session duration for the given tuning session having the given tuning session duration based on the model in response to the determination that the number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation environments is at least the threshold number of tuning session durations.
Claim 10	
[10]	The computing system of claim 9, wherein the threshold number is five hundred tuning session durations.
Claim 11	
[11.pre]	A non-transitory computer-readable medium comprising instructions to cause processor circuitry to at least:
[11.1]	access respective tuning session data from each of a plurality of media presentation devices,
[11.2]	corresponding ones of the media presentation devices in respective ones of media presentation environments,

[11.3]	the respective media presentation environments including at least one media output device to present media from a corresponding one of the media presentation devices,
[11.4]	the respective tuning session data from respective ones of the media presentation devices indicative of a tuning session having a tuning session duration,
[11.5]	wherein the tuning session duration is indicative of an amount of time between interactions with a corresponding one of the media presentation devices,
[11.6]	wherein presentation session data is available for a first subset of the media presentation environments,
[11.7]	and wherein presentation session data is not available for a second subset of the media presentation environments;
[11.8]	access, for ones of the first subset of the media presentation environments, respective presentation session data indicative of a presentation session duration during which media corresponding to a respective tuning session was presented by the respective at least one media output device by the media presentation device within a respective tuning session duration;

[11.9]	generate a model relating the respective tuning session durations to corresponding presentation session durations from the ones of the first subset of the media presentation environments;
[11.10]	based on the model, determine, for a given one of the media presentation environments in the second subset of the media presentation environments, an expected presentation session duration for a given tuning session having a given tuning session duration; and
[11.11]	output the expected presentation session duration for the given tuning session from the given one of the media presentation environments.
Claim 12	
[12.1]	The non-transitory computer-readable medium of claim 11, wherein the instructions cause the processor circuitry to determine the expected presentation session duration, based on the model, for the given tuning session by determining the expected presentation session duration based on multiple ones of the tuning session durations and corresponding ones of the presentation session durations of the ones of the first subset of the media presentation environments, the multiple ones of the tuning session durations being

	within a threshold extent of similarity of the given tuning session duration,
[12.2]	wherein the threshold extent of similarity is a threshold of time similarity in which each of the tuning session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments are within a time threshold of the given tuning session duration, and
[12.3]	wherein the expected presentation session duration for the given presentation session is a weighted average of the presentation session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments.
Claim 13	
[13.1]	The non-transitory computer-readable medium of claim 11, wherein the instructions cause the processor circuitry to determine the expected presentation session duration for the given tuning session based on the model by determining the expected presentation session duration based on multiple ones of the tuning session durations and corresponding ones of the presentation session durations of the ones of the first subset of the media presentation environments, the

	multiple ones of the tuning session durations being within a threshold extent of similarity of the given tuning session duration, and
[13.2]	wherein the expected presentation session duration for the given presentation session is a conditional probability of the presentation session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments.
Claim 14	
[14.1]	The non-transitory computer-readable medium of claim 11, the instructions cause the processor circuitry to: determine that a number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation environments is at least a threshold number of tuning session durations, and
[14.2]	determine the expected presentation session duration for the given tuning session having the given tuning session duration based on the model in response to the determination that the number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation

	environments is at least the threshold number of tuning session durations.
Claim 15	
[15.pre]	A system comprising:
[15.1]	processor circuitry; and
[15.2]	a computer-readable medium including instructions to cause the processor circuitry to at least:
[15.3]	access respective tuning session data from a plurality of set-top boxes,
[15.4]	corresponding ones of the set-top boxes in respective ones of media presentation environments,
[15.5]	the respective media presentation environments including at least one television to present media from a corresponding one of the set-top boxes,
[15.6]	the respective tuning session data from respective ones of the set-top boxes indicative of a tuning session having a tuning session duration,
[15.7]	the tuning session duration indicative of an amount of time between interactions with a corresponding one of the set-top boxes,

[15.8]	wherein on/off durations are available for a first subset of the media presentation environments,
[15.9]	and wherein on/off durations are not available for a second subset of the media presentation environments;
[15.10]	access, for ones of the first subset of the media presentation environments, respective on/off durations corresponding to respective tuning sessions, the on/off duration indicative of an amount of time that the respective television was turned on during the respective tuning session;
[15.11]	generate a model relating the respective tuning session durations to corresponding on/off durations from the ones of the first subset of the media presentation environments;
[15.12]	based on the model, determine, for a given one of the media presentation environments in the second subset of the media presentation environments, an expected on/off duration for a given tuning session having a given tuning session duration; and
[15.13]	cause presentation of the expected on/off duration for the given tuning session from the given one of the media presentation environments.

Claim 16

[16.1]	The system of claim 15, wherein the processor circuitry is to: access, from additional ones of the first subset of the media presentation environments, additional tuning session data indicative of additional tuning session durations and additional on/off durations indicative of an amount of time that the respective television was turned on during the additional tuning session; and
[16.2]	update the model with the additional tuning session durations and additional on/off durations.

Claim 17

[17.1]	The system of claim 16, wherein the processor circuitry is to: subsequent to determining the expected on/off duration, based on the model, for the given tuning session having the given tuning session duration, determine, for another given one of the media presentation environments in the second subset of the media presentation environments, another expected on/off duration for another given tuning session having another given tuning session duration based on the updated model; and
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[17.2]	output the other expected on/off duration for the other given tuning session from the other given one of the media presentation environments.
Claim 18	
[18]	The system of claim 15, wherein the processor circuitry is to determine the expected on/off duration for the given tuning session based on the model by determining the expected on/off duration based on multiple ones of the tuning session durations and corresponding ones of the on/off durations of the ones of the first subset of the media presentation environments, the multiple ones of the tuning session durations being within a threshold extent of similarity of the given tuning session duration.
Claim 19	
[19]	The system of claim 18, wherein the threshold extent of similarity is a threshold of time similarity in which each of the tuning session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments are within a time threshold of the given tuning session duration.
Claim 20	

[20]	The system of claim 19, wherein the expected on/off duration for the given tuning session is a weighted average of the on/off durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments.
Claim 21	
[21]	The system of claim 18, wherein the expected on/off duration for the given tuning session is a conditional probability of the on/off durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments, indicated by the model.
Claim 22	
[22.1]	The system of claim 15, wherein the processor circuitry is to: determine that a number of tuning session durations related by the model to corresponding on/off durations from the first subset of the media presentation environments is at least a threshold number of tuning session durations, and
[22.2]	determine the expected on/off duration for the given tuning session having the given tuning session duration based on the model in response to the determination that the number of tuning session

	durations related by the model to corresponding on/off durations from the first subset of the media presentation environments is at least the threshold number of tuning session durations.
Claim 23	
[23]	The system of claim 22, wherein the threshold number is five hundred tuning session durations.

I, Tim A. Williams, declares as follows:

I. INTRODUCTION

1. I am an independent consultant. All of my opinions stated in this declaration are based on my own personal knowledge and professional judgment. In formulating my opinions, I have relied upon my knowledge, training, and experience in the relevant art.

2. I am over 18 years of age, and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein. Although my qualifications are stated more fully in my curriculum vitae, attached hereto as VA-1003, I provide below a brief summary of my qualifications.

3. I earned a Bachelor of Science degree in Electrical Engineering (BSEE) from Michigan Technological University in 1976. In 1982, I earned a Master's degree, also in Electrical Engineering (MSEE), from the University of Texas at Austin. I earned a Doctor of Philosophy (Ph.D.), also from the University of Texas at Austin, in 1985. My doctorate dissertation was "Digital Signal Processing Techniques for Acoustic Log Data." In 1991, I earned a Master of Business Administration degree from the University of Texas at Austin as well.

4. I have over 40 years of professional experience in wireless communications and telecom technology, including roles in large corporations as well as start-ups and consulting work.

5. For example, from 1979 through 1991, I held the positions of Senior Engineer, Senior Member of the Technical Staff, and Member of the Technical Staff at Motorola, Inc. My work at Motorola included serving as business manager, project leader, and senior technical member for projects relating to the development of various cellular modems, transceivers, and transcoders.

6. As another example, in 1991, I co-founded Wireless Access, Inc., a start-up company focused on the Narrow Band PCS equipment market and which developed the over-the-air protocols, subscriber equipment, and integrated circuits to deploy 2-way paging services. I held the positions of Co-Founder, Chief Technical Officer, Vice President of Engineering, and Vice President of Business Strategy at Wireless Access until it was sold to Glenarby Electronics in 1998.

7. As another example, between 1998 and 2000, I was the Chief Technology Officer and Advisory Board Member of Picazo Communications, which built and sold software PBXs Telephony equipment using VoIP and Circuit Switched Technologies.

8. As another example, in 2004, I founded DoceoTech Inc., which provides training for engineers in Wireless, Networking, and Telephony technologies. Since 2004, I have served as DoceoTech's Chairman.

9. I hold over 25 United States patents in wireless and signal processing technology, as well as numerous patent applications in the same field. Additionally,

I am a Patent Agent registered with the U.S. Patent and Trademark Office since January 2002. Further, I have served as a technical expert in multiple patent proceedings.

10. I have been retained on behalf of VideoAmp, Inc. to analyze and offer technical opinions relating to U.S. Patent No. 11,856,250 (“the ’250 Patent”) and prior art references relating to its subject matter. In forming my opinions, I read and considered the ’250 Patent (VA-1001), its prosecution history (VA-1002), and the exhibits cited in the Exhibit List.

11. I have no financial interest in any party to this proceeding or in the outcome of this proceeding. I am being compensated for my work as an expert on an hourly basis. My compensation is not dependent on the outcome of these proceedings or the content of my opinions.

II. LEGAL PRINCIPLES

12. In forming my analysis and conclusions expressed in this Declaration, I have applied the legal principles described in the following paragraphs, which were provided to me by counsel for the Petitioner.

A. Claim Interpretation

13. I understand that, for purposes of my analysis in this *inter partes* review proceeding, the terms appearing in the patent claims should be interpreted according to their “ordinary and customary meaning.” In determining the ordinary and

customary meaning, I understand that the words of a claim are first given their plain meaning that those words would have had to a person of ordinary skill in the art at the time of the alleged invention. I also understand that the structure of the claims, the specification, and file history may be used to better construe a claim. Moreover, I understand that even treatises and dictionaries may be used, albeit under limited circumstances, to determine the meaning attributed by a person of ordinary skill in the art to a claim term.

B. Anticipation

14. I have been informed that a patent claim is unpatentable as anticipated under 35 U.S.C. § 102 if each and every element of a claim is found either explicitly or inherently in a single prior art reference. Under the principles of inherency, if the prior art necessarily functions in accordance with, or necessarily includes the claimed elements, it anticipates.

C. Obviousness

15. I have been informed that a patent claim is invalid as “obvious” in light of one or more prior art references if it would have been obvious to a person of ordinary skill in the art at the time of the alleged invention (“POSITA”), taking into account (1) the scope and content of the prior art, (2) the differences between the prior art and the claims, (3) the level of ordinary skill in the art, and (4) any so called “secondary considerations” of non-obviousness (e.g., evidence of “long felt need”

for the claimed invention, commercial success attributable to the claimed invention, unexpected results of the claimed invention, and “copying” of the claimed invention by others).

16. While I do not know the exact date that the alleged invention of the '250 patent was made, I do know that the '250 patent's earliest claimed priority date is October 8, 2015. For purposes of my obviousness analysis in the Grounds below, I have applied a date of October 8, 2015 as the date of the alleged invention, although my opinions expressed below would hold true even if the date of the alleged invention were earlier.

17. I have been informed that a claim can be obvious in light of a single prior art reference or multiple prior art references. To be obvious in light of a single prior art reference or multiple prior art references, there must be a reason that would have prompted a POSITA to modify or supplement the single prior art reference, or to combine two or more references, in a manner that provides the elements of the claimed invention. This reason may come from a teaching, suggestion, or motivation to combine, or may come from the reference(s) themselves, the knowledge or “common sense” of a POSITA, or from the nature of the problem to be solved, and this reason may be explicit or implicit from the prior art as a whole. I have been informed that, under the law, the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable

results. I also understand it is improper to rely on hindsight in making the obviousness determination.

18. I understand that an obviousness determination also requires that a POSITA would have had a reasonable expectation of success. This concept has been explained to me as relating to the relative likelihood or predictability—from the perspective of a POSITA—of successfully modifying the prior art in a manner that would meet the claimed limitations of the patent being challenged (here the '250 patent). I understand that the expectation of success need only be “reasonable” and, thus, does not require the absolute certainty gleaned from physically creating the proposed prior art modification.

III. LEVEL OF ORDINARY SKILL IN THE ART

19. In rendering the opinions set forth in this declaration, I was asked to consider the patent claims and the prior art through the eyes of a person of ordinary skill in the art as of the effective filing date of the '250 patent (“POSITA”), which I have concluded is October 8, 2015 for the reasons that I address in detail above (§II.C). I understand that the factors considered in determining the ordinary level of skill in a field of art include the level of education and experience of persons working in the field; the types of problems encountered in the field; the teachings of the prior art; and the sophistication of the technology at the time of the alleged invention. I understand that a POSITA is not a specific real individual, but rather is a hypothetical

individual having the qualities reflected by the factors above. I understand that a POSITA also would have knowledge from the teachings of the prior art, including the art cited below.

20. Taking these factors into consideration, on or before October 8, 2015, a POSITA relating to the technology of the '250 patent would have had (1) a bachelor's degree in computer engineering, electrical engineering, or a related field, and (2) two years of industry experience in distributed computer network systems or cable broadcasting systems. Additional graduate education could substitute for professional experience, and *vice versa*.

21. By October 8, 2015, my education and research experience was at least that of a POSITA. I am qualified to provide opinions concerning what a POSITA would have known and understood at that time, and my analysis and conclusions herein are from the perspective of a POSITA as of that date.

IV. MATERIALS CONSIDERED AND RELIED UPON

22. In forming my opinions and reaching the conclusions described in this declaration, I have relied on the documents and materials cited herein as well as those identified in this declaration, including the '250 patent, the prosecution history of the '250 patent, and prior art references cited herein. These materials comprise patents, related documents, and printed publications. Each of these materials is a type of document that experts in my field would have reasonably relied upon when

forming their opinions. I have also relied on my education, training, research, knowledge, and personal and professional experience in the relevant technologies and systems that were already in use prior to, and within the timeframe of the earliest effective filing date of the '250 patent (October 8, 2015).

23. Accordingly, as part of my independent analysis of the '250 Patent, I have analyzed the following publications and materials:

Exhibit	Description
VA-1001	U.S. Patent No. 11,856,250 to Sheppard et al. ("the '250 patent")
VA-1002	Excerpts from the Prosecution History of the '250 Patent ("the Prosecution History")
VA-1005	U.S. Patent Pub. No. 2016/0249098 A1 to Pecjak et al. (Pecjak)
VA-1006	U.S. Patent No. 9,204,188 B1 to Mirisola et al. ("Mirisola")
VA-1007	U.S. Patent Pub. No. 2011/0289524 A1 to Toner et al. (Toner)
VA-1008	U.S. Patent Pub. No. 2010/0218206A1 to Biemans ("Biemans")
VA-1009	High-Definition Multimedia Interface, Specification Version 1.4 ("HDMI 1.4").
VA-1010	Modeling User Activities in a Large IPTV System ("Qiu")
VA-1011	U.S. Patent Pub. No. 2016/0165277 A1 to Kirillov et al. ("Kirillov")
VA-1012	Pocket Guide to TV Terms, The Nielsen Company, Published 2008 ("Nielsen-2008")

Exhibit	Description
VA-1013	U.S. Patent No. 9,185,435 B2 to Shankar et al. (“Shankar”)
VA-1014	Understanding Power and Rules of Thumb for Determining Sample Sizes, Tutorials in Quantitative Methods for Psychology, published 2007 (“Wilson”)
VA-1015	Using Multivariate Statistics, Sixth Edition, published 2013 (“Tabachnick”)
VA-1016	U.S. Patent Pub. No. 2003/0055759 A1 to Conkwright et al. (“Conkwright”)
VA-1017	U.S. Patent Pub. No. 2007/0074258 A1 to Wood et al. (“Wood”)
VA-1018	Multi-Channel Digital Video Data Capture, Accumulation and Processing Guidelines, published June, 2012

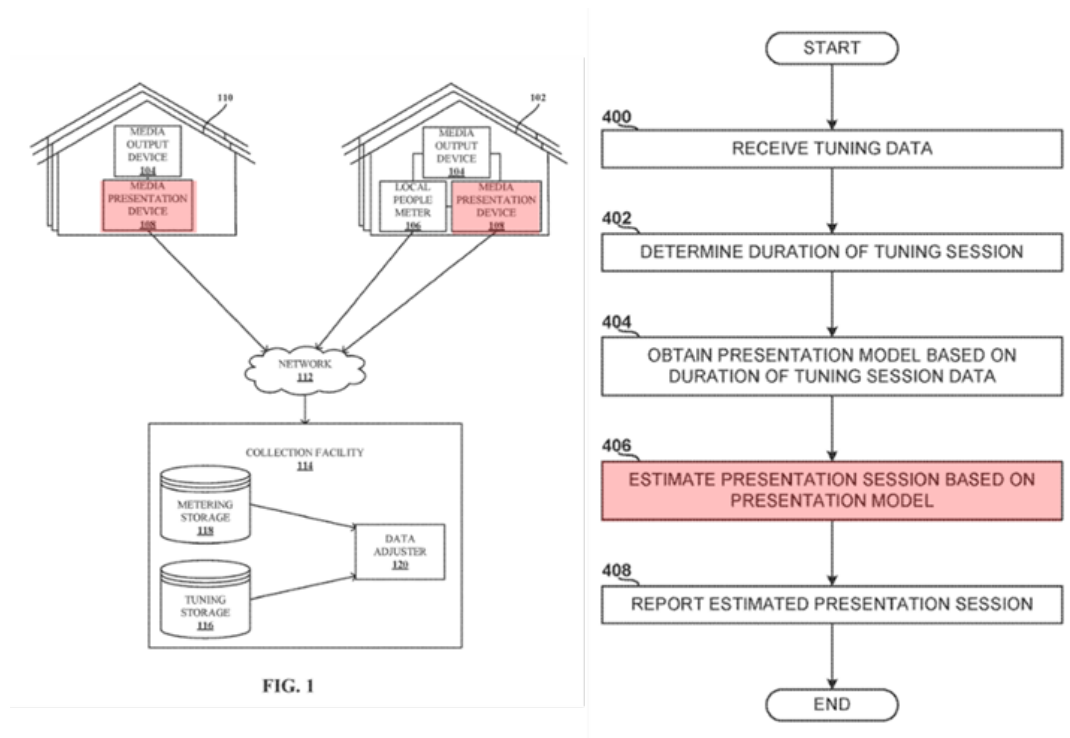
24. Although I cite and quote to selected portions of various references in this Declaration, the reader should understand that these citations are representative examples. A POSITA would have viewed each reference in its entirety and in combination with other references. Accordingly, I intend the references identified in this Declaration to be viewed as incorporated in their entireties.

V. OVERVIEW OF THE '250 PATENT

A. Brief Description

25. The '250 patent “relates generally to media audience measurement, and, more particularly, to methods and apparatus to determine a duration of media presentation based on tuning session duration.” VA-1001, 1:27-30. The '250 patent

describes obtaining tuning data directly from a “media presentation device” (e.g., a set-top box (STB)) a service provider provides to a consumer. VA-1001, 2:30-3:14. Media presentation activity is monitored for select audience members (panelists) using an audience measurement system, for example, a metering device(s) and/or a local people meter (LPM). VA-1001, 3:15-45. The metering data is collected and/or aggregated to create a model that describes a number of minutes a household media presentation device was tuned to a particular channel and a number of minutes a household media presentation device was used (e.g., consumed) by a household panelist member and/or a visitor (e.g., a presentation session), among other things. VA-1001, 3:46-67.



The '250 patent estimates a presentation session based on a model created from tuning data obtained from media presentation devices

VA-1001, FIGS. 1, 4¹.

B. Prosecution History

26. U.S. 11,856,250 issued on December 26, 2023 from U.S. Patent Application No. 17/967,832 (“**the '832 application**”), which was filed with a request for prioritized examination on October 17, 2022. VA-1002, 273-275. The Examiner issued a Notice of Allowability on September 19, 2023. VA-1002, 128-132. The Examiner did not indicate which specific features placed the application in condition for allowance. VA-1002, 131. Moreover, no prior art rejections were

¹ Annotations to figures are shown in color.

issued during prosecution of the '832 application. *See generally*, VA-1002.

VI. OVERVIEW OF CONCLUSIONS FORMED

27. This Declaration explains the conclusions that I have formed based on my independent analysis. To summarize those conclusions:

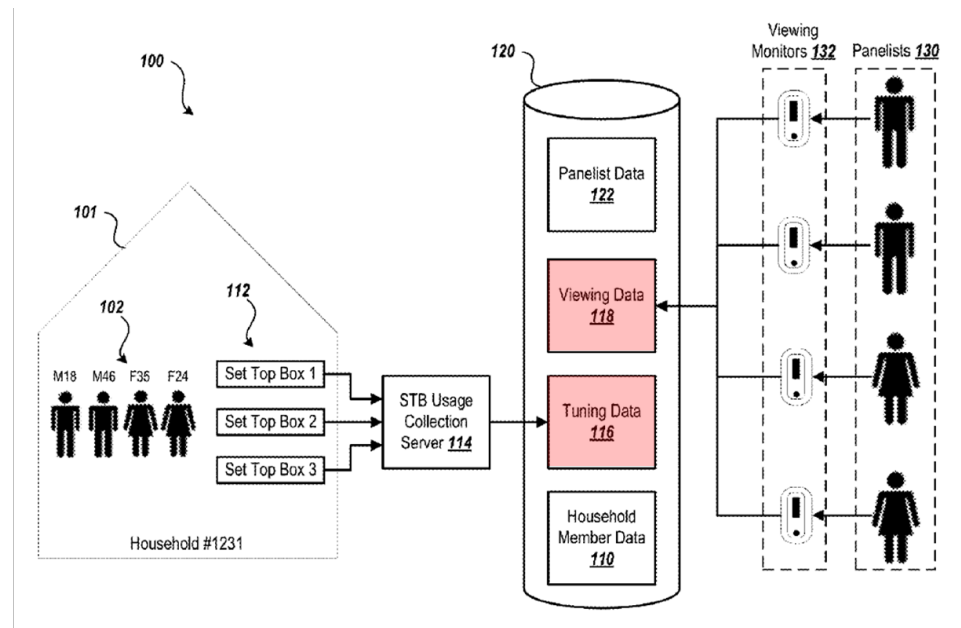
- Based upon my knowledge and experience, and my review of the materials listed above, I believe that Claims 1-8, 11-13, and 15-21 of the '250 patent are obvious in view of Pecjak (VA-1005) and Mirisola (VA-1006). *See* Ground 1A at Section **Error! Reference source not found..**
- Based upon my knowledge and experience, and my review of the materials listed above, I believe that Claims 9-10, 14, and 22-23 of the '250 patent are obvious in view of Pecjak and Mirisola (with or without Shankar) (VA-1013). *See* Ground 1B at Section **Error! Reference source not found..**

VII. OVERVIEW OF THE CITED REFERENCES

A. Pecjak

28. Pecjak discloses techniques for “projecting person-level viewership from household-level data” to include “a projected number of viewing minutes that the particular program was viewed by individual members of [a] household.” VA-1005, ¶¶[0015]-[0019]. Like the '250 patent, Pecjak discloses obtaining tuning data

from set top boxes that provide television programs to a household that can include one or more panelists. VA-1005, ¶¶[0002, [0013], [0020]-[0028], FIGS. 1, 5; VA-1001, 2:30-47, 1:40-51, 3:15-45. Additionally, Pecjak discloses that it obtains viewing level data (also referred to as “viewing data”) that includes “an identification of a particular television program associated with [a] viewing event and a panelist minutes value representing a number of minutes a panelist was exposed to the particular television program during the viewing event.” VA-1005, ¶¶[0002], [0024]-[0027], [0038], FIGS. 1, 5. Pecjak’s FIG. 1 (reproduced below) depicts a household with four members and their demographics, along with three set-top boxes that collect tuning data. VA-1005, FIG. 1. Additionally, FIG. 1 depicts that viewing data is collected from a series of panelists that are assigned viewing monitors. *Id.*



Pecjak collects tuning data from set-top boxes and viewing data from panelists

VA-1005, FIG. 1.

29. Pecjak also discloses a reporting server 202 that uses person-level viewing data “to generate projected person-level viewing data from household-level tuning data.” VA-1005, ¶¶[0029]-[0040]. As shown in Pecjak’s FIG. 2 below, the reporting server 202 includes a “measurement data processor 204, a data aggregation processor 206, and a report generation module 208,” that “generate viewership data based on the household member data 110, tuning data, 116, viewing data 118, and panelist data 122 and use that data to generate one or more reports 210.” VA-1005, ¶¶[0030]-[0040], [0083]-[0093], FIG. 2. The measurement data processor 204 is further divided into a “a pre-processing module 204a, a minute assignment module 204b, and a fractional viewership module 204c.” VA-1005, ¶[0030], FIG. 2.

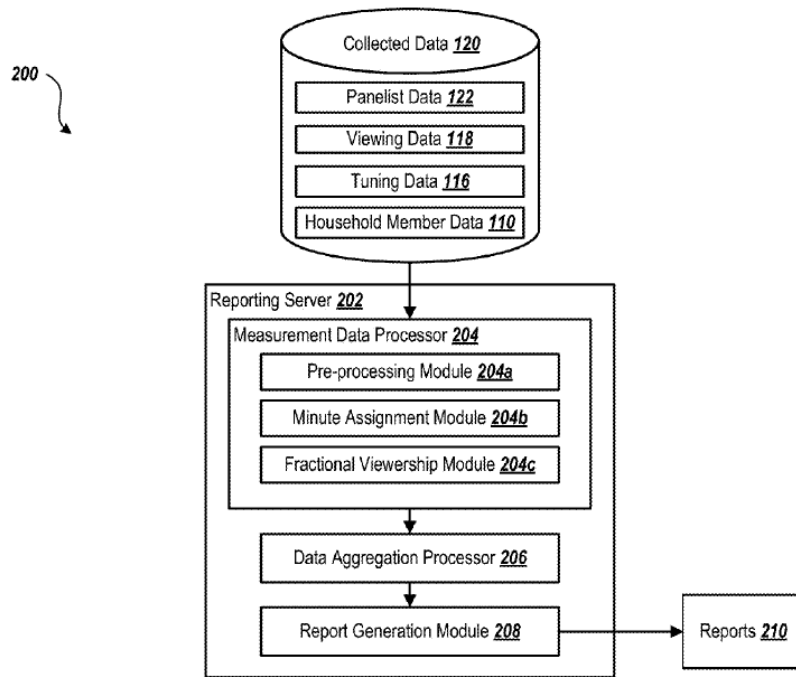
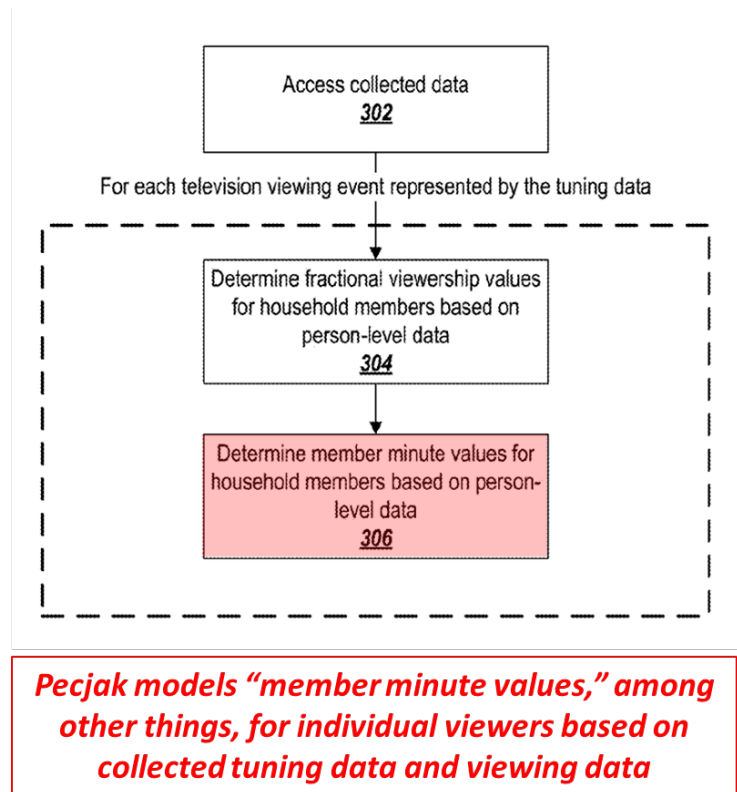


FIG. 2

VA-1005, FIG. 2.

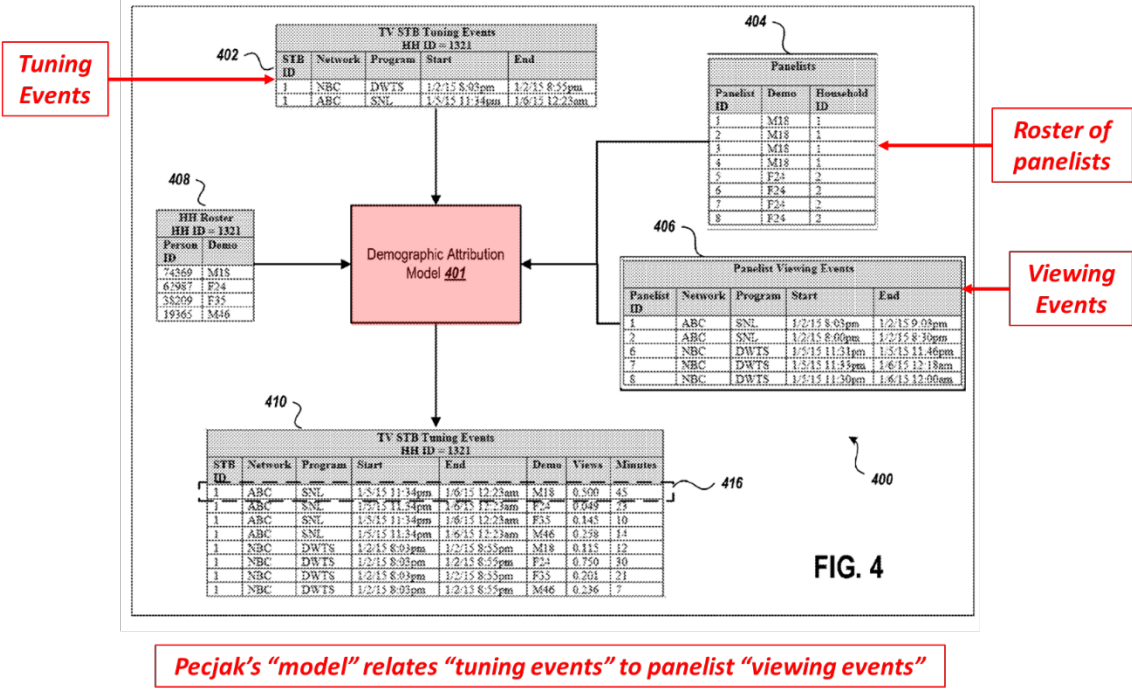
30. The minute assignment module 204b “determines member minute values for the particular television viewing event for each individual member of the household based on the viewing data 118 (306).” VA-1005, ¶[0048], [0090]-[0092], [0097]-[0098], FIGS. 3, 6-7.



VA-1005, FIG. 3.

31. Pecjak models the relationship between tuning data and viewing data with a “demographic attribution model” that uses “person-level viewing data and household-level tuning data to project person-level viewership for the household.” VA-1005, ¶¶[0076]-[0080]. As shown in Pecjak’s FIG. 4 below, the demographic attribution model includes “a tuning events table 402,” “a roster of panelists” 404, and “a household roster [408] for the household associated with the tuning events in table 402.” *Id.* Specifically, Pecjak depicts making predictions on viewership for a non-panelist household of four members (household #1321) for episodes of two programs (“DWTS” and “SNL”). *Id.* Predictions of viewership for all members of

the household are performed for both programs using viewing data from panelists of similar demographics that viewed the same programs. *Id.*



VA-1005, FIG. 4.

B. Mirisola

32. Mirisola discloses determining “viewership” metrics from set-top boxes using “channel tuning information from the set-top boxes.” VA-1006, 5:14-6:51, FIG. 1 (reproduced below). Mirisola explains that “[m]ore precise metrics may be determined by accounting for the power status of the display devices that are coupled to the set-top boxes and are responsible for displaying the content output from the set-top boxes” and that this information can be obtained from High-Definition Multimedia Interface (HDMI) “interfaces and protocols associated with

the HDMI interface.” VA-1006, 5:19-23, 6:52-7:22, FIG. 1, FIG. 2A. This power status information is used to determine “time intervals during which the respective display device 104 is powered on and time intervals during which the respective display device is powered off.” VA-1006, 7:8-22, 9:47-61, FIG. 2A.

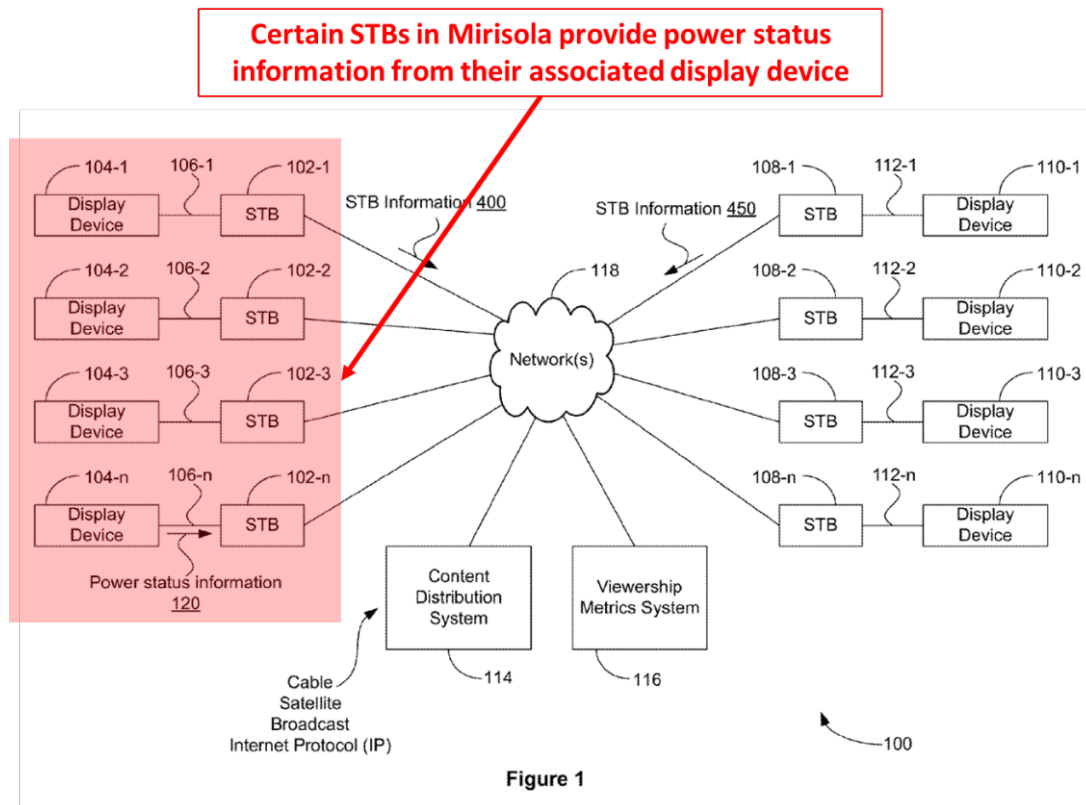
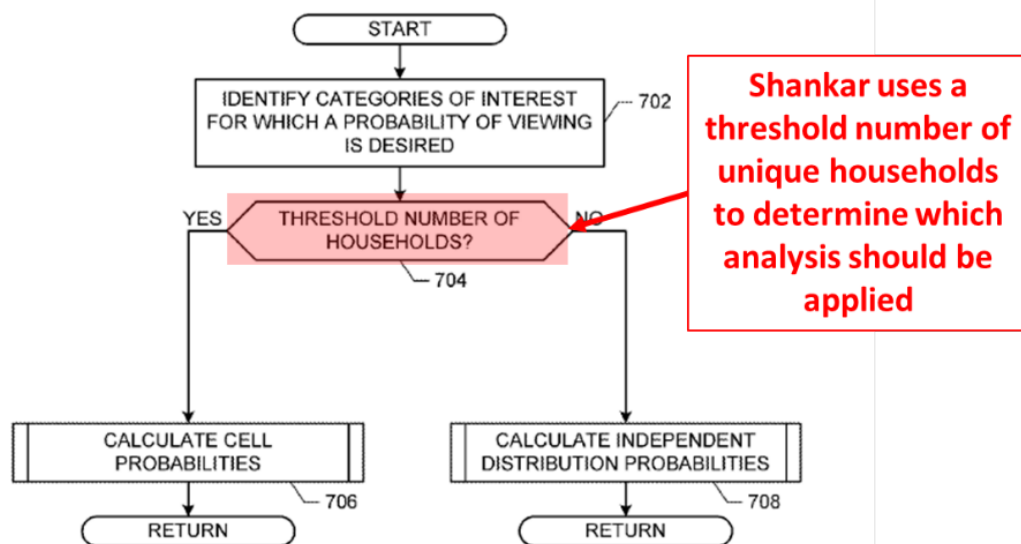


Figure 1
VA-1006, FIG. 1.

C. Shankar

33. Shankar discloses methods for calculating television “exposure” probabilities where a “threshold value” is used to determine which type of analysis should be applied when estimating viewing probabilities from local people meter data (“LPM”). VA-1013, 10:52-11:11, 20:17-28, 20:45-64, 27:34-44, FIGS. 7, 15.

Shankar discloses that when the number of independent households is above the threshold value, a “cell probability” technique is used, and alternatively, if the number of households is below the threshold value, an “independent distribution” technique is used. *Id.* Shankar discloses that “probability value accuracy may be improved when different probability calculation techniques are applied in view of corresponding available sample sizes,” and that the cell probability technique is preferred when the number of households is above the threshold value, as it “yield[s] a probability value with acceptable accuracy” (which would otherwise be unacceptable below the threshold value). VA-1013, 10:52-11:11.



VA-1013, FIG. 7.

VIII. APPLICATION OF THE CITED REFERENCES TO THE CHALLENGED CLAIMS

A. [GROUND 1A] – Claims 1-8, 11-13, and 15-21 are rendered obvious by Pecjak and Mirisola

1. A POSITA would have combined Pecjak and Mirisola

34. It would have been obvious for a POSITA to combine the teachings of Pecjak and Mirisola to (1) retrieve HDMI power status information, as taught by Mirisola, from STBs, as disclosed in Pecjak, to determine periods of time a television corresponding to a set-top box was turned on, and (2) provide implementation details for Pecjak's techniques, e.g., implementing Pecjak's display devices in the form of Mirisola's televisions. VA-1005, ¶¶[0020]-[0028], FIGS. 1, 5; VA-1006, 5:19-23, 6:52-7:22, FIG. 1, FIG. 2A. A POSITA would have combined Pecjak and Mirisola for multiple reasons.

35. First, logging television power status with tuning data gathered from a set-top box would provide increased visibility into user engagement with programs, directly related to the user's interest in those programs, leading to more effective advertising. VA-1005, ¶¶[0020]-[0028], FIGS. 1, 5; VA-1006, 5:19-23, 6:52-7:22, FIG. 1, FIG. 2A. For example, a POSITA would have known that user interaction (e.g., turning on a television) is one of the best indicators that a user is engaged with a television program. This is corroborated by Biemans, which explains that media systems often determined user interest in a television program by detecting a user

input, such as turning a client device off, from a remote control. VA-1008, ¶¶[0038]-[0040], [0045]-[0048], FIGS. 4A-4B. In many cases, a user input to a set-top box is received in response to a user's interest (or lack thereof) in the content being displayed (e.g., turning the volume up on a program of interest, or tuning away from a program that is not of interest). *Id.* To that end, a POSITA knew that interaction is often the best indicator of user interest. *Id.*

36. Second, Mirisola provides implementation details for Pecjak's user interactions of interest with a set-top box. VA-1005, ¶[0020]. For example, Mirisola discloses that a user's channel selections included in tuning information can include a time interval during which a user is tuned to a channel. VA-1006, 6:29-33 ("the raw tuning information may include a first time interval during which the STB is tuned to channel A, a second time interval during which the STB is tuned to channel B, and a third time interval during which the STB is tuned to channel A"). A POSITA would have recognized and found obvious that channel selections would have been indicative of a tuning session duration (e.g., a user changing to a channel at the beginning of a program, and changing the channel again at the end), as this was well recognized in the art before the Benefit Date. VA-1007, ¶¶[0016]-[0023], [0029]; VA-1010, 4-8. In many cases, users tune into programs when they begin and end, and thus using channel changes to mark tuning sessions would have been an intuitive way to estimate the length of a tuning session from interaction data. *Id.*

37. Third, as noted by Mirisola, collecting television power status information with tuning data collected from a set-top box verifies the accuracy of the tuning data and would have allowed the ratings provider to adjust tuning session data where it was determined that the television corresponding to the set-top box was turned off for a portion of the tuning session. VA-1005, ¶¶[0020]-[0021], FIGS. 1, 5; VA-1006, 5:14-23, 6:52-7:22, FIG. 1, FIG. 2A.

38. A POSITA would also have found the combination of Pecjak and Mirisola obvious and predictable because incorporating Mirisola's techniques into Pecjak would have been nothing more than (1) the application of known techniques (e.g., collecting power status from an HDMI connection, capturing indications of user interactions, such as channel selections, in tuning information) to a known structure (e.g., a STB with an HDMI connection to a television) to yield predictable results (e.g., a STB that collects power status information in tuning data), (2) the use of known techniques to improve similar devices (methods, or products) in the same way (applying Mirisola's techniques to a similar Pecjak system and method), and (3) applying a known technique (collecting commands in tuning data) to a known device (Pecjak's set-top boxes that collect tuning data) ready for improvement to yield predictable results. For instance, one predictable result of incorporating Mirisola's teachings into Pecjak's system would have been the improvement in the accuracy of the tuning data, as explained above.

39. A POSITA would have had a reasonable expectation of success in implementing this combination because both Pecjak and Mirisola are analogous art (to each other and the '250 patent) that disclose almost identical techniques used for the same purpose – collecting tuning data from a set-top box playing television programs and using this data to model viewership. VA-1005, ¶¶[0020]-[0028], FIGS. 1, 5; VA-1006, 5:19-23, 6:52-7:22, FIG. 1, FIG. 2A. Indeed, both Pecjak and Mirisola collect tuning data from a set-top box, and both references indicate that user interactions with the set-top box can be included in this tuning data. *Id.* The inclusion of a television, as explicitly disclosed by Mirisola, provides implementation details for Pecjak's system, as Pecjak describes "television programs"—programs that were specifically intended to be displayed on a television. *See generally*, VA-1005. Moreover, the modification to collect power status information leverages an existing, well-known interface of the set-top box—the HDMI interface, and further, Mirisola explains that the collection of power status information is explained within the HDMI specification—a well-established standard document that would have been part of a POSITA's general knowledge. VA-1006, 6:52-7:7; VA-1009, 226, 273-274. Finally, this modification would have involved only routine programming skill well within the capability of a POSITA (e.g., coding machine readable instructions executed by Pecjak's reporting server to retrieve power status information). VA-1005, ¶¶[0029]-[0030]; *see below*, [1.1].

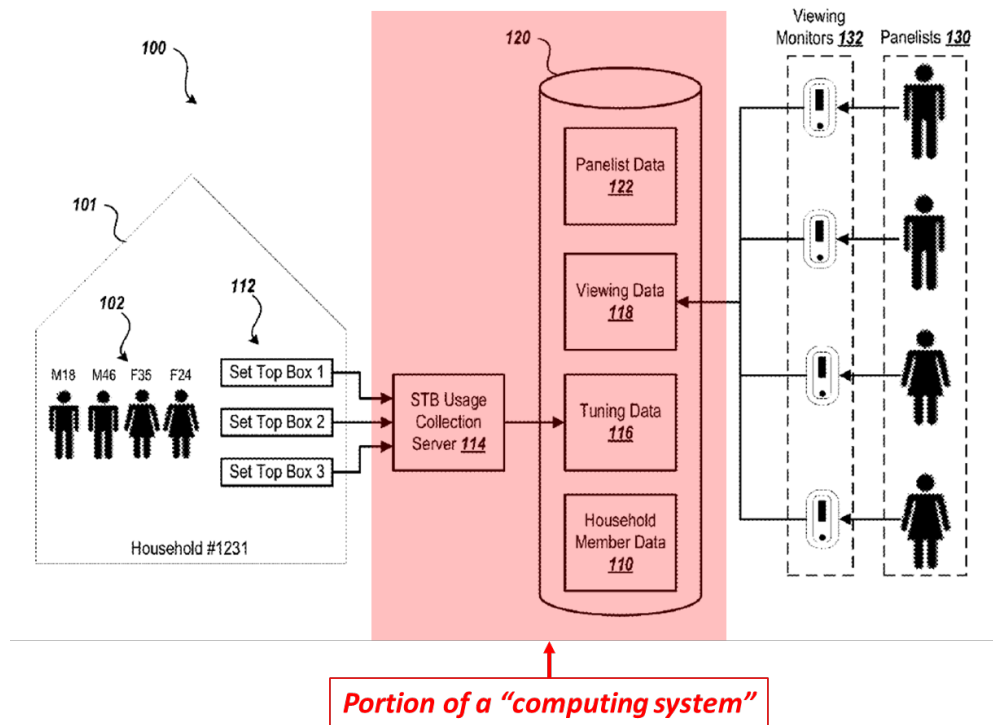
Coding this function would have only required creating instructions to retrieve a known parameter (power status) established by a well-known standard (HDMI). *See above*, §III.

2. Claim Analysis

[1.pre] A computing system comprising:

40. Pecjak discloses a [1.pre]. VA-1005, ¶¶[0005], [0029], [0100], FIGS. 1-2.

41. For example, Pecjak's FIG. 1 (reproduced below) "illustrates an example of a system 100 in which television viewership information may be collected and processed to determine audience measurement data. The system 100 includes a number of households, such as household 101, that include one or more set-top boxes 112." VA-1005, ¶[0020]. "The set top boxes 112 may report ... tuning events to a set top box usage collection server 114." VA-1005, ¶[0020]. Storage 120 stores panelist data 122, viewing data 118, tuning data 116, and household member data 110. VA-1005, ¶¶[0020]-[0028].



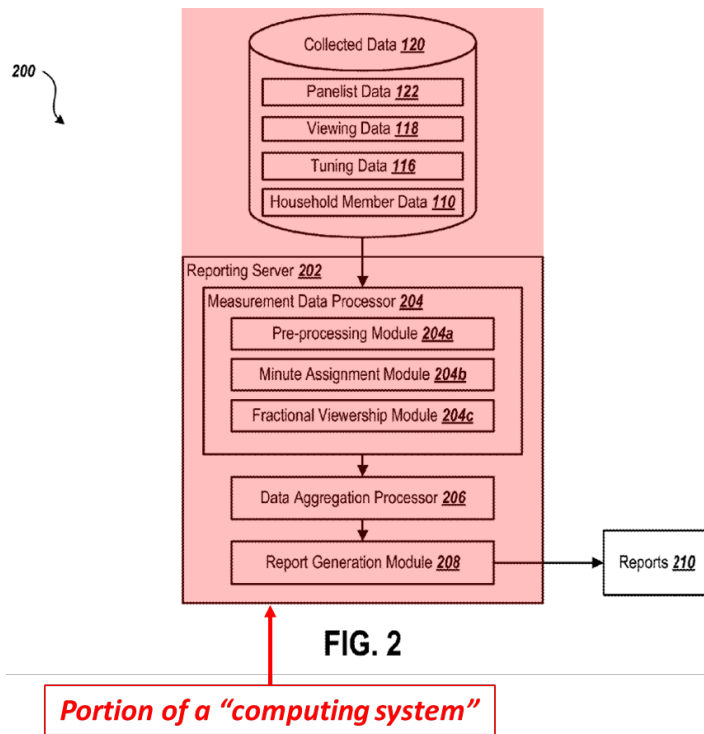
VA-1005, FIG. 1.

42. The collected data in storage 120 is provided to a reporting server 202 (highlighted in red in Pecjak's FIG. 2 below) that receives collected data 120 and generates reports 210. VA-1005, ¶¶[0029]-[0030], [0100]. Pecjak describes the reporting server 202 as follows:

The reporting server 202 may be implemented using, for example, a general-purpose computer capable of responding to and executing instructions in a defined manner, a personal computer, a special-purpose computer, a workstation, a server, or a mobile device. The reporting server 202 may receive instructions from, for example, a software application, a program, a piece of code, a device, a

computer, a computer system, or a combination thereof, which independently or collectively direct operations. The instructions may be embodied permanently or temporarily in any type of machine, component, equipment, or other physical storage medium that is capable of being used by the reporting server 202.

VA-1005, ¶¶[0029]-[0030], [0100]. A POSITA would have understood that the server 114, storage 120, and the reporting server 202 are part of a “computing system” at least because servers and storage devices are well-known components of a computer system. Indeed, devices, such as the reporting server 202, must perform various computing operations by executing the machine-readable instructions, as described below in [1.1]-[1.13]. VA-1005, ¶¶[0029]-[0030], [0100]. Thus, it would have been obvious to a POSITA that Pecjak discloses a *“computing system.”*



VA-1005, FIG. 2.

[1.1] machine readable instructions; and

43. As noted above in [1.pre], Pecjak’s reporting server 202 “receive[s] instructions from, for example, a software application, a program, a piece of code, a device, a computer, a computer system, or a combination thereof, which independently or collectively direct operations. ... The instructions² may be embodied permanently or temporarily in any type of machine, component, equipment, or other physical storage medium that is capable of being used by the reporting server 202.” VA-1005, ¶[0029]. Moreover, “[t]he reporting server 202

² All emphasis is added unless otherwise noted.

executes instructions that implement a measurement data processor 204, a data aggregation processor 206, and a report generation module 208.” VA-1005, ¶[0030]. Pecjak also discloses that its techniques are implemented by “instructions stored on a computer readable storage device” or “a computer program product, i.e., a computer program tangibly embodied in an information carrier, e.g., in a machine-readable storage device, in machine-readable storage medium, in a computer-readable storage device or, in computer-readable storage medium for execution by, or to control the operation of data processing apparatus.” VA-1005, ¶¶[0005], [0100], FIG. 2. Accordingly, Pecjak teaches that its computer system includes “machine readable instructions.”

[1.2] processor circuitry to execute the machine readable instructions to at least:

44. Pecjak discloses [1.2] at least because Pecjak’s processors 204, 206, and 208 (“***processor circuitry***”) in the reporting server 202 execute machine readable instructions. Specifically, Pecjak’s “reporting server 202 executes instructions that implement a measurement data processor 204, a data aggregation processor 206, and a report generation module 208.” VA-1005, ¶[0030]. These processors are further configured to also execute instructions. *Id.* For example, Pecjak’s ***machine readable instructions*** are executed by a “data processing apparatus” or “one or more processors” as part of “digital electronic circuitry”

(“*processor circuitry*”) to perform at least the operations described below in [1.3]-[1.13]. VA-1005, ¶¶[0005], [0029]-[0030], [0067], [0096], [0097], [0098], [0100], FIG. 2.

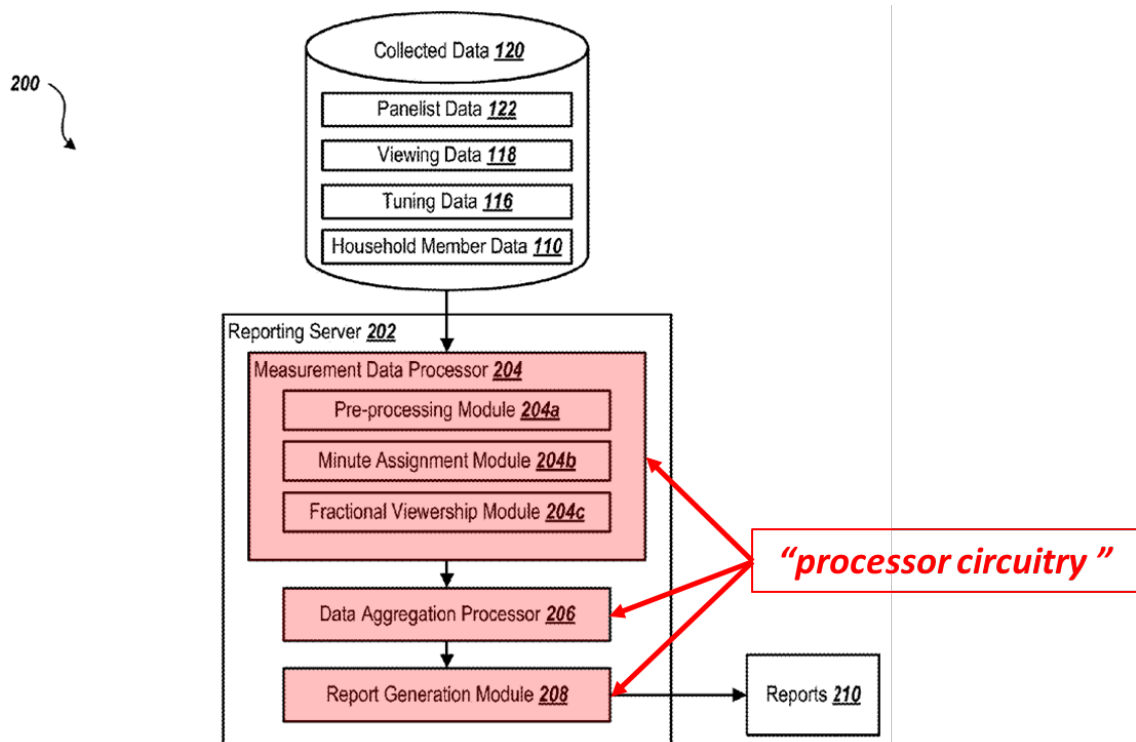


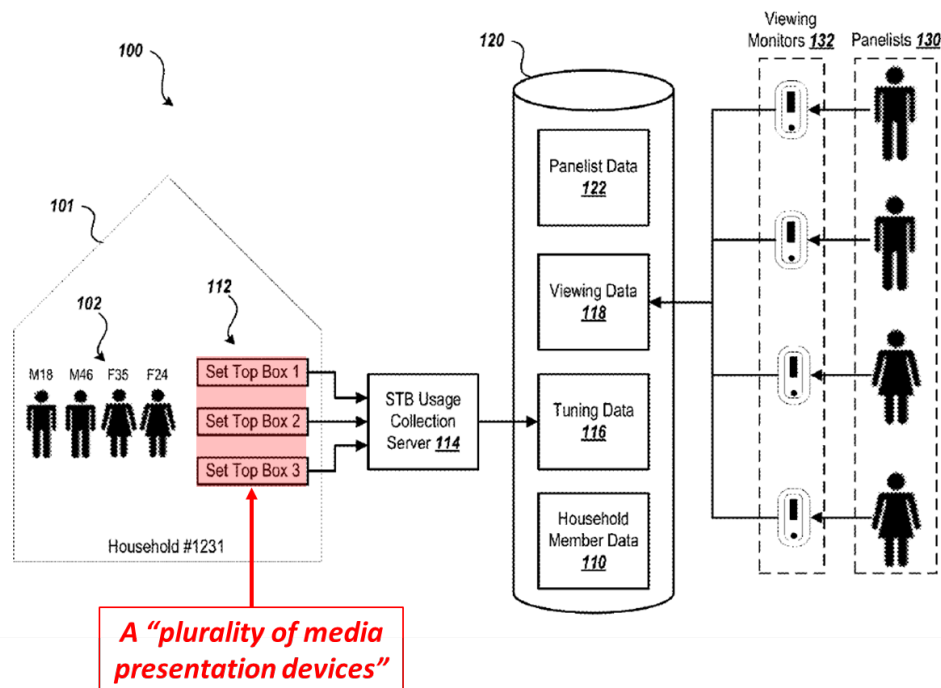
FIG. 2

VA-1005, FIG. 2.

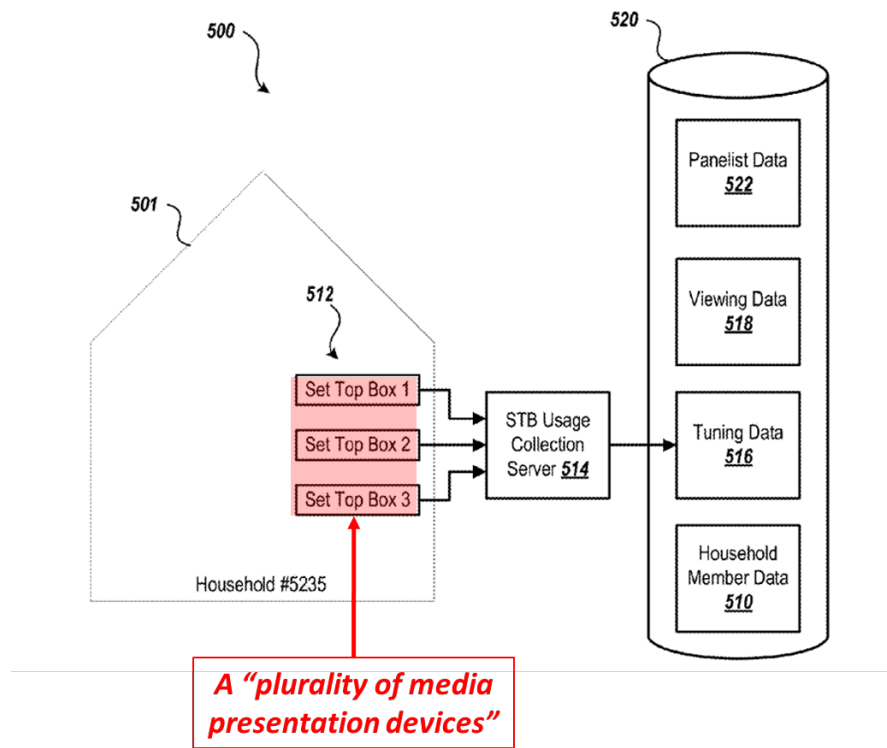
[1.3] access respective tuning session data from a plurality of media presentation devices,

45. The '250 patent describes that a “set-top box” (“STB”) is an example “*media presentation device.*” VA-1001, 2:39-57. Consistent with the '250 patent, Pecjak discloses set top boxes (“*a plurality of media presentation devices*”) that are used for “viewing television programs.” VA-1005, ¶[0020]. As shown below in

Pecjak's FIGS. 1 and 5, these set top boxes can be located in a household. VA-1005, ¶¶[0021]-[0023], [0039]-[0040], [0076]-[0077], FIG. 1. One common and obvious scenario would have been when different members of a single household are watching television content through set-top boxes located in different rooms, respectively, of the household. In some cases, these set top boxes can be located in different respective households, each with different "demographics." VA-1005, ¶¶[0020]-[0023] ("The system 100 includes **a number of households**, such as household 101, that include one or more set-top boxes 112 for viewing television programs."), [0037], [0081], FIGS. 1, 5.



VA-1005, FIG. 1.



VA-1005, FIG. 5.

46. Pecjak also discloses accessing *“tuning session data from a plurality of media presentation devices.”* In particular, Pecjak teaches that “[t]he set top boxes 112 record data for tuning events (e.g., viewing events), which may represent a particular television network or program being watched at a particular time.” VA-1005, ¶[0020]. “The set top boxes 112 ... may store tuning data 116 representing these tuning events in a database or other storage 120.” VA-1005, ¶[0020]. “[T]he tuning data may include data to identify the household 101 and set top box 112, stream control data, data representing content recorded by the set top box 112, programs ordered on the set top box 112, and data about when the set top box 112

was on or off.” VA-1005, ¶¶[0020]-[0021], FIGS. 1, 5. The tuning data may also include “a particular television program watched during each viewing event, and a household minutes value representing a number of minutes the particular household watched the particular television program during each viewing event.” VA-1005, ¶[0084]. Because the tuning data includes data for particular programs being watched at a particular time, data representing content recorded by the set top box 112, programs ordered on the set top box 112, and data about when the set top box 112 was on or off, a POSITA would have understood that the tuning data stored and used by the set top boxes is “*tuning session data*.” VA-1005, ¶¶[0013], [0020], [0026], [0056], [0063]; VA-1001, 3:54-56. And because this “tuning session data” is received from the set top boxes 112, it would have been obvious to a POSITA that Pecjak also discloses “*access respective tuning session data from a plurality of media presentation devices*.” *Id.*

47. As discussed above in [1.2], the pre-processing module 204a and measurement data processor 204 are part of the reporting server 202 processing circuitry, thus it is Pecjak’s “*computing system*” that is performing these operations. VA-1005, ¶[0030], FIG. 2; *see above*, [1.2].

[1.4] corresponding ones of the plurality of media presentation devices in respective ones of media presentation environments,

48. The ’250 patent describes an “environment” as an area in which “tuning

data is collected” or as a “media presentation location.” VA-1001, 4:26-37 (“FIG. 1 is a block diagram of an example environment 100 in which tuning data is collected from an example media presentation location 110 ...”), 4:51-64. The ’250 patent also describes a media presentation location as “a location that has been statistically selected to develop media ratings data” such as a household. VA-1001, 4:51-64, FIG. 1 (illustrating a media presentation location as a house). Other example environments described by the ’250 patent include “a theater, a restaurant, a tavern, a retail location, an arena, etc.” VA-1001, 4:51-64. Accordingly, a POSITA would have understood that a “*media presentation environment*” also encompasses an area within which a media presentation can be presented, such as a household or a room in a household. VA-1001, 4:51-64, FIG. 1.

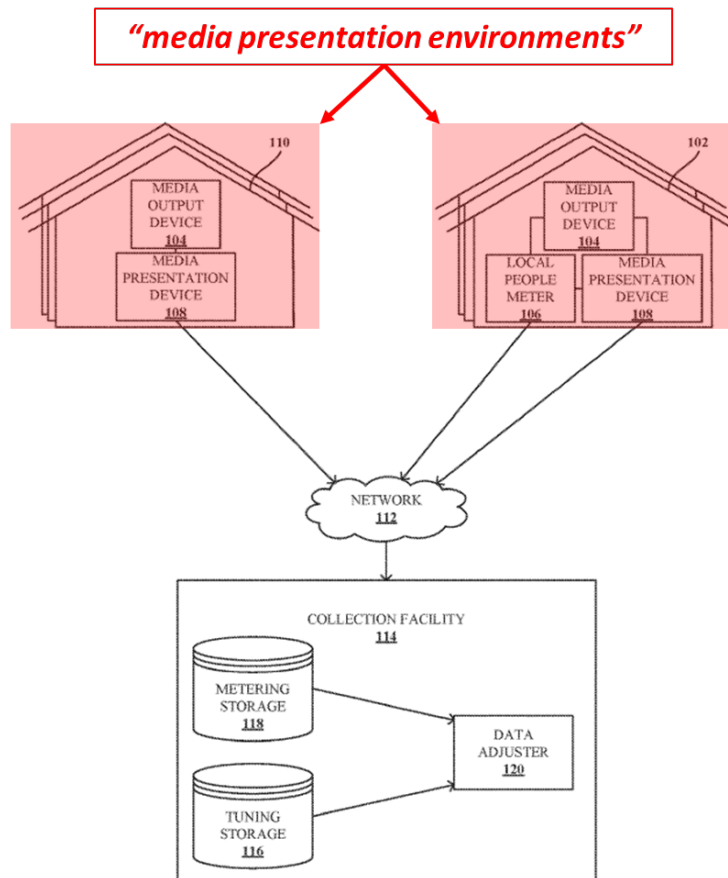


FIG. 1

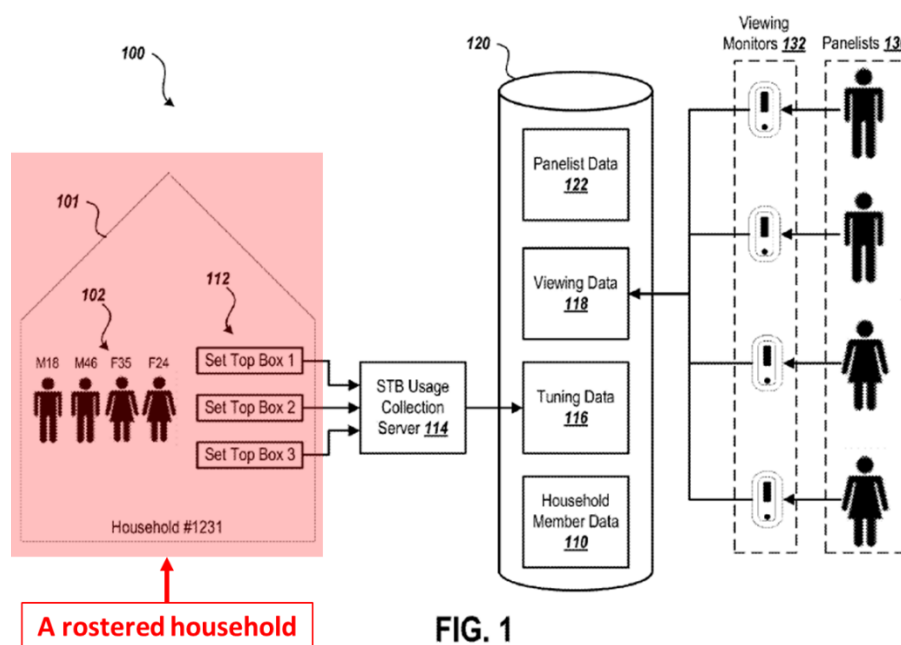
VA-1001, FIG. 1.

49. Pecjak discloses *"media presentation environments"* similar to the ones described in the '250 patent in multiple ways. First, recall that Pecjak teaches that there are "one or more set-top boxes 112 for viewing television programs" in each household. In an example in which each household has only one set-top box, the two set-top boxes would have been located respectively in two households (*"corresponding ones of the plurality of media presentation devices in respective ones of media presentation environment"*). VA-1005, ¶¶[0020]-[0021], [0057],

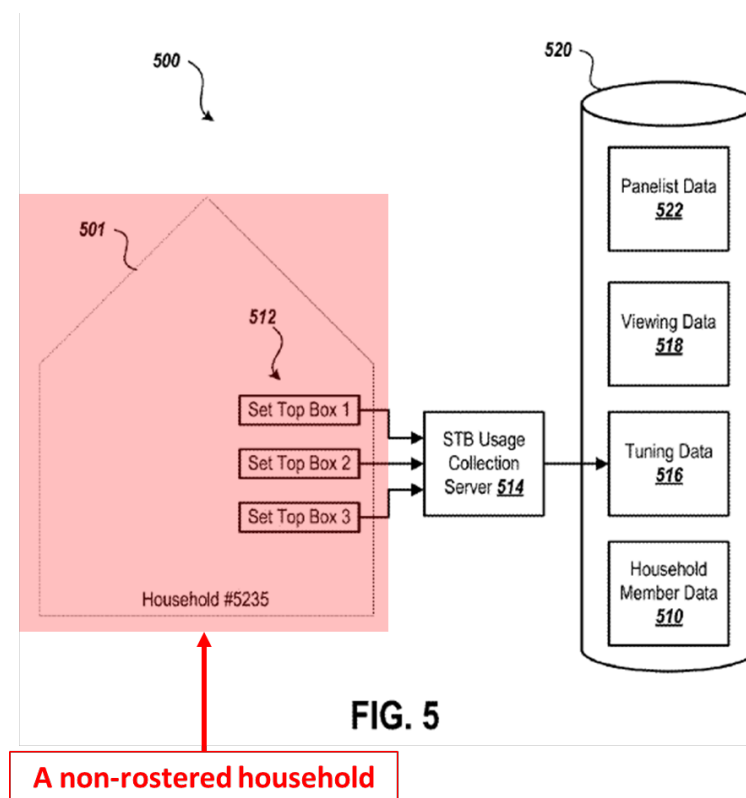
[0084], [0089], [0095], FIGS. 1, 5.

50. Pecjak also discloses two types of households—both of which are “*media presentation environments*”—“rostered” households where viewer demographics are known (e.g., household #1231 in FIG. 1³), and “non-rostered” households where viewer demographics are unknown (e.g., household #5235 in FIG. 5). VA-1005, ¶¶[0020]-[0022], [0081], FIG. 1, 5. Pecjak’s set-top boxes generate tuning data from tuning events such that the tuning data is associated with each household. VA-1005, ¶[0020]; *see above*, [1.3]. Again, because there are at least two types of households disclosed by Pecjak and each household may have its own media presentation environment with a set-top box, Pecjak discloses [1.4].

³ Pecjak illustrates household #1231 in FIG. 4, but inadvertently labels the household “1321.” VA-1005, FIG. 4.



VA-1005, FIG. 1.



VA-1005, FIG. 5.

51. Second, as explained above in [1.3], in the scenario in which each set-top box is located in a different room of the same household, the set-top boxes are ***“corresponding ones of the plurality of media presentation devices in respective ones of media presentation environment.”***

52. As one example, Pecjak teaches that viewing monitors carried by panelists are portable computing devices. VA-1005, ¶[0026]. A POSITA would have recognized and found obvious that individuals carrying portable devices—in both panelist and non-panelist households—would, when located in different rooms, have consumed Pecjak’s television programs in a different respective ***“media presentation environments.”*** VA-1005, ¶[0026]. Pecjak corroborates this idea by illustrating that household members of certain demographics have a propensity to view certain content (e.g., an 18-year old male may have a propensity to view “SNL” over “DWTS”), and to that end, certain household members would have preferred to view their content separately from others (e.g., in their own room). VA-1005, ¶¶[0076]-[0080], FIG. 4.

53. Mirisola also corroborates this understanding by disclosing that information retrieved from a set top box can include “a location of the sending STB within a household (e.g., living room, family room, bedroom, etc.).” VA-1006, 12:66-13:20.

[1.5] the respective ones of the media presentation environments including at least one media output device to present media from a correspond-ing one of the media presentation devices,

54. The '250 patent's "***media output device***" includes a "television." VA-1001, 2:61-67. Consistent with the '250 patent, Pecjak discloses television programs provided by set-top boxes ("***at least one media output device to present media from a corresponding one of the media presentation devices***"). VA-1005, ¶¶[0013] (describing "one or more set-top boxes for viewing television programs), [0020]-[0021] (describing that members use the set-top boxes "to watch television"), [0096] (describing a "television playing the program). A POSITA would have recognized and found obvious that each of Pecjak's households ("***the respective ones of the media presentation environments***") would have included at least one television ("***at least one media output device***") as it would have been obvious that a household would have included a television to view television programs provided through a set top box in the household. VA-1005, ¶¶[0013], [0020]-[0021], [0096].

55. Mirisola discloses example scenarios in which set-top boxes provided media content to a corresponding display device, such as a television. VA-1006, 3:56-67, FIG. 1 (reproduced below, illustrating set top boxes coupled to a display device). Indeed, to the extent there may be any questions regarding the type of display device is used with set top boxes in Pecjak, Mirisola provides explicit disclosure of televisions being connected to set top boxes for displaying media

content. *Id.* Moreover, to the extent Patent Owner contends that a disclosure of televisions presenting media from set top boxes is not obvious in Pecjak, a POSITA would have combined Pecjak and Mirisola for the reasons explained above in Section §VIII.A.1. *Id.* Thus, the Pecjak-Mirisola combination would have rendered obvious a computer system including “*the respective ones of the media presentation environments* [Pecjak’s rooms or households] *including at least one media output device* [Mirisola’s television] *to present media from a corresponding one of the media presentation devices* [Pecjak and Mirisola’s set top boxes].”

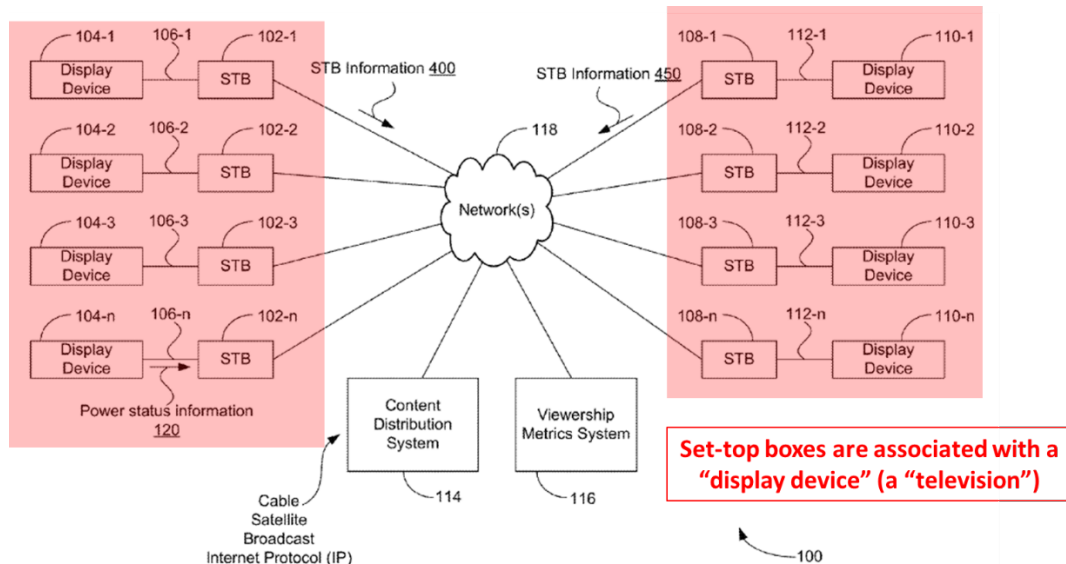
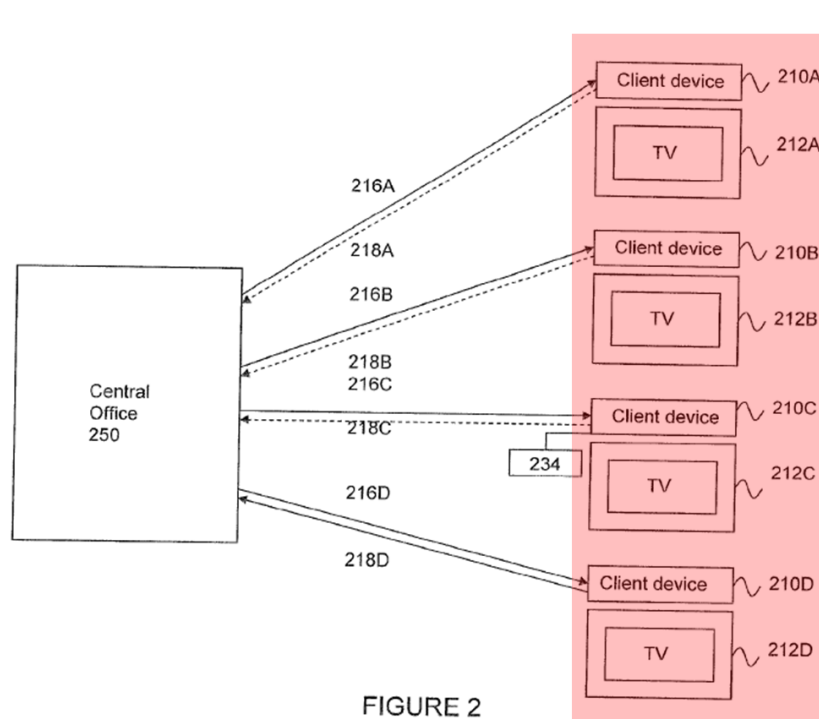


Figure 1

VA-1006, FIG. 1.

56. As another corroborating example, Biemans similarly discloses that a client device, such as a set-top box, is connected to a television. VA-1008, ¶¶[0038]-

[0040], FIG. 2. FIG. 2 below illustrates client devices with corresponding televisions. VA-1008, FIG. 2.



"client devices" (set-top boxes) are associated with televisions

VA-1008, FIG. 2.

[1.6] the respective tuning session data from respective ones of the media presentation devices indicative of a tuning session having a tuning session duration,

57. Pecjak's tuning data includes a "minutes value" (*"a tuning session duration"*) representing "a number of minutes the ... television program was played" (*"indicative of a tuning session having a tuning session duration"*) "at a particular household in association with the tuning event." VA-1005, ¶¶[0002]-

[0004], [0025], [0036], [0080], [0084], [0095]. As discussed above in [1.3], each media presentation environment is associated with a respective set top box that collects and provides the tuning session data (*“the respective tuning session data from respective ones of the media presentation devices”*). VA-1005, ¶¶[0002]-[0004], [0025], [0036], [0080], [0084], [0095]; *see above*, [1.3]. For instance, as shown in Pecjak’s FIG. 4 below, a tuning events table 402 includes *“household-level tuning data”* including: 1) Set Top Box 1 (*“STB ID 1”*) (a *“respective ... media presentation device”*) with a starting time of 5:03 pm on 1/2/15 and ending time of 8:55 pm on 1/2/15 (*“respective tuning session data”*) for one program *“DWTS”* (*“a tuning session”*), and 2) STB ID 1 with a starting time of 11:34 pm on 1/5/15 and ending time of 12:23 am on 1/6/15 (*“respective tuning session data”*) for another program *“SNL”* (*“a tuning session”*). VA-1005, ¶¶[0076]-[0080], FIG. 4. Thus, this data indicates that the first tuning session for STB ID 1 had a tuning session duration of 3 hours and 52 minutes and that the second tuning session for STB ID 1 had a tuning session duration of 49 minutes (*“the respective tuning session data ... indicative of a tuning session having a tuning session duration”*). *Id.* Because Pecjak’s system collects data from all the set-top boxes in a household, a POSITA would have understood that turning session data from other set-top boxes in the household (ID #1321) would similarly be collected and provided in the tuning events table 402. VA-1005, ¶¶[0020], [0081], FIGS. 1, 5.

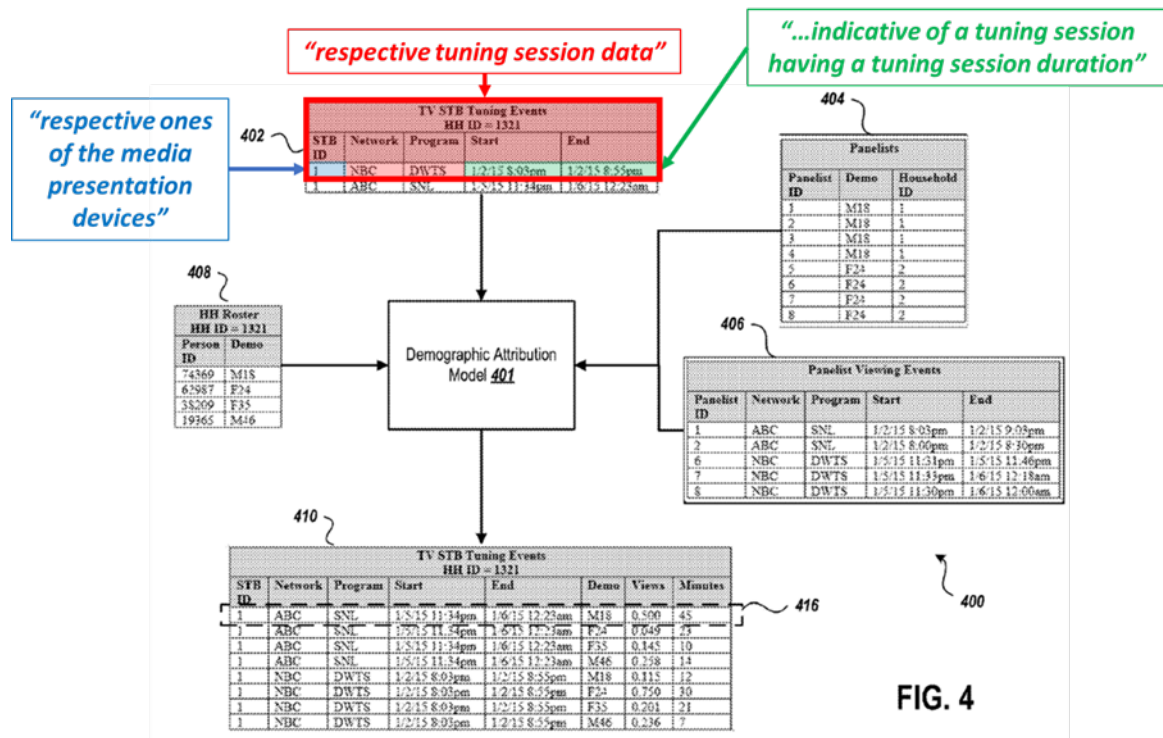


FIG. 4

VA-1005, FIG. 4.

[1.7] wherein the tuning session duration is indicative of an amount of time between interactions with a corresponding one of the plurality of media presentation devices,

58. In particular, Pecjak teaches that tuning data 116 includes “data about ... user interaction with the set top box 112” (“interactions with a corresponding one of the plurality of media presentation devices”). VA-1005, ¶[0020]. A POSITA would have recognized and found obvious that the interactions described by Pecjak would have included user commands to the set top box, for example, a command to change to a particular channel or to power off a STB or television, and

further, that these commands would have been indicative of the tuning session duration (e.g., a user changing to a channel at the beginning of a program, and changing the channel again at the end – *“the tuning session duration is indicative of an amount of time between interactions with a corresponding one of the plurality of media presentation devices”*).

59. This understanding is corroborated by other references in the art, for example, Toner, Qiu, and Biemans. VA-1007, ¶¶[0016]-[0023], [0029]; VA-1008, ¶¶[0038]-[0040], [0045]-[0048], FIGS. 4A-4B; VA-1010, 4-8. Like Pecjak and the ’250 patent, and reflecting the knowledge that would have been known to a POSITA as of the Benefit Date, Toner discloses the collecting and analyzing of viewing data from a set top box. VA-1007, ¶¶[0016]-[0030], FIG. 1. Toner’s system includes a set top box, a headend 101, and a usage collection configuration information (UC Config 104) that “instruct[s] the STB 102 to selectively collect, store, and send viewing data 106.” VA-1007, ¶¶[0020]-[0023], FIG. 1. The viewing data collected by Toner includes “operational commands from the viewer” and “the duration in seconds of the viewing of that channel before the channel was changed or the STB 102 was powered off.” VA-1007, ¶¶[0023], [0029].

60. Qiu, a research paper that models user activity across an Internet Protocol Television (IPTV) system, also corroborates that channel switches are highly indicative of tuning session durations. VA-1010, 4-8. For example, Qiu

notes that “many users switch channels ... when a TV program ends” and that user activity is correlated to “TV program alignment.” VA-1010, 4. Qiu models a user’s tuning session length using the selected channel to generate a “channel-session.” VA-1010, 5-6.

61. Biemans discloses a system that determines a user’s interest in a television program (modeled over time) by “detecting a user input to the client device 100, for example, from a remote control.” VA-1008, ¶¶[0038]-[0040], [0045]-[0049], FIGS. 4A-4B. This input can be the selection of a channel, or an adjustment of the television’s volume. *Id.*

62. Additionally, Pecjak in view of Mirisola also renders [1.5] obvious. For example, Mirisola discloses that a user’s channel selections can be included in tuning information, to include a “time interval” that a user is tuned to a specific channel (*“an amount of time between interactions with a corresponding one of the plurality of media presentation devices”*). VA-1006, 6:1-10 (“The STB 102 may tune to any particular channel in the signals in accordance with end user inputs (e.g., an end user changes channels using a remote control)”), 6:29-33 (“the raw tuning information may include a first time interval during which the STB is tuned to channel A, a second time interval during which the STB is tuned to channel B, and a third time interval during which the STB is tuned to channel A”). This is consistent with the ’250 patent, which describes that tuning sessions are “a period of time between

channel changes.” VA-1001, 3:54-56.

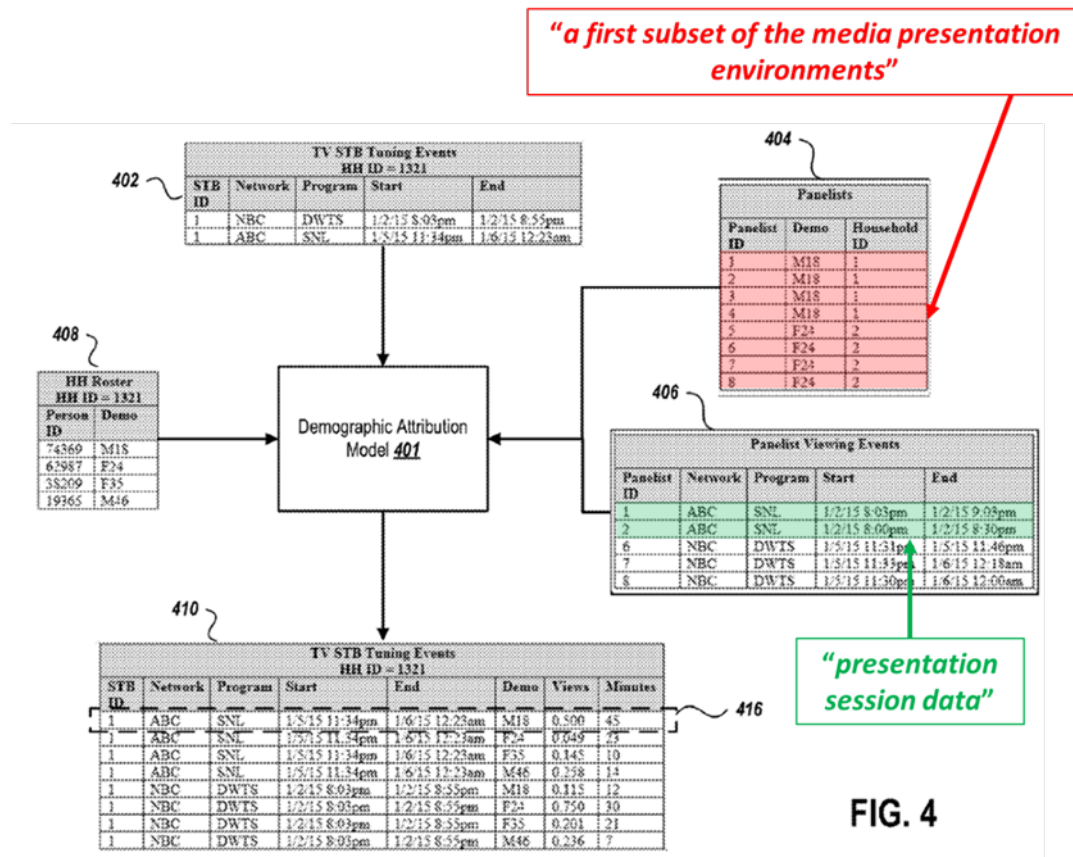
[1.8] wherein presentation session data is available for a first subset of the media presentation environments,

63. The '250 patent describes that a “presentation session” can be “a number of minutes a household media presentation device was used (e.g., consumed) by a household panelist member and/or a visitor,” and that “***presentation session data***” can be “data related to media presented while the media output device 104 is on and a user is present.” VA-1001, 3:59-61, 8:11-12. Accordingly, “***presentation session data***” includes, at least, a duration a television program was consumed by a panelist. *Id.* Panelists are “audience members (e.g., household members, users, panelists, etc.) enlisted to be monitored, who divulge and/or otherwise share their media activity and/or demographic data to facilitate a market research study.” VA-1001, 3:19-23.

64. Consistent with the '250 patent, Pecjak discloses that panelists can be recruited to obtain panelist viewing data (“***presentation session data***”) obtained from a monitoring device that is indicative of person-level viewing activity for the individual panelists. VA-1005, ¶¶[0002], [0013], [0025]-[0027], [0076], [0078]-[0082], FIGS. 1, 4-5; *see above*, [1.4]. Additionally, like the '250 patent, Pecjak describes that demographic information is acquired from panelists. VA-1005, ¶¶[0022], [0024], [0079], FIG. 4. Thus, in some cases, ***presentation session data***

may include information regarding the viewers or panelists (e.g., a demographic or identifier). *Id.* A household that includes a set-top box and has one or more panelists corresponds to “*a first subset of the media presentation environments*”. VA-1005, ¶¶[0022], [0024]; *see above*, [1.4]. As discussed below, Pecjak uses panelist viewing data to project person-level minutes values for television programs in households with panelists (“*presentation session data is available for a first subset of the media presentation environments*”). VA-1005, ¶¶[0076]-[0092], FIGS. 3-4, 6-7; *see below* [1.11].

65. For example, Pecjak’s FIG. 4 depicts a table 404 that is a “roster of panelists” including a number of different households (“Household ID 1” and “2”) (“*a first subset of the media presentation environments*”). VA-1005, ¶[0076], FIG. 4. Additionally, FIG. 4 depicts a table 406 of “panelist viewing events” that summarize the person-level viewing data associated with each of the panelists (e.g., panelist 1 watched “SNL” on “ABC” from 8:03 PM to 9:03 PM – a total of 60 minutes) (“*presentation session data*”). VA-1005, ¶[0078], FIG. 4. As discussed below, this panelist viewing data is used to project viewing data for the tuning events listed in table 402.

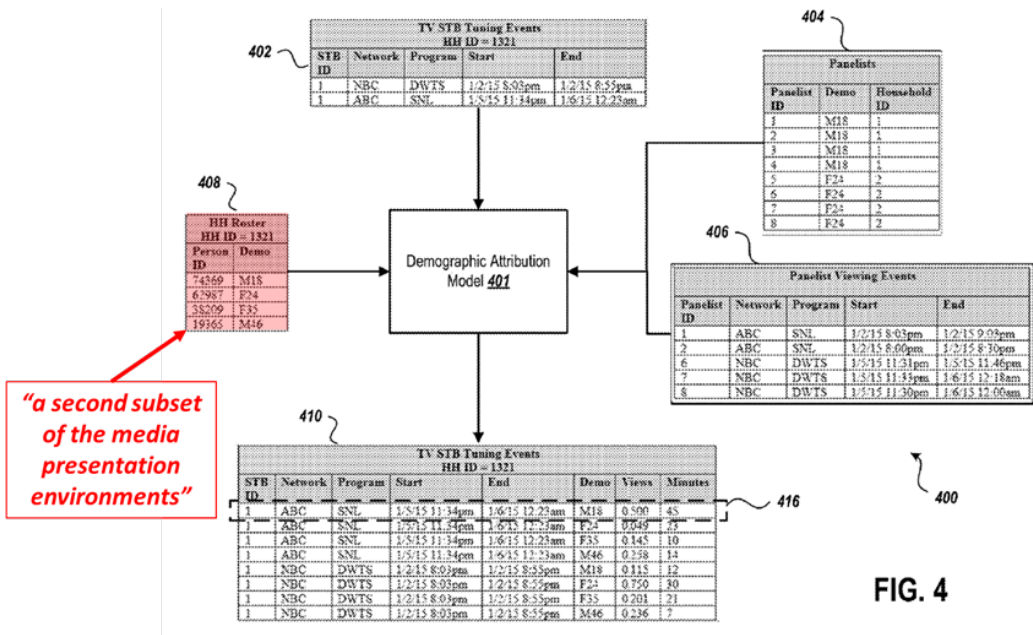


VA-1005, FIG. 4.

[1.9] and wherein presentation session data is not available for a second subset of the media presentation environments;

66. Pecjak teaches that “[v]iewing within particular demographic groups may also be projected for households where individual member information is not known based on the observed and projected person-level data.” VA-1005, ¶[0019]. Thus, Pecjak discloses households in which individual member information is available, such as panelists in the “*first subset of the media presentation environments*” as explained above in [1.8], and households for which individual member information is not available, e.g., non-panelist households, and projection

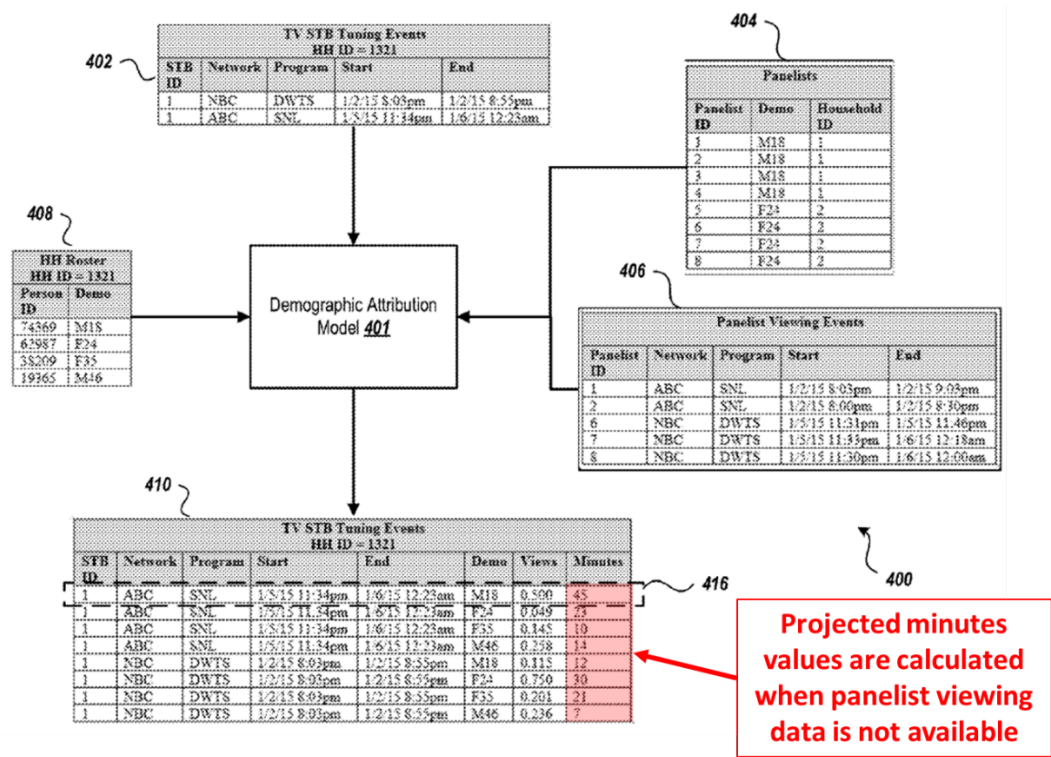
is performed (“*a second subset of the media presentation environments*”). VA-1005, ¶¶[0019], [0025], [0028]. Because panelist viewing data (“*presentation session data*”) is not available for non-panelist households, it would have been obvious to a POSITA that Pecjak teaches or suggests “*presentation session data is not available for a second subset of the media presentation environments*”). *Id.* Pecjak’s FIG. 4 below illustrates a non-panelist household as table 408. VA-1005, FIG. 4.



VA-1005, FIG. 4.

67. For example, table 402 in Pecjak’s FIG. 4 (reproduced below) includes tuning events for a household (described in table 408) that does not have a panelist (“*a second subset of the media presentation environments*”). VA-1004, ¶¶[0076]-[0080], FIG. 4. Per-person “minute values” are projected for each tuning event and

for each of the viewers in this household, described in more detail below. *Id.*; see below, [1.12]. These projected minutes values are calculated, at least in part, because panelist viewing data is not available for the household (“*presentation session data is not available for a second subset of the media presentation environments*”). *Id.*



VA-1005, FIG. 4.

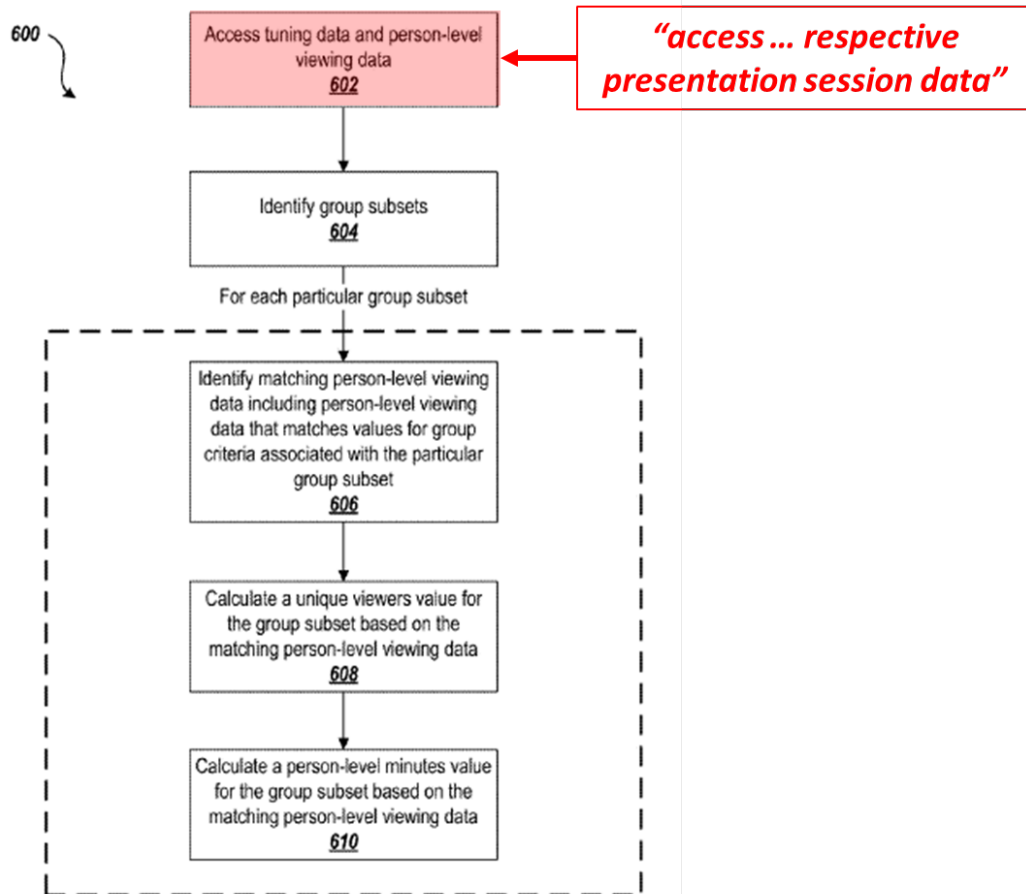
[1.10] access, for ones of the first subset of the media presentation environments, respective presentation session data indicative of a presentation session duration during which media corresponding to a respective tuning session was presented on the respective at least one media out-put device by the media presentation device within a respective tuning session duration;

68. Pecjak teaches that “panelist viewing data” from a panelist household (“presentation session data” from “the first subset of the media presentation

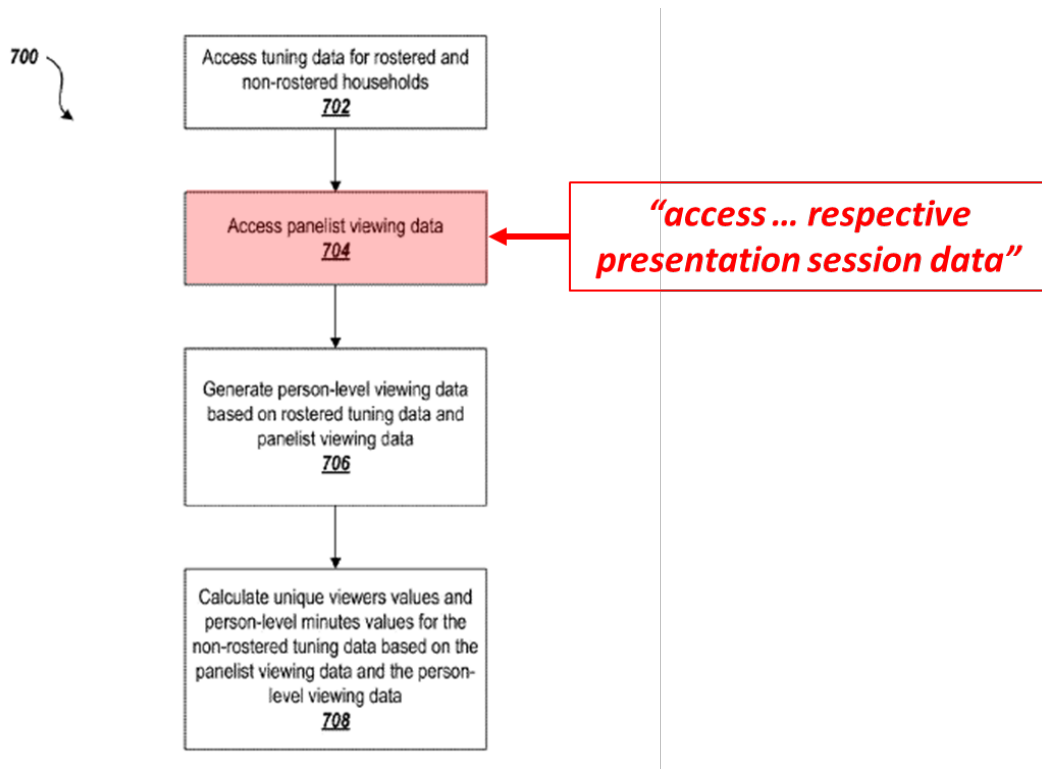
environments”) includes a panelist minutes value that represents “a number of minutes the particular panelist member was exposed to the particular television program” (“*data indicative of a presentation session duration*”), and is “access[ed]” by the measurement data processor (“*access, for ones of the first subset of the media presentation environments, respective presentation session data indicative of a presentation session duration*”). VA-1005, ¶¶[0002], [0013], [0084], [0096], FIGS. 6-7 (reproduced below). FIG. 6 and 7 below illustrate that Pecjak’s techniques include the measurement data processor accessing viewing data from panelists. VA-1005, FIGS. 6-7.

69. As discussed above in [1.8] and [1.9], panelist viewing data includes “person-level viewing activity for the individual panelists,” for example, “a television viewing event” that played for a period of time (“*media corresponding to a respective tuning session*” and “*a respective tuning session duration*”) where “a particular panelist 130 [watched the] television program for a period of time” (“*a presentation session duration during which media corresponding to a respective tuning session was presented*”). VA-1005, ¶¶[0025]-[0027]; *see above*, [1.8]-[1.9]. Additionally, as discussed above in [1.3] and [1.5], television programs are presented using a set top box and corresponding television (“*media corresponding to a respective tuning session was presented on the respective at least one media output device by the media presentation device*”). VA-1005, ¶¶[0020]-[0023],

[0039]-[0040], [0076]-[0077], FIG. 1; *see above*, [1.3], [1.5].



VA-1005, FIG. 6.



VA-1005, FIG. 7.

70. Pecjak's FIG. 4 illustrates an example where panelist viewing data (shown as table 406) is accessed for two programs ("SNL" and "DWTS") that correspond to tuning sessions obtained from a non-panelist household (shown as tables 402 and 408). VA-1005, ¶¶[0076]-[0080], FIG. 4.

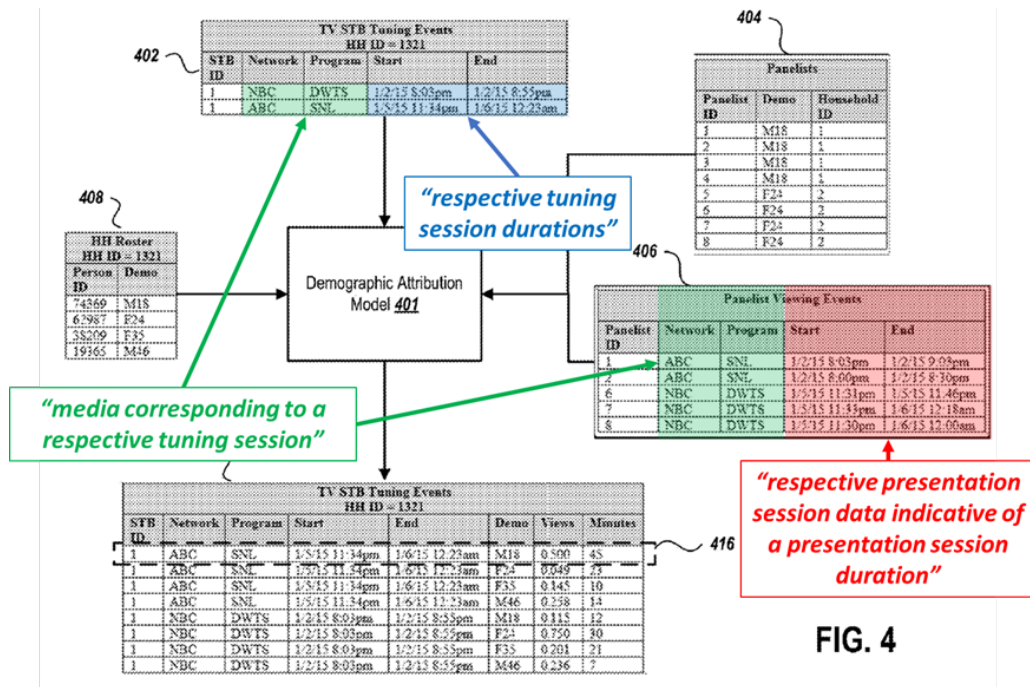


FIG. 4

VA-1005, FIG. 4.

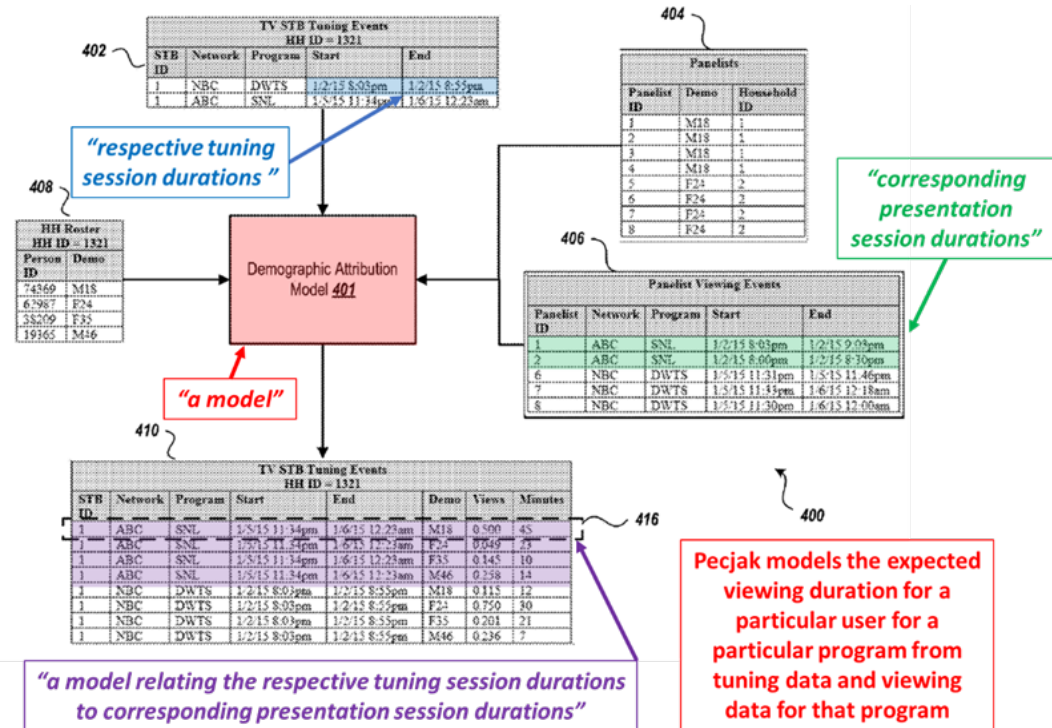
[1.11] generate a model relating the respective tuning session durations to corresponding presentation session durations from ones of the first subset of the media presentation environments;

71. Pecjak teaches that a “demographic attribution model” (“*a model*”) is generated using tuning data and durations (e.g., “a television viewing event occurred on January 2 associated with the show ‘DWTS’” that ran from 8:03 PM to 8:55 PM) (“*respective tuning session durations*”) and viewing data and durations from panelist households (e.g., “Panelist ID 1 watched ‘SNL’ from 8:03 PM until 9:03 PM (60 minutes)”) (“*corresponding presentation session durations from ones of the first subset of the media presentation environments*”) to project “person-level viewership” for the household, including “person-level minutes values” (an expected

per-person viewing duration for a non-rostered household) and “member minutes values” (an expected per-person viewing duration for a rostered household). VA-1005, ¶¶[0076]-[0078], [0097]-[0098], FIG. 4 (reproduced below). This operation is performed by the measurement data processor 204, which generates person-level viewing data for tuning events based on “first person level viewing data” (e.g., “Panelist ID 1 watched ‘SNL’ from 8:03 PM until 9:03 PM (60 minutes)” (*“corresponding presentation session durations from ones of the first subset of the media presentation environments”*)) and “rostered tuning data” (e.g., “a television viewing event occurred on January 2 associated with the show ‘DWTS’” that ran from 8:03 PM to 8:55 PM) (*“respective tuning session durations”*). VA-1005, ¶¶[0076]-[0078], [0097]-[0098], FIGS. 4, 7.

72. A POSITA would have recognized and found obvious that the demographic attribution model would have “*relat[ed]*” the tuning data and durations (*“respective tuning session durations”*) to viewing data and durations (*“corresponding presentation session durations from ones of the first subset of the media presentation environments”*) as the projected viewing data is generated for a particular tuning event among a plurality of such events. VA-1005, ¶¶[0076]-[0080], FIG. 4. For example, in FIG. 4 (reproduced below), Pecjak illustrates two separate programs (“SNL” and “DWTS”) in table 402. *Id.* To determine a projected value for the SNL program, the demographic attribution model distinguishes

viewing data that corresponds to the SNL tuning event (e.g., “panelist IDs 1 and 2 only,” thus, “*relating*” the viewing data from these panelists to the corresponding tuning event, and vice versa). *Id.*



VA-1005, FIG. 4⁴.

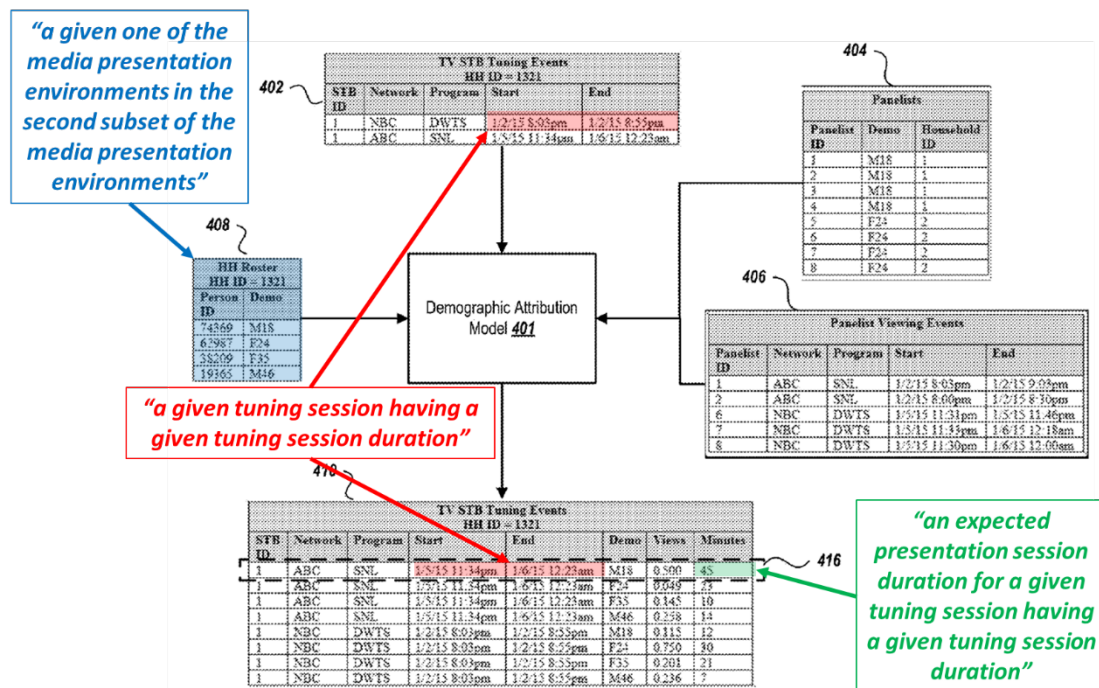
[1.12] based on the model, determine, for a given one of the media presentation environments in the second subset of the media presentation environments, an expected presentation session duration for a given tuning session having a given tuning session duration; and

⁴ Pecjak inadvertently swaps the listed program data in table 406 from what is listed in tables 402 and 410. VA-1005, FIG. 4. The program dates and times from tables 402 and 410 should be referenced with respect to FIG. 4. *Id.*

73. Pecjak teaches that the demographic attribution model and measurement data processor are used to project person-level viewership (“***based on the model, determine ... an expected presentation session duration***”) for households that do not have panelists (“... ***for a given one of the media presentation environments in the second subset of the media presentation environments***”). VA-1005, ¶¶[0076]-[0080], [0097]-[0098], FIGS. 4, 6-7. The projected person-level viewership for a household that does not have a panelist includes person-level minutes values (an expected per-person viewing duration for a non-rostered household) and member minutes values (an expected per-person viewing duration for a rostered household). Thus, Pecjak teaches “***determining ... an expected presentation session duration for a given tuning session having a given tuning session duration.***” VA-1005, ¶¶[0076]-[0078], [0097]-[0098], FIG. 4.

74. For example, Pecjak discloses an example where a minutes value is projected for an “SNL” program, which ran from 11:34 PM to 12:23 AM for a duration of 49 minutes (“***a given tuning session having a given tuning session duration***”), and an 18-year old male in a household that is not a panelist (“***a given one of the media presentation environments in the second subset of the media presentation environments***”). VA-1005, ¶[0080], FIG. 4. Using the panelist viewing data that corresponds to the 18-year-old male demographic, it is determined

that panelist viewing events for “panelist IDs 1 and 2” correspond to that specific episode of SNL, where panelist ID 1 watched the program for “60 minutes” and panelist ID 2 watched for “30 minutes.” *Id.* Averaging these values yields “an average of 45 minutes,” which is the projected number of minutes the non-panelist 18-year-old male would have been expected to view the program (“*determine, for a given one of the media presentation environments in the second subset of the media presentation environments, an expected presentation session duration*”).
Id.



VA-1005, FIG. 4.

[1.13] output the expected presentation session duration for the given tuning session from the given one of the media presentation environments.

75. Pecjak teaches that the results of its model are provided in “reports” (an

“**output**”), and that the results of its techniques can be provided as an “output” generated by “one or more programmable processors executing a computer program” (e.g., the operations of the “measurement data processor”). VA-1005, ¶¶[0013], [0028]-[0030], [0097]-[0098], FIG. 2. As discussed above, the measurement data processor “generates person-level viewing data for tuning events represented by the rostered tuning data” and “calculates unique viewers values and person-level minutes values for the non-rostered tuning data” (“***the expected presentation session duration for the given tuning session from the given one of the media presentation environments***”). VA-1005, ¶¶[0097]-[0098]; FIG. 7; *see above*, [1.12].

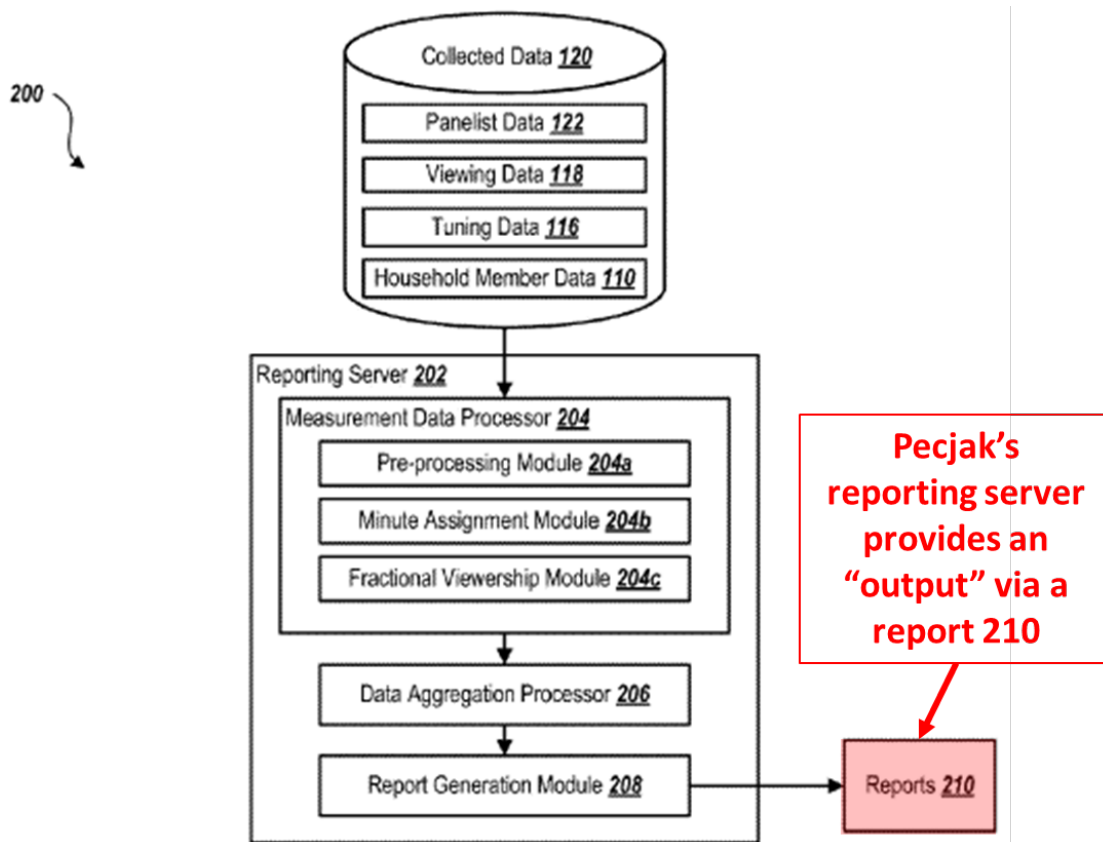


FIG. 2

VA-1005, FIG. 2.

76. A POSITA also would have recognized and found obvious that the projections of Pecjak's demographic attribution model (*"the expected presentation session duration"*) would have been presented as an *"output"* as this information is reviewed by advertisers and content providers to make advertising and programming decisions. VA-1005, ¶¶[0001], [0013], [0019], [0055]; VA-1006, 1:16-40. For example, Pecjak discloses that "[e]stimates of television (TV) viewership may be used by content providers, advertisers, and others to estimate the number of people that viewed a particular television program, advertisement, sporting event, or other

content item,” and these estimations would have been based on the projections performed by Pecjak’s techniques. VA-1005, ¶[0013].

[2.1] The computing system of claim 1, wherein the processor circuitry is to: access, from the first subset of the media presentation environments, additional tuning session data and additional media presentation data indicative of additional tuning session durations and additional media presentation session durations, respectively; and

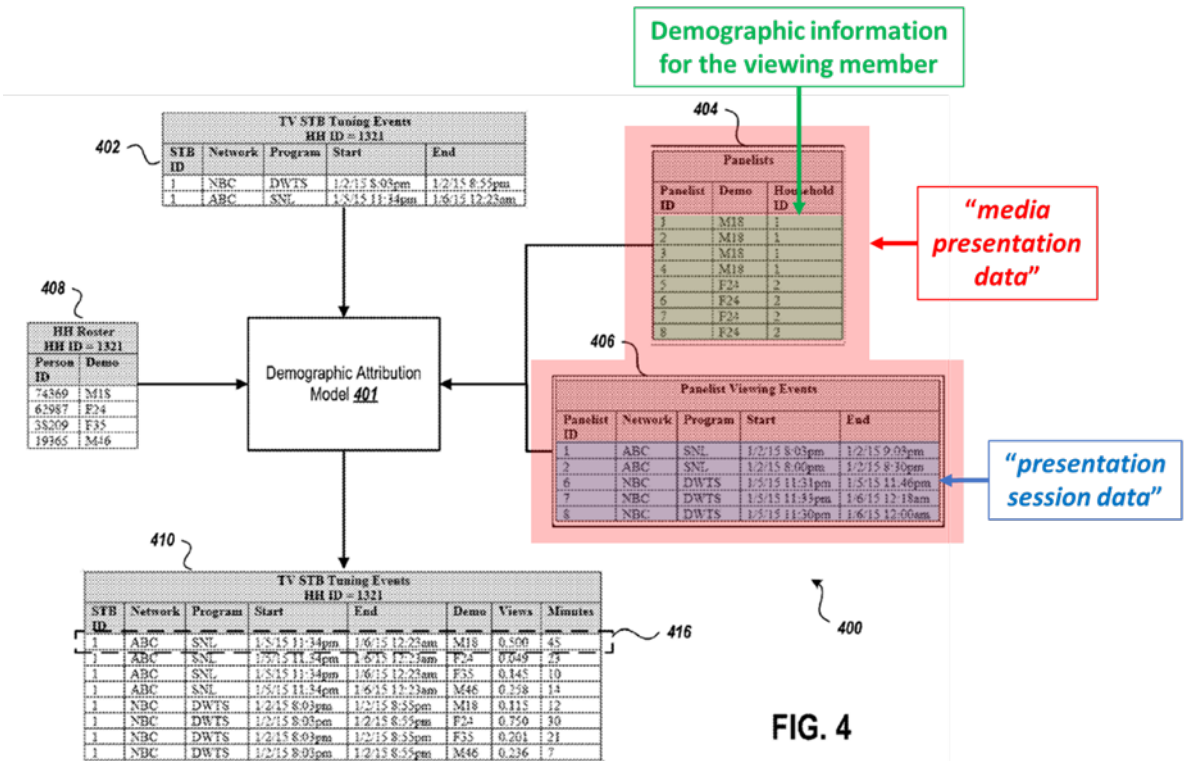
77. To the extent the term “***additional media presentation data***” is accorded any patentable weight⁵, Pecjak and Mirisola render [2.1] obvious.

78. As a preliminary matter and as explained above in [1.3], Pecjak discloses accessing “***tuning session data***” such as “a particular television program watched during each viewing event, and a household minutes value representing a number of minutes the particular household watched the particular television program during each viewing event.” VA-1005, ¶[0084]. This data, which includes “***tuning session duration***” data (e.g., household minutes value), is obtained from “***the first subset of the media presentation environments***,” as explained in [1.8] and [1.10]. When such data is collected for multiple programs or additional households, it would have been obvious that Pecjak also teaches accessing “***additional tuning session data ... indicative of additional tuning session durations***.”

⁵ “Media presentation data” is not recited in claim 1 but claim 2 recites “additional media presentation data.”

79. Moreover, Pecjak discloses that panelist viewing data (“presentation session data” discussed above in [1.8]) and demographic information are associated with panelists (together, “***media presentation data***”)⁶. VA-1005, ¶¶[0022], [0024], [0037], [0040], [0079], FIG. 4. For example, Pecjak’s FIG. 4 depicts a panelist roster (see table 408). VA-1005, ¶[0077]. Each of the panelists is attributed to a demographic (e.g., “M18” for a 18-year-old male). VA-1005, ¶¶[0078]-[0080], FIG. 4. These panelists are also given an “ID” which corresponds to particular viewing data (e.g., panelist ID 1, an 18-year-old male, watched SNL on ABC from 8:03 PM to 9:03 PM). *Id.* Accordingly, both viewing data and demographic information is available for panelists (“***media presentation data***”). *Id.* Additionally, because the panelist viewing data includes a duration (e.g., SNL on ABC from 8:03 PM to 9:03 PM, 60 minutes), this “***media presentation data***” is “***indicative of ... media presentation session durations.***” *Id.*

⁶ The ’250 patent explains that “media presentation data” can include data indicating, e.g., “which household member is currently consuming a particular media and the demographics of that household member.” VA-1001, 3:15-18, 5:43-45.



VA-1005, FIG. 4.

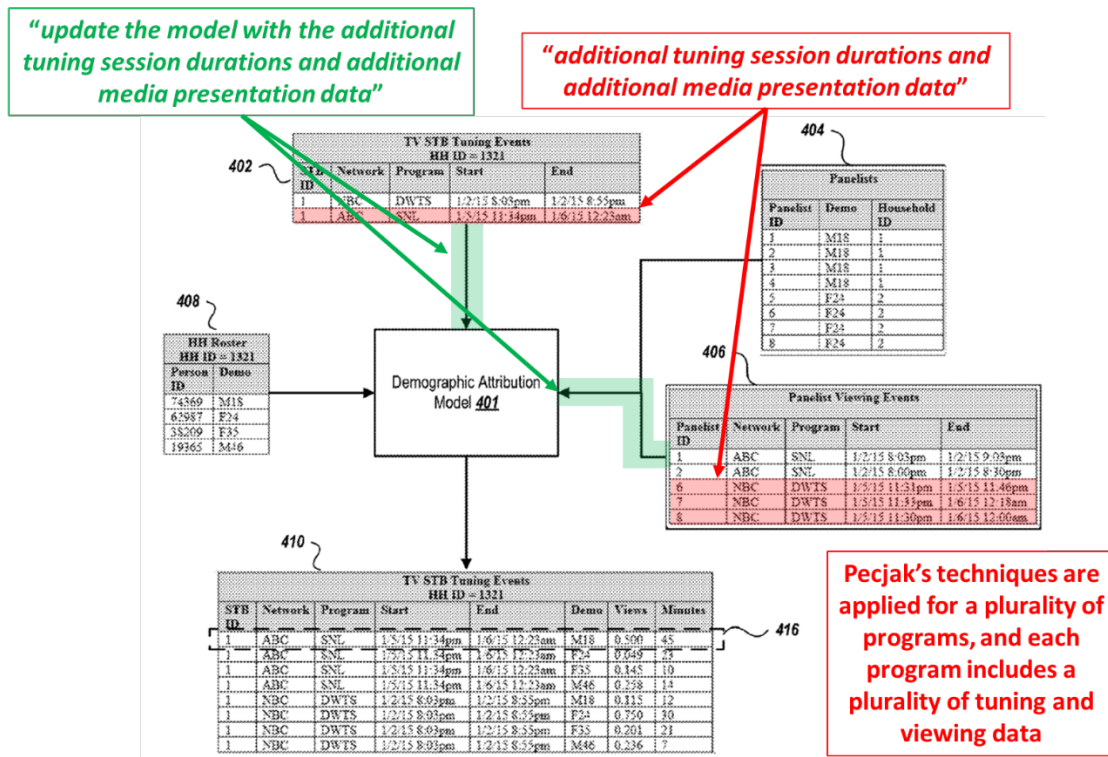
80. Pecjak also discloses that multiple instances of “*media presentation data*” are accessed when projecting minutes values (e.g., “Panelist ID 1 watched ‘SNL’ from 8:03 PM until 9:03 PM (60 minutes). Panelist ID 2 watched ‘SNL’ from 8:00 PM until 8:30 PM (30 minutes)”—“*media presentation data*”). VA-1005, ¶¶[0078]-[0080], FIG. 4.

81. Additionally, as discussed above in [1.10], Pecjak’s measurement data processor (“*the processor circuitry*”) accesses tuning session data and panelist viewing data, and thus would have “*access[ed] ... additional tuning session data and additional media presentation data*” in the same way. VA-1005, ¶¶[0002],

[0013], [0084], [0096], FIGS. 6-7; *see above*, [1.10].

[2.2] update the model with the additional tuning session durations and additional media presentation data.

82. As explained above in [1.11], Pecjak teaches generating a model 401 that relates “*the respective tuning session durations to corresponding presentation session durations.*” *See above*, [1.11]. To ensure that the model has the latest data to project person-level viewing events, it would have been obvious to a POSITA that as additional tuning session data is collected, such data would have been stored at additional tuning events data, e.g., in table 402. VA-1005, ¶[0078], FIG. 4. It would also have been obvious that the reporting server 202 (“*processing circuitry*”) in the Pecjak-Mirisola system would have *updated* the model with “*additional tuning session data*” for additional programs or additional households with panelists (“*the first subset of the media presentation environments*”). For example, as shown in Pecjak’s FIG. 4 below, additional tuning session data from table 402 would have continued to be provided to the model 401.



VA-1005, FIG. 4.

83. FIG. 4 also illustrates that model 401 is *updated* with “*additional media presentation data.*” For instance, as explained above, panelist viewing event and panelist roster information including demographic information (“*additional media presentation data*”) stored in tables 406 and 408 is provided to model 401. VA-1005, ¶¶[0077]-[0079], FIG. 4. It would have been obvious to a POSITA that as additional program and household information is collected, the model would have been updated with the “*additional media presentation data*” so that the latest data to project person-level viewing events is used.

84. A POSITA would have recognized and found obvious from Pecjak and

Mirisola's general disclosure that the generated model would have been updated continuously with subsequently generated data ("*update the model with the additional tuning session durations and additional media presentation data*"), at least because these systems make their predictions across a wide range of consumers and are continuously accessing tuning and panelist data for a plurality of programs to keep the model and projected results up-to-date. For example, Pecjak (1) assigns a four-digit identifier for each of its households, (2) assigns an identifier to each of the STBs within each household, and (3) assigns identifiers to each of its panelists, thus indicating that its techniques are to be used on a large scale. VA-1005, FIGS. 1, 4-5. Further, Pecjak's discussion of group subsets indicate that its techniques are applied over large geographic areas, for example, "Texas." VA-1005, ¶¶[0085]-[0092]. With access to such a large swath of data, a POSITA would have naturally been motivated to continually update the demographic attribution model as new data became available. VA-1005, ¶¶[0085]-[0092], FIGS. 1, 4-5; VA-1006, 1:16-40, 5:33-67 (describing a "content distribution environment" including "108-n" STBs).

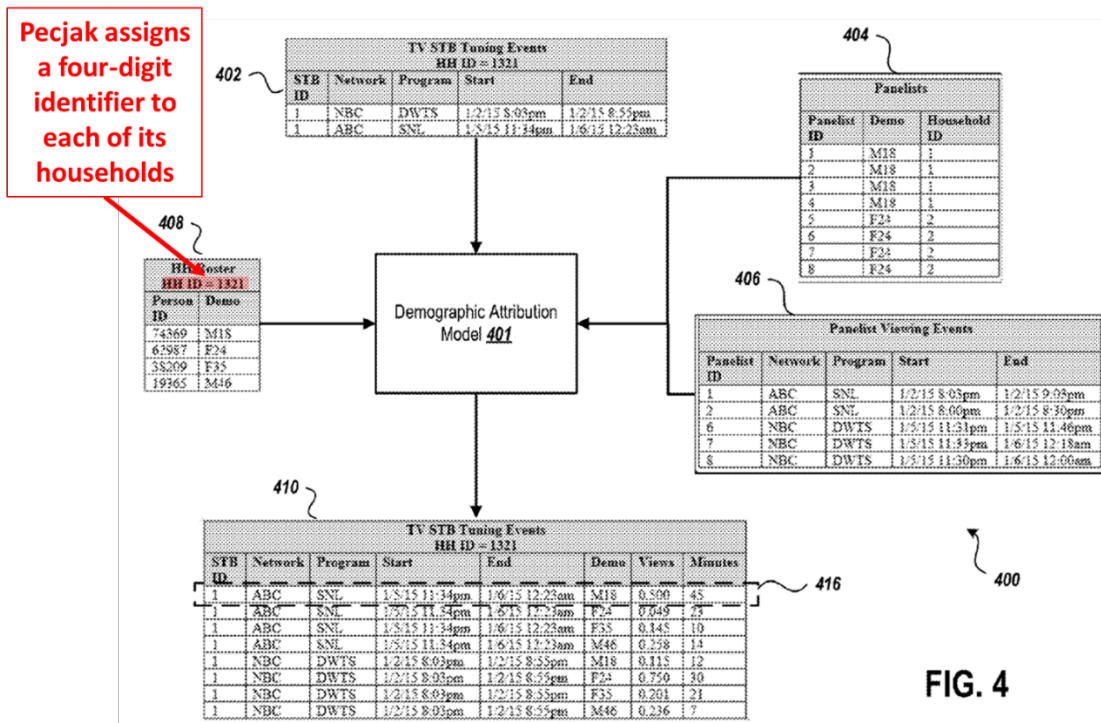


FIG. 4

VA-1005, FIG. 4.

[3.1] The computing system of claim 2, wherein the processor circuitry is to: subsequent to determining the expected the presentation session duration, based on the model, for the given tuning session having the given tuning session duration, determine, for another given one of the media presentation environments in the second subset of the media presentation environments, another expected presentation session duration for another given tuning session having another given tuning session duration based on the updated model; and

85. Claim 3 recites limitations similar to [1.12] and [1.13] and further specifies that the features of claim 3 are performed “*subsequent to determining the expected the presentation session duration ... for the given tuning session having the given tuning session duration.*” As explained below and for reasons similar to those noted above in [1.12], [1.13], and [2], Pecjak and Mirisola render claim 3

obvious.

86. In particular, as noted in [1.9], Pecjak's system includes households for which individual member information is not known, e.g., non-panelist households, and projection is performed. A household amongst this subset of households for which an earlier projection was not made in [1.12] and [1.13] corresponds to *“another given one of the media presentation environments in the second subset of the media presentation environments.”*

87. It would have been obvious to a POSITA that after generating a model, outputting the expected presentation session duration, accessing additional tuning session data and additional media presentation data, the model in Pecjak-Mirisola system would have been updated with additional tuning session data and additional media presentation data (as explained above in [1.12], [1.13], [2.1], and [2.2]).

88. A POSITA would have also recognized and found obvious that the updated model discussed above in [2.1]-[2.2] would have been used to determine *“another expected presentation session duration for another given tuning session having another given tuning session duration”* so that the latest information is used to provide projections for any household for which a projection was not previously made. VA-1005, ¶¶[0020], [0037], [0055]-[0056]; *see above*, [2.1]-[2.2]. Pecjak's techniques were designed to model person-level viewership (*“another expected presentation session duration for another given tuning session having another*

given tuning session duration”) across many households, and in order to do so, Pecjak’s demographic attribution model would have been continually applied to various households for various programs (“*determine, for another given one of the media presentation environments in the second subset of the media presentation environments ... based on the updated model*”). VA-1016, ¶[0008] (describing the benefits of larger sample sizes). For example, Pecjak in FIG. 4 depicts one example household with various members – only one of many possibly demographics across many households. VA-1004, ¶¶[0057], [0067], [0077]-[0080], FIG. 4. Indeed, Pecjak discloses that “viewership reports” are generated for “various demographic groups” and different “demographic categories” (“*another given one of the media presentation environments in the second subset of the media presentation environments*”). VA-1005, ¶¶[0057], [0067]. Further, because Pecjak’s “unique viewers values” represent the “estimated number of individual members in the particular demographic group ... that watched the particular television program,” a POSITA would have recognized and found obvious that Pecjak’s techniques would have been applied across many households (including “*another given one of the media presentation environments in the second subset of the media presentation environments*”). VA-1005, ¶¶[0088], [0098]; VA-1016, ¶[0008].

89. Additionally, as discussed above, the measurement data processor “generates person-level viewing data for tuning events represented by the rostered

tuning data” and “calculates unique viewers values and person-level minutes values for the non-rostered tuning data” (“*the processor circuitry is to ...*”). VA-1005, ¶¶[0097]-[0098]; FIG. 7; *see above*, [1.12], [3.1].

[3.2] output the other expected presentation session duration for the other given tuning session from the other given one of the media presentation environments.

90. As discussed above in [1.13] and [3.1], Pecjak describes that the results of its model are provided in “reports” (an “*output*”), and that the results of the method steps of its techniques can be provided as an “output” generated by “one or more programmable processors executing a computer program” (e.g., the operations of the “measurement data processor”). VA-1005, ¶¶[0013], [0030], [0057], [0067], [0097]-[0098], FIG. 2; *see above*, [1.13], [3.1]. Also, as discussed above, the measurement data processor “generates person-level viewing data for tuning events represented by the rostered tuning data” and “calculates unique viewers values and person-level minutes values for the non-rostered tuning data,” to include the “*other given*” households (“*the other expected presentation session duration for the other given tuning session from the other given one of the media presentation environments*”). VA-1005, ¶¶[0097]-[0098]; FIG. 7; *see above*, [1.12], [3.1].

91. A POSITA would have recognized and found obvious from Pecjak and Mirisola’s general disclosure that the generated model would have made subsequent predictions for other households (“*output the other expected presentation session*

duration for the other given tuning session from the other given one of the media presentation environments”), at least because these systems make their predictions across a wide range of consumers and are continuously accessing tuning and panelist data for a plurality of programs. For example, Pecjak (1) assigns a four-digit identifier for each of its households, (2) assigns an identifier to each of the STBs within each household, and (3) assigns identifiers to each of its panelists, thus indicating that its techniques are to be used for multiple households on a large scale. VA-1005, FIGS. 1, 4-5. Further, Pecjak’s discussion of group subsets indicate that its techniques are applied over large geographic areas, for example, “Texas.” VA-1005, ¶¶[0085]-[0092]. With access to such a large swath of data, a POSITA would have naturally been motivated to continually make viewership predictions across various households. VA-1005, ¶¶[0085]-[0092], FIGS. 1, 4-5; VA-1006, 1:16-40, 5:33-67 (describing a “content distribution environment” including “108-n” STBs).

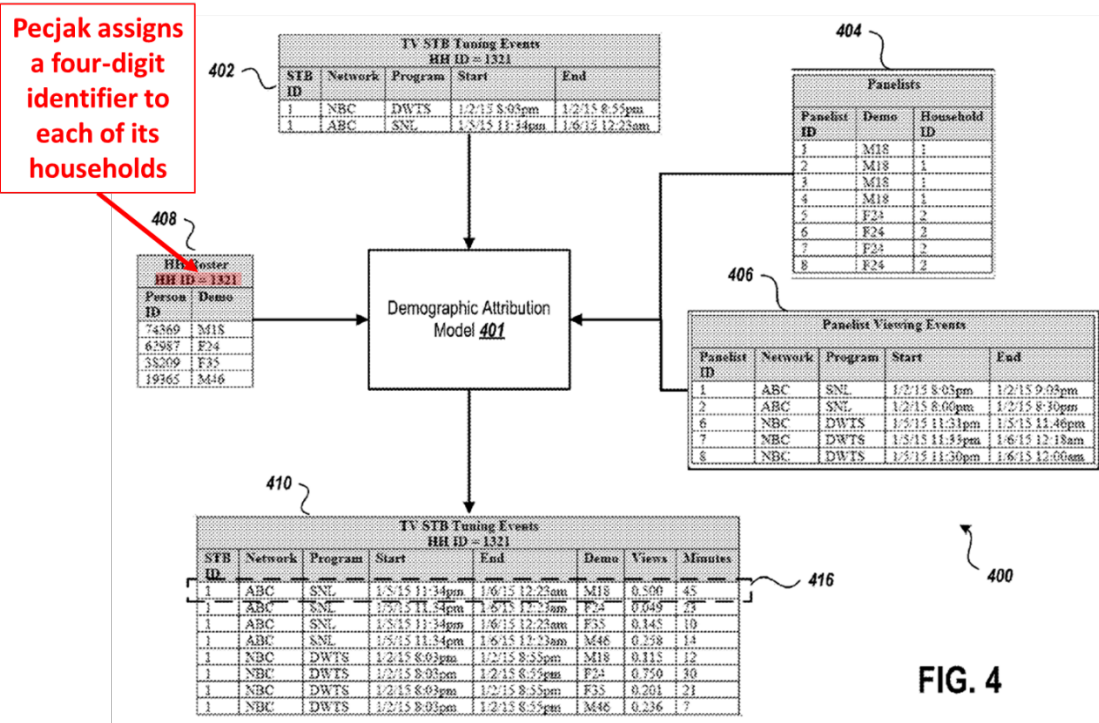


FIG. 4

VA-1005, FIG. 4.

92. As discussed above in [1.13], a POSITA also would have recognized and found obvious that the projections of Pecjak’s demographic attribution model (“*the expected presentation session duration*”) would have been provided as an “*output*” as this information is reviewed by advertisers and content providers to make advertising and programming decisions. VA-1005, ¶¶[0001], [0013], [0019], [0055]; VA-1006, 1:16-40; *see above*, [1.13]. For example, Pecjak discloses that “[e]stimates of television (TV) viewership may be used by content providers, advertisers, and others to estimate the number of people that viewed a particular television program, advertisement, sporting event, or other content item,” and these estimations would have been based on the projections performed by Pecjak’s

techniques. VA-1005, ¶[0013].

[4] The computing system of claim 1, wherein the processor circuitry is to determine the expected presentation session duration for the given tuning session based on the model by determining the expected presentation session duration based on multiple ones of the tuning session durations and corresponding ones of the presentation session durations of the ones of the first subset of the media presentation environments, the multiple ones of the tuning session durations being within a threshold extent of similarity of the given tuning session duration.

93. Mirisola discloses that tuning data, in the form of power status information, can be filtered to remove noisy information in an effort to establish a ***“threshold extent of similarity,”*** as explained below. VA-1006, 18:32-51, 23:43-48, FIG. 6A. For example, Mirisola discloses that “intervals of less than 3 minutes in duration may be filtered out and disregarded as noisy” and that intervals can also be filtered out “if any of the intervals for the particular STB is longer than 16 hours.” VA-1006, 18:32-51. In the combination, Mirisola’s filters would have been applied to Pecjak’s ***“tuning session durations,”*** for example, to remove short tuning sessions indicative of noisy data, and unacceptably long tuning sessions indicative of a lack of interaction. VA-1006, 18:32-51, 23:43-48, FIG. 6A; VA-1005, ¶[0018]. In so doing, the remaining tuning session durations that satisfy the filters have ***“a threshold extent of similarity of the given tuning session duration”*** as these durations have been confirmed to be neither too short, nor too long and within a particular duration, when compared to the ***“given tuning session.”*** VA-1006, 18:32-51, 23:43-48, FIG.

6A. A POSITA would have been motivated to apply Mirisola's filters to Pecjak's tuning data because, as Mirisola explains, these filters remove "noisy" and "unreliable" information, thus increasing the accuracy of the model. VA-1006, 18:32-51. This is consistent with Pecjak's disclosure that "[a]dditional techniques to improve accuracy of the projections" can be performed. VA-1005, ¶[0018].

94. As discussed above in [1.4], panelist households (*"the first subset of the media presentation environments"*) include set top boxes, which report tuning session data and durations (*"tuning session durations"*). VA-1005, ¶¶[0020], [0022], FIG. 1; *see above*, [1.4]. Additionally, Pecjak discloses that multiple instances of panelist viewing data related to the tuning session (*"multiple ... corresponding ones of the presentation session durations"*) are used to project *"the expected presentation session duration"* (e.g., "panelist IDs 1 and 2" for an episode of "SNL"). VA-1005, ¶¶[0076]-[0080], FIG. 4. A POSITA also would have recognized and found obvious that *"multiple ones of the tuning session durations"* would have additionally been accessed from the panelist households, along with the panelist viewing data, as Pecjak discloses that panelist households include a set top box, which reports such tuning session data. VA-1005, ¶¶[0020], [0022], FIG. 1; *see above*, [1.4].

95. Additionally, as discussed above in [1.12], Pecjak's demographic attribution model and measurement data processor (*"the processor circuitry"*)

project tuning session durations based on panelist viewing data, and thus would have *“determin[ed] the expected presentation session duration based on multiple ones of the tuning session durations and corresponding ones of the presentation session durations”* in the same way. VA-1005, ¶¶[0076]-[0080], [0097]-[0098], FIGS. 4, 6-7; *see above*, [1.12].

96. Requiring gathered tuning session durations to satisfy *“a threshold extent of similarity”* in order to be used for viewership modeling was known in the art before the Benefit Date, and would have been part of a POSITA’s general knowledge. VA-1018, 24. For example, the Media Rating Council (MRC) published guidelines before the Benefit Date for the collection and reporting of tuning data that included setting minimum and maximum values for acceptable instances of tuning session data (thus ensuring tuning session data has *“a threshold extent of similarity”* of falling within acceptable minimum and maximum duration values (both *“thresholds”*)). VA-1018, 24.

[5] The computing system of claim 4, wherein the threshold extent of similarity is a threshold of time similarity in which each of the tuning session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments are within a time threshold of the given tuning session duration.

97. As discussed above in [4], Mirisola’s filters are based on time (e.g., intervals of less than 3 minutes in duration”), and thus the threshold used to filter tuning data is *“a threshold of time similarity in which each of the tuning session*

durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments.” VA-1006, 18:32-19:10, 23:43-48, FIGS. 6A, 8; *see above*, [4]. Because each of the tuning sessions used to project the “*given tuning session duration*” passes through these filters, “*each of the tuning session durations*” used in the projection is “*within a time threshold of the given tuning session duration*” (e.g., a tuning session with a significantly different duration than the given tuning session (e.g., “3 minutes” or “16 hours”) would have been filtered out). *Id.*

[6] The computing system of claim 5, wherein the expected presentation session duration for the given presentation session is a weighted average of the presentation session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments.

98. Pecjak discloses that, for non-rostered households where exact demographics are unknown, person-level minutes values (“*the expected presentation session duration for the given presentation session*”) can be calculated for a particular group subset (e.g., a geographical area such as Texas or New York) and demographic (e.g., “age, gender, race, or income”) by approximation using the panelist viewing data. VA-1005, ¶¶[0085]-[0093], FIG. 6. Given that the composition of any given non-rostered household is unknown, Pecjak approximates a total “unique viewers value” for each demographic (e.g., the total number of unique viewers for the demographic in the total non-rostered households) by estimating “the

average number of persons in households represented by the viewing data” for that demographic (e.g., the average number of persons per household from the panelist data). *Id.* For example, Pecjak explains that Texas may have an average number of persons per household of 2.5, indicating a total of 25 members for 10 households, of which 12 are male and 8 are female. VA-1005, ¶[0089].

99. Using the estimated unique viewers value for the group subset, Pecjak then calculates a person-level minutes value for demographics in the group subset (e.g., matching panelist viewing data for males with the estimated number of males across all non-rostered households). VA-1005, ¶¶[0090]-[0091]. This calculation can include a “co-viewing factor” (a “*weight*”) that factors the amount of co-viewing that occurs in the group subset (e.g., Texas has a co-viewing factor of 1.5, indicating that, on average, 1.5 people watched the program per-household). VA-1005, ¶¶[0018], [0090]-[0092]. Pecjak’s co-viewing factor is determined from viewing data from panelist households (“*a weighted average of the presentation session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments*”). VA-1005, ¶[0092].

100. As an example, if tuning data from a non-rostered household indicates that “SNL” was watched for an average total time of 100 minutes for each household, the total number of minutes per-person accounting for co-viewing, or the “*weighted average of the presentation session durations*,” would be 150 minutes (100 minutes

x 1.5 co-viewing = 150 minutes; indicating that multiple people in at least some households watched the program simultaneously—“*the expected presentation session duration for the given presentation session is a weighted average*,” where the average is weighted based on the amount of co-viewing). VA-1005, ¶¶[0090]-[0092].

101. Additionally, Pecjak determines person-level minutes value for each demographic in the group subset using the estimated unique viewers value for the demographic, an additional “*weight*” (e.g., for 80% male viewership, the total number of minutes watched by any given male would be 120 minutes (150 minutes x 0.8 = 120 minutes) (“*the expected presentation session duration for the given presentation session is a weighted average*,” where the average is weighted based on a demographic). *Id.*

102. Additionally, a “*weighted average*” is a mathematical technique well within the general knowledge and skill of a POSITA and prevalent in the prior art. VA-1005, ¶[0018]; VA-1011, ¶¶[0063]-[0075]; VA-1012, 6; VA-1017, ¶[0054]. For example, Kirillov discloses using a weighted average to calculate “viewer-level reach,” where the weight adjusts the estimation for particular demographics. VA-1011, ¶¶[0063]-[0075]. Wood provides another example, where “viewer usage” (describing set top boxes tuned to a particular program) is modeled with a *weighted average*. VA-1017, ¶[0054].

[7] The computing system of claim 5, wherein the time threshold is four minutes.

103. I have been informed by counsel that a *prima facie* case of obviousness exists where the claimed ranges or amounts do not overlap with the prior art but are merely close. Here, the claims are obvious because Mirisola discloses a time threshold of three minutes, as explained above in [4]-[6], which is close to 4 minutes. VA-1006, 18:32-51; VA-1014, 6-8.

104. I have also been informed by counsel that a party can rebut the *prima facie* case of obviousness by proving that the claimed range or value possesses some criticality. In this case, the '250 patent assigns no criticality to a time threshold of four minutes, and Pecjak and Mirisola disclose the general conditions of the claimed features. *See, e.g.*, VA-1001, 11:23-33; VA-1005, ¶¶[0076]-[0080]; FIG. 4; VA-1006, 5:19-23, 6:52-7:22, FIG. 1, FIG. 2A. For example, Pecjak and Mirisola are analogous art to the '250 patent, as explained above in Section §VIII.A.1. Like the '250 patent claims, Pecjak and Mirisola describe a computer system with set top boxes, televisions, and recording of tuning data that models viewership for certain households with relevant viewership data obtained from other households). *Id.* Moreover, for the reasons described throughout this declaration, Pecjak and Mirisola render the independent claim and its dependent claims obvious, which is further evidence that the general conditions of the claims are disclosed.

105. The '250 patent provides one example of a threshold range being 4 minutes, a second example of the threshold range being 5 minutes, and also explains that “the minimum threshold range may be set and/or adjusted by a user and/or an administrator.” VA-1001, 11:23-33, 16:11-41. Thus, in contrast to describing the claimed range as being critical, the '250 patent describes the claimed range as merely being a product of routine experimentation well within the capabilities of a POSITA. For at least these reasons, [7] is obvious in view of Pecjak and Mirisola.

[8] The computing system of claim 4, wherein the expected presentation session duration for the given presentation session is a conditional probability of the presentation session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments, indicated by the model.

106. Pecjak discloses that each projected level viewing event (“***the expected presentation session duration for the given presentation session***”) can include a “fractional viewership value” (“***a conditional probability***”) that represents the probability for a condition that a particular viewer watched the program. VA-1005, ¶[0079], FIG. 4. For example, for 4 panelists of same demographic (e.g., “18-year old male”), if only 2 of those panelists watched the program, the fractional viewership value would be 50% (“***a conditional probability of the presentation session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments, indicated by the model***”). VA-1005, ¶[0079], FIG. 4. Pecjak’s FIG. 4 illustrates example fractional

viewership values that have been calculated for an example rostered household. *Id.*

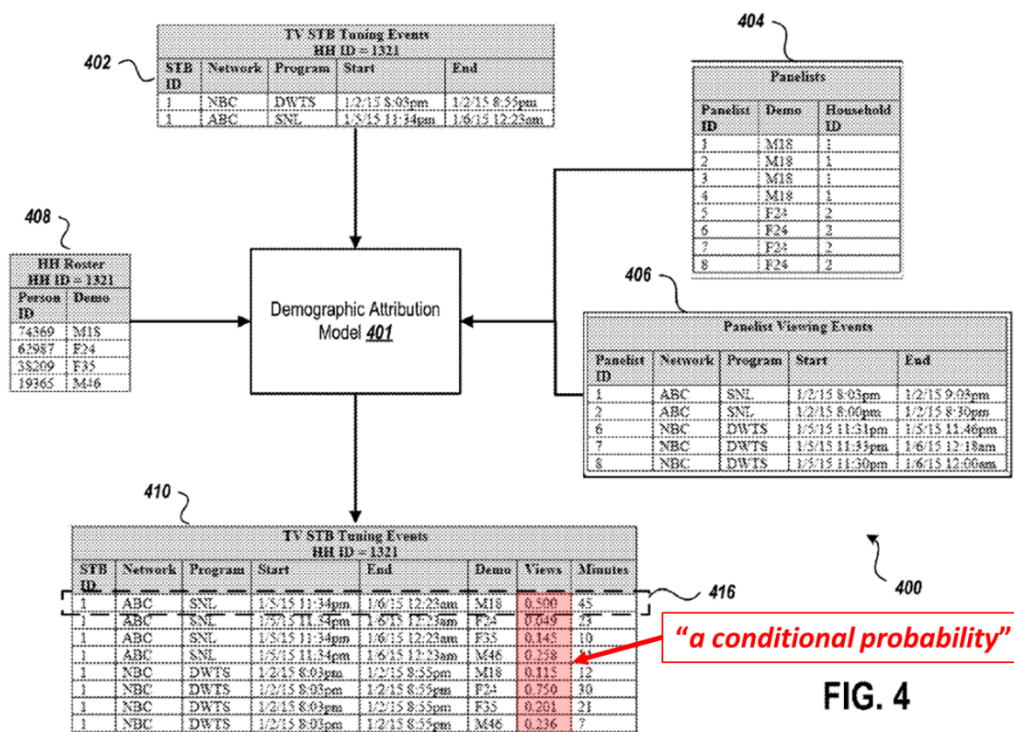


FIG. 4

VA-1005, FIG. 4.

[11.pre] A non-transitory computer-readable medium comprising instructions to cause processor circuitry to at least:

107. Pecjak discloses that its techniques are embodied as a “computer program product” or “instructions” (“*instructions to cause processor circuitry to ...*”) stored in a “machine-readable storage medium” (“*non-transitory computer-readable medium*”). VA-1005, ¶¶[0005], [0029]-[0030], [0100], FIG. 2. As explained above in [1.pre]-[1.2], Pecjak further discloses that its instructions are executed by a “data processing apparatus” or “one or more processors” as part of “digital electronic circuitry” (“*processor circuitry*”) e.g., in the reporting server

202. VA-1005, ¶¶[0005], [0029]-[0030], [0100]-[0102], FIG. 2; *see above* [1.pre]-[1.2].

[11.1]-[13.2]

108. These limitations are obvious as explained above for the corresponding limitations listed in the following table.

Claim	Corresponding Claim
11.1	1.3
11.2	1.4
11.3	1.5
11.4	1.6
11.5	1.7
11.6	1.8
11.7	1.9
11.8	1.10
11.9	1.11
11.10	1.12
11.11	1.13
12.1	4
12.2	5
12.3	6
13.1	4
13.2	8

[15.pre] A system comprising:

109. Pecjak-Mirisola render [15.pre] obvious for at least the same reasons in [1.pre]. VA-1005, ¶¶[0005]-[0007], [0010], [0020], [0029]-[0030], [0081], FIGS.

1-2, 5; *see above*, [1.pre].

[15.1] processor circuitry; and

110. This limitation is obvious for the reasons discussed above in [1.2]. *See above* [1.2].

[15.2] a computer-readable medium including instructions to cause the processor circuitry to at least:

111. This limitation is obvious for the reasons discussed above in [1.pre]-[1.2] and [11.pre]. *See above* [1.pre]-[1.2], [11.pre].

[15.3]-[15.7]

112. Limitations [15.3]-[15.7] recite features similar to limitations [1.3]-[1.7] but replace the term “media presentation devices” with “set-top boxes.” In the mapping of features [1.3]-[1.7], Petitioner already mapped the “media presentation devices” to “set-top boxes.” Accordingly, for at least the reasons noted above in [1.3]-[1.7], Pecjak and Mirisola render obvious [15.3]-[15.7].

[15.8] wherein on/off durations are available for a first subset of the media presentation environments,

113. Pecjak teaches that “the tuning data may include ... data about when the set top box 112 was on or off.” VA-1005, ¶¶[0020]-[0021], FIGS. 1, 5. A POSITA would have understood that data that indicates *when* a particular set top box was on or off would also provide “*on/off durations [that] are available for a first subset of the media presentation environments*” at least because the on or

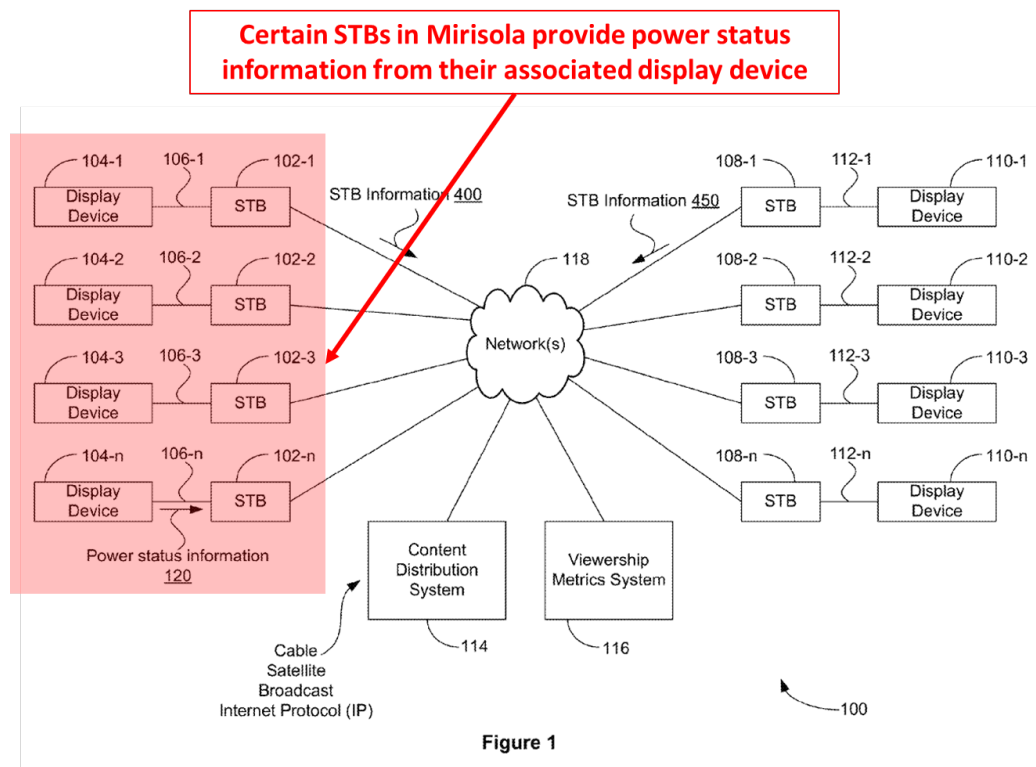
off times provide an indication of the duration of when a set top box was on or off in a particular panelist household or room (“*a first subset of the media presentation environment*”).

114. To the extent Patent Owner alleges that Pecjak does not render obvious [15.8], Pecjak and Mirisola also render [15.8] obvious.

115. Mirisola discloses that a set-top box with an HDMI connection to a display device “collect[s] power status information 120 for the display device 104” (e.g., a television) along with “power status information for the STB 102.” VA-1006, 5:61-62; 6:52-7:22, 8:16-32, FIGS. 1, 2A. Mirisola explains that power status indicates time intervals during which the respective device is powered on and time intervals during which the respective device is powered off (“*on/off durations*”). VA-1006, 6:52-7:22, 13:1-14:62, 5:61-62, 8:16-32, FIGS. 1, 2A. Mirisola’s system “derive[s] the pertinent intervals from the chronological sequences of these events along respective timelines” (e.g., an interval representing when the STB was powered on and subsequently powered off). VA-1006, 12:40-61, FIG. 10.

116. In the Pecjak-Mirisola combination, interactions with the set-top box (including turning the set-top box or television on and off) would have been captured by the set-top box and would have indicated “time intervals” that correspond to tuning sessions (“*on/off durations are available*”). VA-1005, ¶[0020]; VA-1006, 5:61-62; 6:52-7:22, FIGS. 1, 2A; *see above*, §VIII.A.1.

117. Additionally, Mirisola explains that some set-top boxes “do not collect power status information for the display devices 110” (e.g., a set-top box with non-HDMI connection to a television). VA-1006, 8:33-54. Accordingly, a POSITA would have understood that some of the STBs in the Pecjak-Mirisola system (a graphic illustrative example is shown below using Mirisola’s FIG. 1) would have an HDMI connection and other set-top boxes would not. Thus, on/off durations would have been available for households or rooms with a set-top box with an HDMI connection to a display device, which include the panelists’ households or rooms (*“for a first subset of the media presentation environments”*).



VA-1006, FIG. 1.

[15.9] and wherein on/off durations are not available for a second subset of the media presentation environments;

118. As discussed above in [15.8], Mirisola explains that some set-top boxes “do not collect power status information for the display devices 110” (e.g., a set-top box with non-HDMI connection to a television) (“***on/off durations are not available***”). VA-1006, 8:33-54. Accordingly, on/off durations would not have been available for households with a set-top box with no HDMI connection to a display device, or a suitable alternative (“***for a second subset of the media presentation environments***”).

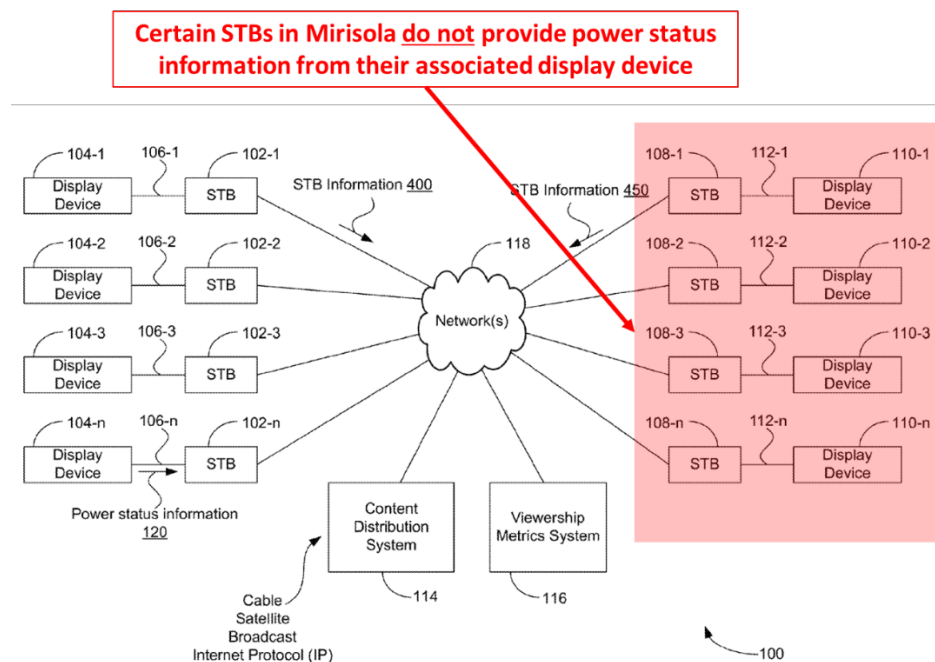


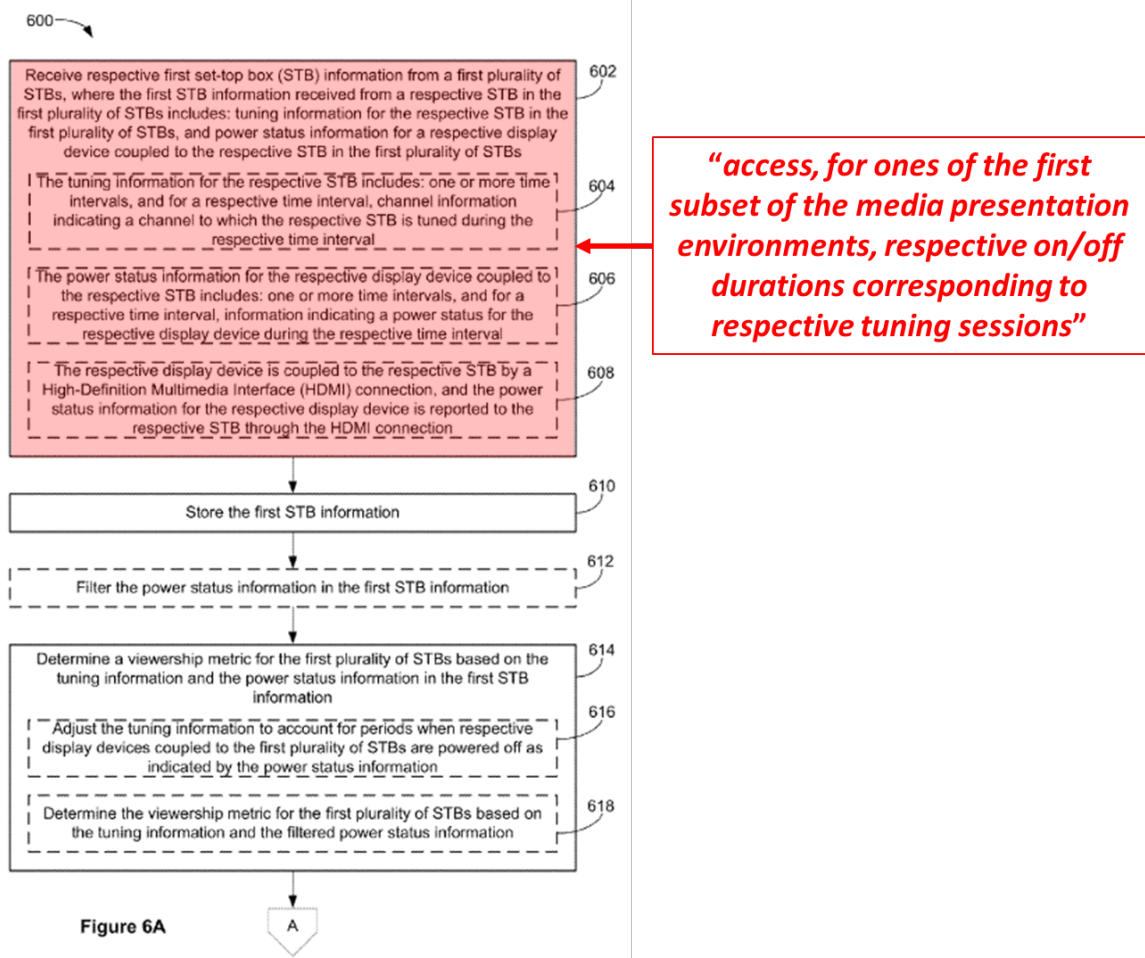
Figure 1

VA-1006, FIG. 1.

[15.10] access, for ones of the first subset of the media presentation environments, respective on/off durations corresponding to respective tuning

sessions, the on/off duration indicative of an amount of time that the respective television was turned on during the respective tuning session;

119. Like Pecjak, Mirisola discloses that, when estimating viewership for households without on/off data, the process begins with “receiv[ing] respective first set-top box (STB) information from a first plurality of STBs” (“*access, for ones of the first subset of the media presentation environments, respective on/off durations*”) including “tuning information for the respective STB in the first plurality of STBs” (including a “time interval”) (“*corresponding to respective tuning sessions*”) and “power status information for a respective display device coupled to the respective STB” (also indicating a “time interval”). VA-1006, 19:60-20:11, 20:43-52, FIGS. 6A (reproduced below), 6B; VA-1005, ¶¶[0020]-[0021]. As discussed above in [15.8], power status information includes data indicative of time intervals during which the respective device is powered on and time intervals during which the respective device is powered off (“*the on/off duration indicative of an amount of time that the respective television was turned on during the respective tuning session*”). VA-1006, 5:61-62; 6:52-7:22, 8:16-32, FIGS. 1, 2A.

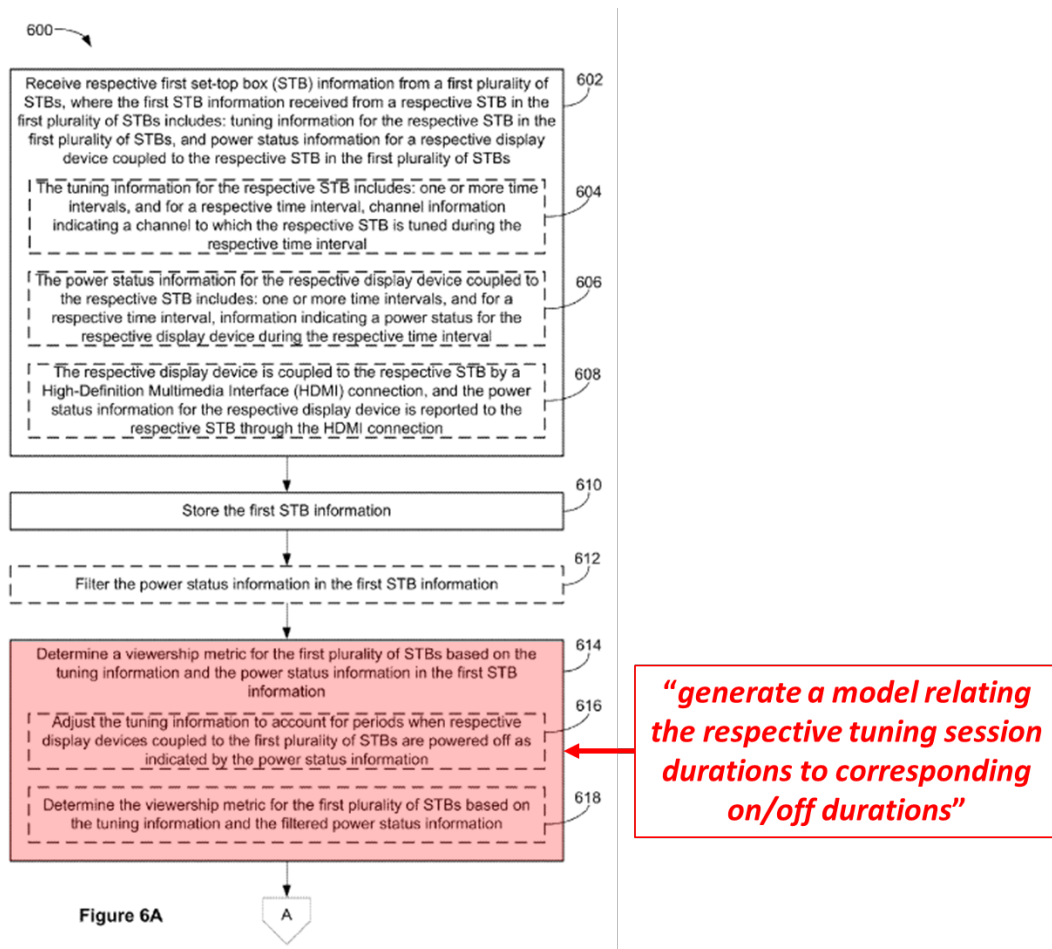


VA-1006, FIG. 6A.

[15.11] generate a model relating the respective tuning session durations to corresponding on/off durations from the ones of the first subset of the media presentation environments;

120. As explained above in [1.9], Pecjak discloses “*generating ... a model.*” VA-1005, ¶¶[0076]-[0078], [0097]-[0098], FIG. 4; *see above*, [1.11]. The model uses tuning session duration information as taught by the Pecjak-Mirisola combination. *Id.* For example, Mirisola teaches “determin[ing] a viewership metric for the first plurality of STBs based on the tuning information and the power status

information in the first STB information.” VA-1006, 20:15-26, FIGS. 6A-6B. This includes “adjusting the tuning information to account for periods when respective display devices coupled to the first plurality of STBs are powered off as indicated by the power status information.” *I.* Mirisola discloses a “tuning information adjusting module for adjusting raw tuning information using power status information of display devices” (“*relating the respective tuning session durations to corresponding on/off durations from the ones of the first subset of the media presentation environments*”), and as discussed above, in the combination the tuning information adjustment module would have been used to adjust Pecjak’s tuning data to account for display device power status information (thereby incorporating Mirisola’s techniques into Pecjak’s generated “*model*”) . VA-1006, 11:45-52, 14:62-16:31, FIG. 5; *see above* §VIII.A.1.



VA-1006, FIG. 6A.

[15.12] based on the model, determine, for a given one of the media presentation environments in the second subset of the media presentation environments, an expected on/off duration for a given tuning session having a given tuning session duration; and

121. Mirisola system also “receives respective second STB information from a second plurality of STBs distinct from the first plurality of STBs” which “does not include power status information for a respective display device coupled to the respective STB” (“***a given one of the media presentation environments in the second subset of the media presentation environments***”). VA-1006, 21:14-25;

FIGS. 6A-6B.

122. Using both the first and second STB information, Mirisola's system "determines a viewership metric for a second plurality of STBs based on the tuning information included in the second STB information (630)" (*"for a given tuning session having a given tuning session duration"*), and "determines an adjusted viewership metric for the second plurality of STBs based at least on the power status information received from the first plurality of STBs" (*"based on the model, determine, for a given one of the media presentation environments in the second subset of the media presentation environments, an expected on/off duration"*).

VA-1006, 21:26-40.

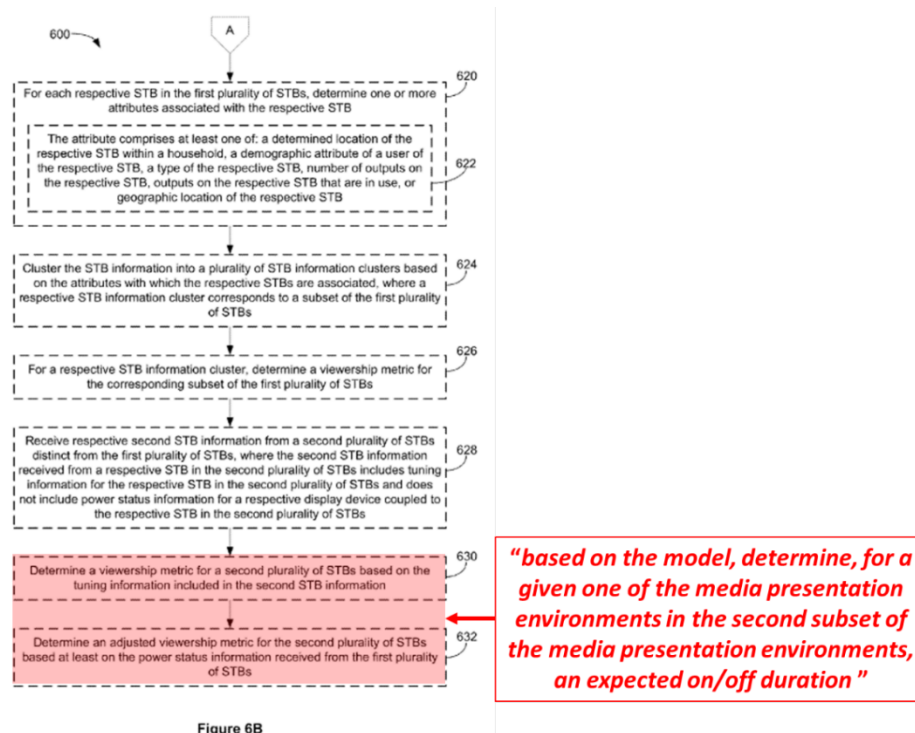


Figure 6B

VA-1006, FIG. 6B.

123. Additionally, as discussed above, these steps would have been “embodied as “instructions” stored in a “machine-readable storage medium” (“*computer-readable medium including instructions to cause the processor circuitry to at least ...*”). VA-1005, ¶¶[0005], [0029]-[0030], [0100], FIG. 2; VA-1006, 19:62-67; *see above*, [15.10].

[15.13] cause presentation of the expected on/off duration for the given tuning session from the given one of the media presentation environments.

124. Pecjak describes that the results of its model are provided in “reports,” and that the results of the method steps of its techniques can be provided as an “output” generated by “one or more programmable processors executing a computer program” (e.g., the operations of the “measurement data processor”). VA-1005, ¶¶[0013], [0030], [0097]-[0098], FIG. 2; *see also* [1.13]. As discussed above, the above steps would have been “embodied as “instructions” stored in a “machine-readable storage medium” (“*computer-readable medium including instructions to cause the processor circuitry to at least ...*”), the results of which would have been presented for review in a “report” (“*cause presentation of the expected on/off duration for the given tuning session from the given one of the media presentation environments*”). VA-1005, ¶¶[0005], [0029]-[0030], [0100], FIG. 2; VA-1006, 19:62-67; *see above*, [15.10].

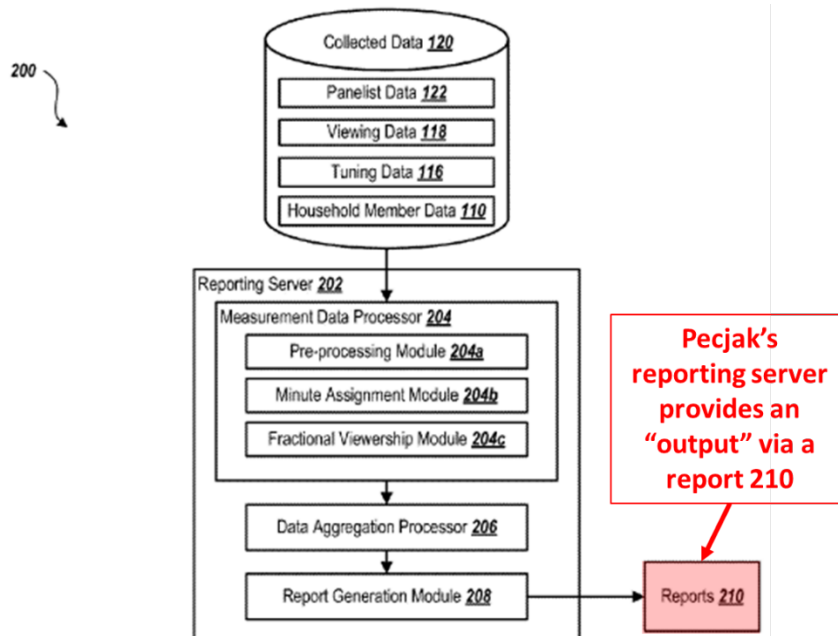


FIG. 2

VA-1005, FIG. 2.

[16.1] The system of claim 15, wherein the processor circuitry is to: access, from additional ones of the first subset of the media presentation environments, additional tuning session data indicative of additional tuning session durations and additional on/off durations indicative of an amount of time that the respective television was turned on during the additional tuning session; and

125. The Pecjak-Mirisola combination would have accessed additional “on/off durations” similar to the additional “media presentation data” as discussed above in [2.1]. *See above*, [2.1].

[16.2] update the model with the additional tuning session durations and additional on/off durations.

126. The Pecjak-Mirisola combination would have updated its model with additional “on/off durations” similar to the additional “media presentation data” as discussed above in [2.2]. *See above*, [2.2].

[17.1] The system of claim 16, wherein the processor circuitry is to: subsequent to determining the expected on/off duration, based on the model, for the given tuning session having the given tuning session duration, determine, for another given one of the media presentation environments in the second subset of the media presentation environments, another expected on/off duration for another given tuning session having another given tuning session duration based on the updated model; and

127. The Pecjak-Mirisola combination would have determined another expected “***on/off duration***” for another household similar to the additional “expected presentation session duration” as discussed above in [3.1]. *See above*, [3.1].

[17.2] output the other expected on/off duration for the other given tuning session from the other given one of the media presentation environments.

128. The Pecjak-Mirisola combination would have output the expected “***on/off duration***” for another household similar to the additional “expected presentation session duration” as discussed above in [3.2]. *See above*, [3.2].

[18] The system of claim 15, wherein the processor circuitry is to determine the expected on/off duration for the given tuning session based on the model by determining the expected on/off duration based on multiple ones of the tuning session durations and corresponding ones of the on/off durations of the ones of the first subset of the media presentation environments, the multiple ones of the tuning session durations being within a threshold extent of similarity of the given tuning session duration.

129. Mirisola discloses that on/off predictions are made from “***multiple ones of the tuning session durations and corresponding ones of the on/off durations of the ones of the first subset of the media presentation environments***” (e.g., a sample of “80 unique set top boxes”). VA-1006, 17:65-18:16, FIG. 1. Additionally, as

discussed above in [4], Mirisola discloses that tuning data, in the form of power status information, can be “filtered” to remove “noisy information” (thus enforcing a “*threshold extent of similarity*”). VA-1006, 18:32-51, 23:43-48, FIG. 6A; *see above*, [4].

[19] The system of claim 18, wherein the threshold extent of similarity is a threshold of time similarity in which each of the tuning session durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments are within a time threshold of the given tuning session duration.

130. This claim is obvious for the reasons discussed above in [5]. *See above*, [5].

[20] The system of claim 19, wherein the expected on/off duration for the given tuning session is a weighted average of the on/off durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments.

131. As discussed above in [6], a “*weighted average*” is a mathematical technique well within the general knowledge and skill of a POSITA and prevalent in the prior art. VA-1005, ¶[0018]; VA-1011, ¶¶[0063]-[0075]; VA-1012, 6; *see above*, [6]. For example, Kirillov discloses using a weighted average to calculate “viewer-level reach,” where the weight adjusts the estimation for particular demographic. VA-1011, ¶¶[0063]-[0075]. Wood provides another example, where “viewer usage” (describing set top boxes tuned to a particular program) is modeled with a weighted average. VA-1017, ¶[0054]. Accordingly, a POSITA would have

recognized and found obvious that an “*expected on/off duration*” would have been calculated as a “*weighted average of the on/off durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments.*”

[21] The system of claim 18, wherein the expected on/off duration for the given tuning session is a conditional probability of the on/off durations of the multiple ones of the tuning session durations of the ones of the first subset of the media presentation environments, indicated by the model.

132. The Pecjak-Mirisola combination would have determined “*a conditional probability of the on/off durations*” similar to the conditional probability of the “expected presentation session duration” as discussed above in [8].
See above, [8].

B. [GROUND 1B] – Claims 9-10, 14, and 22-23 are rendered obvious by Pecjak and Mirisola (with or without Shankar)

1. A POSITA would have combined Pecjak-Mirisola and Shankar

133. It would have been obvious for a POSITA to combine the teachings of Pecjak-Mirisola and Shankar to use a threshold to qualify data sets of tuning session durations related to viewing data (e.g., setting a threshold sample size for a particular demographic or program). VA-1005, ¶¶[0076]-[0080], [0097]-[0098], FIGS. 4, 6-7; VA-1013, 10:52-11:11, 20:17-28, 20:45-64, 27:34-44, FIGS. 7, 15. A POSITA would have been motivated to make this combination for multiple reasons.

134. First, a POSITA would have recognized and found obvious that setting

a threshold sample size would have improved the accuracy of projections, as corroborated by multiple prior art references. VA-1005, ¶[0018]; VA-1016, ¶[0008]; VA-1014, 6-8. For example, Shankar discloses that larger sample sizes above a threshold allow the use of more accurate probability techniques (e.g., cell probability) that would otherwise have unacceptable accuracy. VA-1013, 10:52-11:11. Further, a POSITA also knew that larger sample sizes in general typically resulted in more accurate projections. VA-1014, 6-8; VA-1016, ¶[0008]. For example, *Understanding Power and Rules of Thumb for Determining Sample Sizes*, a publication from *Tutorials in Quantitative Methods for Psychology*, describes different recommended sample sizes and how accuracy improves with sample size (“50 as very poor; 100 as poor, 200 as fair, 300 as good, 500 as very good and 1000 as excellent”). *Id.* Accordingly, a POSITA would have been motivated to take steps to ensure that an adequate amount of data had been collected before attempting to make projections using the collected data. *Id.* As a general principle, modeling television viewership is performed by aggregating data—predicting the most likely behaviour of a given individual user by gathering data from many other like users in the hope of developing a trend. *Id.* This principle is rooted in the idea that many data points are gathered prior to making a prediction, thus minimizing the errors introduced by any one sample of data. *Id.* Making predictions using sample sizes of low statistical power would have led to unreliable and potentially misleading

conclusions.

135. Second, Shankar discloses additional probability techniques that would have enhanced the existing techniques of Pecjak and Mirisola (e.g., cell probability and independent distribution). VA-1013, 10:52-11:11, 12:8-42, 17:8-23, 20:17-28, 20:45-64, 27:34-44, FIGS. 7, 15. For example, Shankar discloses calculating an “average visitor parameter (AVP)” that quantifies the exposure of a television program to a particular demographic, another data point that would have been beneficial to the Pecjak-Mirisola system, which is interested in demographic-specific projections. VA-1013, 24:3-25:13, FIG. 10.

136. A POSITA would also have found the combination of Pecjak-Mirisola and Shankar obvious and predictable because Pecjak, Mirisola, and Shankar are analogous art, and because incorporating Shankar’s techniques into Pecjak-Mirisola would have been nothing more than (1) the application of known techniques (e.g., using a threshold to qualify a sample size) to a known structure (e.g., the Pecjak-Mirisola demographic attribution model) to yield predictable results (e.g., using a threshold to qualify data sets used by the demographic attribution model), and (2) the use of known techniques to improve similar devices (methods, or products) in the same way (applying Shankar’s techniques of estimating television viewership to a similar Pecjak-Mirisola system and method). For instance, one predictable result of incorporating Shankar’s teachings into Pecjak-Mirisola’s system would have been

the improvement in the accuracy of the tuning data, as explained above.

137. A POSITA would have had a reasonable expectation of success in implementing this combination because all of Pecjak, Mirisola, and Shankar disclose similar techniques used for the same purpose – collecting television viewing data and using this data to model viewership. VA-1005, ¶¶[0020]-[0028], FIGS. 1, 5; VA-1006, 5:19-23, 6:52-7:22, FIG. 1, FIG. 2A; VA-1013, 10:52-11:11, 20:17-28, 20:45-64, 27:34-44, FIGS. 7, 15. Pecjak invites a POSITA to use additional techniques to improve the accuracy of its techniques, and using thresholds to qualify a sample size for predictions would have been part of a POSITA's general knowledge. VA-1005, ¶[0018]; VA-1014, 6-8; VA-1015, 653, 754. As discussed above, a POSITA would have been generally aware of the benefits of qualifying a prediction by setting requirements for sample size, and the combination of Pecjak-Mirisola and Shankar simply reduces this theory to practice. VA-1014, 6-8; VA-1016, ¶[0008]. Finally, this modification would have involved only routine programming skill well within the capability of a POSITA (e.g., coding machine readable instructions to implement a threshold value of panelist data sets to be executed by Pecjak's reporting server, which is capable of executing such instructions). VA-1005, ¶¶[0029]-[0030].

2. Claim Analysis

[9.1] The computing system of claim 1, wherein the processor circuitry is to: determine that a number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation environments is at least a threshold number of tuning session durations, and

138. A POSITA also would have recognized and found obvious that Shankar's "threshold value" ("***a threshold number***") would have been beneficial to qualify samples of tuning session durations for particular programs or demographics. VA-1013, 7:26-60, 10:52-11:11, 20:17-28, 20:45-64, 27:34-44, FIGS. 7, 15. For example, Shankar discloses that when "collected [Local People Meter (LPM)] data" (representing "exposure minutes to respective persons within the household" for a "tuning session" ("***corresponding presentation session durations***" each associated with a "***tuning session duration***")) is above a threshold value, a "cell probability" technique is used, and alternatively, if the LPM data is below the threshold value, an "independent distribution" technique is used (thus ensuring that "***at least a threshold number of tuning session durations***" are related to the collected "***corresponding presentation session durations***"). *Id.* This is because applying an insufficient sample size to the cell probability technique would "yield[] unacceptably low probability value accuracy." VA-1013, 10:52-11:11.

139. As discussed above in Ground 1A, each of Pecjak's households include a set top box that reports tuning data and tuning session durations for the household

(“*a number of tuning session durations*”). See, e.g., above, §VIII.A.2.[1.6].

Accordingly, in the combination, the number of related tuning sessions and viewing data from the panelist households would have satisfied a threshold in Pecjak-Mirisola’s model for a projection (“*determine that a number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation environments is at least a threshold number of tuning session durations*”). VA-1005, ¶¶[0076]-[0080], [0097]-[0098], FIGS. 4, 6-7; VA-1013, 10:52-11:11, 20:17-28, 20:45-64, 27:34-44, FIGS. 7, 15. Indeed, Pecjak invites a POSITA to use additional techniques to improve the accuracy of its techniques, and using thresholds to qualify a sample size for predictions would have been part of a POSITA’s general knowledge. VA-1005, ¶[0018]; VA-1014, 6-8; VA-1015, 653, 754.

140. For example, *Understanding Power and Rules of Thumb for Determining Sample Sizes*, a publication from *Tutorials in Quantitative Methods for Psychology*, describes different recommended sample sizes (each a “threshold number” of participants) and the associated level of confidence with each (e.g., “50 as very poor; 100 as poor, 200 as fair, 300 as good, 500 as very good and 1000 as excellent”). VA-1014, 6-8; see also VA-1015, 653, 754. As an additional example, the Media Rating Council (MRC) published guidelines before the Benefit Date for the collection and reporting of tuning data that included a “[m]inimum reporting

size.” VA-1018, 26. Thus, it would have been obvious to a POSITA that the Pecjak-Mirisola system would have used a threshold number of tuning session durations to determine “*a number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation environments is at least a threshold number of tuning session durations*” to ensure that a reasonable sample size is used to provide accurate projections.

[9.2] determine the expected presentation session duration for the given tuning session having the given tuning session duration based on the model in response to the determination that the number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation environments is at least the threshold number of tuning session durations.

141. As discussed above in [9.1], after determining the threshold number of related tuning sessions was met (“*the determination that the number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation environments is at least the threshold number of tuning session durations*”), a projection of a viewing duration would have been made by the demographic attribution model to generate Pecjak’s table 410, as discussed above in [1.11]-[1.12] (“*determine the expected presentation session duration for the given tuning session having the given tuning session duration based on the model*”). VA-1005, ¶¶[0013], [0030], [0097]-[0098],

FIG. 2; *see above*, [1.11]-[1.12], [9.1]. Thus Pecjak and Mirisola, with or without Shankar, render [9.2] obvious.

[10] The computing system of claim 9, wherein the threshold number is five hundred tuning session durations.

142. As discussed above in [9.1], the use of specific threshold values would have been part of a POSITA's general knowledge, knowledge that included a specific threshold number of five hundred ("***the threshold number is five hundred tuning session durations***"). VA-1014, 6-8; VA-1015, 653, 754; *see above*, [9.1]-[9.2]. Indeed, both *Understanding Power and Rules of Thumb for Determining Sample Sizes* and *Using Multivariate Statistics* disclose a recommended sample size of five hundred. VA-1014, 6-8; VA-1015, 653, 754. Setting a threshold at this value would have provided similar benefits as discussed above in [9.1]-[9.2]. *See above*, [9.1]-[9.2].

143. I have been informed by counsel that there is a presumption of anticipation when the range or values disclosed in the prior art overlap the claimed range or value. Here, at least one prior art reference (e.g., *Understanding Power and Rules of Thumb for Determining Sample Sizes*), discloses that sample sizes from 50-1000 are viable, encompassing the claimed value of "five hundred." VA-1014, 6-8.

144. I have also been informed by counsel that a party can rebut the presumption of anticipation by proving that the claimed range or value possesses

some criticality, when compared to the overlapping range or values. Here, the '250 patent assigns no criticality to a threshold five hundred tuning session durations, and only describes that the "minimum number of entries may be preset and/or based on user and/or administrator preferences." VA-1001, 16:11-29. VA-1001, 11:23-33. The '250 patent provides one example of a threshold range being 4 minutes, a second example of the threshold range being 5 minutes, and also explains that "the minimum threshold range may be set and/or adjusted by a user and/or an administrator." VA-1001, 11:23-33, 16:11-41. Thus, the claimed range is not a critical range and is merely a product of routine experimentation well within the capabilities of a POSITA. Thus Pecjak and Mirisola, with or without Shankar, render [10] obvious.

[14.1] The non-transitory computer-readable medium of claim 11, the instructions cause the processor circuitry to: determine that a number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation environments is at least a threshold number of tuning session durations, and

145. This limitation is obvious for the reasons discussed above in [9.1]. See above, [9.1].

[14.2] determine the expected presentation session duration for the given tuning session having the given tuning session duration based on the model in response to the determination that the number of tuning session durations related by the model to corresponding presentation session durations from the first subset of the media presentation environments is at least the threshold number of tuning session durations.

146. This limitation is obvious for the reasons discussed above in [9.2]. See

above, [9.2].

[22.1] The system of claim 15, wherein the processor circuitry is to: determine that a number of tuning session durations related by the model to corresponding on/off durations from the first subset of the media presentation environments is at least a threshold number of tuning session durations, and

147. This limitation is obvious for the reasons discussed above in [9.1]. *See above, [9.1].*

[22.2] determine the expected on/off duration for the given tuning session having the given tuning session duration based on the model in response to the determination that the number of tuning session durations related by the model to corresponding on/off durations from the first subset of the media presentation environments is at least the threshold number of tuning session durations.

148. This limitation is obvious for the reasons discussed above in [9.2]. *See above, [9.2].*

[23] The system of claim 22, wherein the threshold number is five hundred tuning session durations.

149. This claim is obvious for the reasons discussed above in [10]. *See above, [10].*

IX. ADDITIONAL REMARKS

150. I currently hold the opinions expressed in this declaration. But my analysis may continue, and I may acquire additional information and/or attain supplemental insights that may result in added observations.

151. I hereby declare that all statements made are of my own knowledge are

true and that all statements made on information and belief are believed to be true. I further declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this proceeding.

Dated: 30 Jan, 2025

By: *Tim Arthur Williams*
Tim A. Williams

Tim Arthur Williams, Ph.D.
Curriculum Vitae

Dr. Williams has 45 years of professional experience in wireless communications, networking and telecom technology. He is an entrepreneur who has participated in the organization and operation of start up companies that brought wireless LAN, software VoIP PBX, and 2-way paging technology to the marketplace. Dr. Williams holds numerous patents in wireless and signal processing technology. He is an experienced litigation support consultant with experience in patent infringement matters. Dr. Williams is also a registered Patent Agent.

- Wireless LAN
- Cellular and PCS Standards
- Cellular Telephone Architecture
- Digital Signal Processing
- Telecommunications Technology
- VoIP Technology
- Computer Networking
- Wireless Networks & Protocols

Year	University	Degree
1991	University of Texas at Austin	MBA
1985	University of Texas at Austin	Ph.D., Dissertation: “Digital Signal Processing Techniques for Acoustic Log Data”
1982	University of Texas at Austin	MSEE, Thesis: “Cepstral Processing of Speech Signals”
1976	Michigan Technological University	BSEE

Professional Experience

From: 2008
To: 2010
Organization: Expressume, Inc / Montage Inc. – Milwaukee, WI
Title: Board Member
Summary: This company sells software for human resource recruiting. This company was sold in June 2019.

From: 2008
To: 2014
Organization: Faculte, Inc. – San Jose, CA
Title: Board Member
Summary: This company provided SaaS (Software as a Service) web video based communication products.

From: 2008
To: 2010
Organization: BitRail Networks Inc. – Miami, FL
Title: Founder, Board Member
Summary: This company sold computer networking solutions.

From: 2008
To: Present
Organization: Calumet Venture Management – Madison, WI
Title: Member
Summary: This company provides seed capital and management expertise to small companies.

From: 2006
To: 2015
Organization: BEEcube Inc. – Fremont, CA
Title: Founder, Board Member, Board Advisor
Summary: This company built high speed processing solutions. This company was sold to National Instruments, Inc. in Feb 2015.

Tim Arthur Williams, Ph.D.
Curriculum Vitae

From: 2006
To: 2015
Organization: Topaz Equity, LLC – Danville, CA
Title: Founder, Board Member
Summary: This is a private equity investment company. It owned AtomAMPD which develops, markets and sells software based network solutions.

From: 2004
To: Present
Organization: DoceoTech Inc. – Danville, CA
Title: Founder, Chairman
Summary: This was a training company that provides training for engineers in Wireless, Networking, and Telephony technologies. It is currently owned by Beach Technologies, LLC.

From: 2004
To: 2006
Organization: SiBEAM, Inc. – Sunnyvale, CA
Title: Founder, Chief Executive Officer
Summary: This is a fabless semiconductor company that develops high-speed wireless networking ICs. This company was sold to Silicon Image, Inc. in Apr 2011.

From: 2001
To: 2004
Organization: JetQue, Inc. – Danville, CA
Title: Founder, Chief Executive Officer
Summary: This company created messaging solutions for the mobile professional.

From: 1999
To: 2000
Organization: Atheros Communications, Palo Alto, CA
Title: Interim CEO, Advisory Board Member
Summary: This company builds wireless LAN ICs. Atheros became a public company in May 2004. (ATHR) This company was sold to QCOM in Jan 2011.

Tim Arthur Williams, Ph.D.
Curriculum Vitae

From: 1998
To: 2000
Organization: Picazo Communications, Inc. – San Jose, CA
Title: Chief Technology Officer, Advisory Board Member
Summary: This company built and sold software PBXs Telephony equipment using VoIP and Circuit Switched Technologies. The company was purchased by Intel.

From: 1996
To: Present
Organization: Beach Technologies, LLC – Danville, CA
Title: Chief Executive Officer
Summary: This is a consulting company that provides IP services. It owns DoceoTech LLC and Streaming Knowledge LLC, which perform the same services.

From: 1991
To: 1998
Organization: Wireless Access, Inc. – Santa Clara, CA
Title: Co-Founder, Chief Technical Officer, Vice President of Engineering, Vice President of Business Strategy
Summary: This was a startup company focusing on the Narrow Band PCS equipment market. The company developed the over the air protocols, the subscriber equipment and the ICs to deploy 2-way paging services. The company was sold to Glenarye Electronics.

From: 2014
To: 2021
Organization: Through Technology, LLC. – Chicago, IL
Title: Partner
Summary: This is a private equity investment company. It owns Through Technology Group, PTE LTD, which is registered in Singapore.

From: 1979
To: 1991
Organization: Motorola, Inc. – Austin, TX – Semiconductor Sector

Tim Arthur Williams, Ph.D.
Curriculum Vitae

Title: Sr. Engineer, Member Technical Staff, Sr. MTS
Summary: Business manager, project leader, and senior technical member of the teams which were responsible for product development of the following systems:

- ADPCM transcoder,
- ISDN U-reference point transceiver,
- CT-2 voice codec and channel modem,
- GSM voice codec and channel modem,
- TDMA voice codec and channel modem
- CDMA voice codec and channel modem, and
- Japanese Digital Cellular voice codec and channel modem.

From: 1976

To: 1979

Organization: Motorola Inc. - Chicago, IL - Communications Sector - Digital Voice Privacy Group

Title: Engineer

Summary: This group built the first commercial digitally encrypted two-way FM land mobile radio system.

Professional Certifications

- Patent Agent – U.S. Patent and Trademark Office #50,790 (Jan 2002)

Issued Patents

Patent	Date	Description
10,917,232	2021	Data Enciphering or Deciphering using a Hierarchical Assignment System
9,787,471	2017	Data Enciphering or Deciphering using a Hierarchical Assignment System
7,904,117	2011	Wireless Communication Device using Adaptive Beamforming
6,781,962	2004	Apparatus and Method for Stored Voice Message Control
6,600,481	2003	Data entry apparatus and method
6,088,457	2000	Method and apparatus for over the air programming a communication device
5,854,595	1998	Communications apparatus and method with a computer interchangeable integrated circuit card
5,557,642	1996	Direct conversion receiver for multiple protocols

Tim Arthur Williams, Ph.D. Curriculum Vitae
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5,428,638	1995	Method and apparatus for reducing power consumption in digital communications devices
5,345,406	1994	Bandpass sigma delta converter suitable for multiple protocols
5,101,344	1992	Data processor having split level control store
5,001,661	1991	Data processor with combined adaptive LMS and general multiplication functions
4,989,169	1991	Digital tone detector using a ratio of two demodulators of differing frequency
4,972,356	1990	Systolic IIR decimation filter
4,965,762	1990	Mixed size radix recoded multiplier
4,947,363	1990	Pipelined processor for implementing the least-mean-squares algorithm
4,876,542	1989	Multiple output oversampling A/D converter with each output containing data and noise
4,862,169	1989	Oversampled A/D converter using filtered, cascaded noise shaping modulators
4,843,585	1989	Pipelineable structure for efficient multiplication and accumulation operations
4,843,390	1989	Oversampled A/D converter having digital error correction
4,796,219	1989	Serial two's complement multiplier
4,737,925	1988	Method and apparatus for minimizing a memory table for use with nonlinear monotonic arithmetic functions
4,734,876	1988	Circuit for selecting one of a plurality of exponential values to a predetermined base to provide a maximum value
4,727,508	1988	Circuit for adding and/or subtracting numbers in logarithmic representation
4,722,067	1988	Method and apparatus for implementing modulo arithmetic calculations
4,682,302	1987	Logarithmic arithmetic logic unit
4,618,946	1986	Dual page memory system having storage elements which are selectively swapped between the pages
4,406,010	1983	Receiver for CVSD modulation with integral filtering
4,398,262	1983	Time multiplexed n-ordered digital filter

Patent Applications and Continuation Applications
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Appl. Num.	Pub. Date	Description
20070037528	2007	Wireless Communication Device using Adaptive Beamforming
20040252679	2004	Stored Voice message Control Extensions

Tim Arthur Williams, Ph.D.
Curriculum Vitae

Published Papers

- 6 Sept 2016 Putnam, Jonathan D. and Williams, Tim A., The Smallest Salable Patent-Practicing Unit (SSPPU): Theory and Evidence.
Available at SSRN: <https://ssrn.com/abstract=2835617>
- 19 Sept 2022 Williams, Tim A, A Study of IPlytics Standard Essential Patent Tool.
Available at SSRN: <https://ssrn.com/abstract=4223782>

Litigation Experience

See attached.

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement	Venue	Case Number(s)
Patent Infringement Wireless LANs	Morgan Miller and Blair	Proxim v. 3Com	3Com.	Complete					2001 D. Del.	1:2001-cv-00155; 1:2001-cv-00755
Patent Infringement Networking ICs	Simpson Thacher & Bartlett LLP	3Com Inc. v. D-Link/ Realtek Inc.	3Com	Complete					2002 N.D. CA	03-cv-02177
Patent Infringement Wireless LANs	Weil Gotshal & Manges	Agere Systems v. Broadcom Inc.	Broadcom	Complete					2003 E.D. PA	03-cv-03138
Patent Infringement Digital Subscriber Loop (DSL)	Heller Ehman White & McAuliffe	GlobespanVirata v. Texas Instruments	Texas Instruments; Stanford University	Complete	Y	Y			2003 D.N.J.	03-cv-02854
Patent Infringement Cellular Phones	McKool Smith	Ericsson Inc v. Samsung Inc.	Ericsson	Complete	Y				2004 ITC	337-TA-577
Patent Infringement PBX services	Howrey	Foundry Networks v. Alcatel Inc.	Foundry Networks	Complete					2004 E.D. TX	2:04-cv-00040
Patent Infringement PBX services	Howrey	Foundry Networks v. Lucent Technologies Inc.	Foundry Networks	Complete	Y				2004 E.D. TX	2:04-cv-00040
Patent Infringement Wireless ICs	Kirkland and Ellis LLP	Intel Corp. v. Wi-LAN Inc.	Intel	Complete					2004 N.D. CA	08-cv-04555
Patent Infringement VoIP	Fish and Richardson	STS Networks v. Witness Systems	Witness Systems	Complete	Y	Y			2004 N.D. Ga.	04-cv-02111
Patent Infringement Telephone Systems	Sidley Austin LLP	C2 Comm. Tech Inc. v. AT&T Inc.	AT&T	Complete					2006 E.D. TX	2:06-cv-00241
Patent Infringement Networking ICs	Simpson Thacher & Bartlett LLP	Commil USA LLC v. Cisco Systems Inc.	Cisco	Complete					2006 E.D. TX	2:07-cv-341; 2:11-cv- 00417; 2:11-cv-00265
Patent Infringement PBX services	Fish and Richardson	Microsoft Inc. v. Alcatel Inc.	Microsoft	Complete					2006 ITC	337-TA-598
Patent Infringement and Trade Secret Cellular Phones	Heller Ehman White & McAuliffe	Qualcomm Inc v. Broadcom Inc.	Qualcomm	Complete					2006 S.D. CA	06-cv-0660

Dr Tim A Williams Case History

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimony	Engagement	L	Venue	Case Number(s)
Patent Infringement Telephone Systems	Jones Day LLP	In re Katz Patents	Experian	Complete				2007	C.D. CA		07-ml-01816
Patent Infringement Telephone Systems	Howrey	In re Katz Patents	General Electric	Complete	Y			2007	C.D. CA		07-ml-01816
Patent Infringement Wireless Networks	Heller Ehrman LLP and Covington & Burling LLP	Intermec Tech. V. Palm Inc.	Palm	Complete	Y			2007	D. Del.		1:2007-cv-00272
Patent Infringement Cellular Phones	Cooley Godward Kronish LLP	Qualcomm Inc. v. Broadcom Inc.	Qualcomm	Complete				2007	S.D. CA		08-cv-01607; 08-cv- 01829
Patent Infringement Cellular Phones	DLA Piper	Qualcomm Inc. v. Nokia Inc.	Qualcomm	Complete				2007	W.D. WI; S.D. CA; S.D. CA		3:07-cv-00187; 3:07-cv- 01366; 3:05-cv-02063
Patent Infringement	Howrey LLP	Minerva Inc. v. Motorola Inc. et al.	Research in Motion	Complete				2007	E.D. TX		2:2007-cv-00229
Patent Infringement	Covington & Burling; Cooley; Howrey; DLA Piper	Saxon Innovations LLC. v. Nokia Corp. et al.	Samsung; Nintento; RIM; Palm	Complete				2007	E.D. TX		6:2007-cv-00490
Patent Infringement	Baker Botts LLP	AT&T v. Airbiquity	AT&T	Complete				2008	N.D. TX		08-cv-01637
Patent Infringement	Quinn Emanuel LLP	ESN v Cisco	Cisco	Complete				2008	E.D. TX		5:08-cv-00020
Patent Infringement Telephone Call Processing	Jones Day LLP	In re Katz Interactive Call Processing	Citizens Communicati ons	Complete	Y			2008	C.D. CA		07-ml-01816
Patent Infringement VoIP	Kilpatrick Stockton LLP	Verizon Corp. v. Cox Inc.	Cox	Complete	Y		Y	2008	E.D. VA		1:08-cv-00157
Patent Infringement	Latham & Watkins LLP	Freedom Wireless Inc. v. Cricket Communications Inc et al.	Cricket Comm.	Complete	Y			2008	E.D. TX		2:06-CV-504
Patent Infringement	Irell & Manella LLP	eBay Inc. v. IDT Corp. et al.	eBay.	Complete	Y			2008	W.D. AR		4:08-cv-04015
Patent Infringement	Foley & Lardner LLP	SPH America LLC v. Kyocera Wireless Corp. et al.	Kyocera.	Complete				2008	S.D. CA		3:08-cv-02146; 3:09-cv- 00299; 3:09-cv-00572
Patent Infringement Wireless Devices	Ropes & Grey LLP	Motorola Inc. v. Research in Motion Inc.	Motorola	Complete				2008	N.D. TX		3:08-cv-00284
Patent Infringement	Banner & Witcoff	Paradox Ltd. v. ADT Ltd.	Paradox	Complete	Y			2008	E.D. TX		2:06-cv-00462

Dr Tim A Williams Case History

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimony	Engagement	L Venue	Case Number(s)
Patent Infringement	Gibson Dunn LLP	Broadcom v Emulex	Emulex	Complete					2009 C.D. CA	09-cv-01058
Patent Infringement	Keker & Van Nest LLP	Intel Corp. v. CSIRO Inc.	Intel	Complete	Y				2009 E.D. TX	06-cv-00551
Wireless ICs	Foley and Lardner LLP	SPH v Nokia	Nokia	Complete					2009 S.D. CA	3:2009-cv-02535
Patent Infringement	Fish and Richardson LLP	Tekelec v Performance Technologies Inc.	Performance Technologies, Inc.	Complete					2009 E.D. NC	09-cv-00531
Patent Infringement	McDermott Will & Emery	Telecommunications Systems Inc. v Sybase 365 Inc.	Sybase	Complete					2009 E.D. VA	09-cv-00387
Patent Infringement	Kecker & Van Nest LLP	Kodak v HTC	HTC	Complete					2010 ITC	337-TA-831
Patent Infringement	Howrey LLP	WIAV v Motorola	Motorola	Complete	Y				2010 E.D. VA	3:09-cv-00447
Patent Infringement	Quinn Emanuel LLP	WIAV v Sony	Sony	Complete	Y				2010 E.D. VA	3:09-cv-00447
Patent Infringement	Covington LLP	Fujitsu v Belkin et al.	Fujitsu	Complete	Y	Y			2011 N.D. CA	10-cv-03972-LHK
Patent Infringement	Finnegan Henderson LLP	HTC v Apple Inc.	HTC	Complete	Y	Y			2011 ITC	337-TA-721
Patent Infringement	Hogan Lovells LLP	MOSAID v Cisco Inc.	MOSAID	Complete	Y				2011 ITC	337-TA-778
Patent Infringement	Quinn Emanuel LLP	Motorola v Apple Inc.	Motorola	Complete	Y				2011 S.D. FL; D. Del.	1:2010-cv-23580 1:2010-cv-00867
Patent Infringement	Finnegan Henderson LLP	HTC v Apple Inc.	HTC	Complete	Y				2012 ITC	337-TA-808
Patent Infringement	Proskauer LLP	MMI v Apple Inc.	MMI	Complete	Y				2012 D. Del.	1:10-cv-00258
Patent Infringement	Ropes and Grey LLP	Motorola v Microsoft Inc.	Motorola	Complete	Y	Y			2012 W.D. WA.	10-cv-01823
Patent Infringement	Quinn Emanuel LLP	Samsung v Apple Inc.	Samsung	Complete	Y	Y			2012 N.D. CA	11-cv-01846
Patent Infringement	Fish and Richardson LLP	VirnetX v Avaya	Avaya	Complete	Y				2013 E.D. TX	6:11-cv-00018
Patent Infringement and Trade Secret Cellular Phones	Heller Ehman White & McAuliffe	Broadcom Inc. v Qualcomm Inc.	Qualcomm	Complete	Y				21-Jan-03 S.D. CA	05-cv-1392
Patent Infringement	Baker & McKenzie LLP	Wells Fargo and Kilpatrick Stockton LLP	Wells Fargo and Wachovia.	Complete	Y				6/27/05 E.D. TX	2:2005-cv-00291; 2:2005-cv-00293
Patent Infringement	Morrison & Foerster	Class v Apple	Apple	Complete					9/22/06 Unknown	Unknown

Dr Tim A Williams Case History

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement L	Venue	Case Number(s)
Patent Infringement	Cravath Swaine & Moore	Broadcom Inc. v Qualcomm Inc.	Qualcomm	Complete				10-Jan-07	C.D. CA	05-cv-00467
Patent Infringement	Cooley Godward Kronish LLP	Broadcom Inc. v Qualcomm Inc.	Qualcomm	Complete	Y			13-Jan-08	ITC	337-TA-543
Arbitration	Cooley, Godward, Kronish LLP	Qualcomm v Panasonic	Qualcomm	Complete				6/24/09	Arbitration	None
Arbitration	Sidley Austin LLP	AT&T v. Intrado	AT&T Mobility LLC (f/k/a Cingular Wireless LLC) (- AT&TO);	Complete	Y			3-Nov-09	Arbitration	
Patent Infringement	Nixon Peabody; K&L Gates; Altson and Bird; Greenberg Traurig; Spotts Fain; Winston & Strawn; Goodwin Proctor	SPH America v Acer Inc. et al	Sierra Wireless; Novatel; Nokia; Hewlett Packard; UT Starcom; Motorola Solutions; Motorola Mobility.	Complete	Y			4/14/10	S.D. CA	3:2009-cv-02535 Application Serial No 10/304,121 and U.S. Patent No. 7,084,529, Patent Interference No.
Patent Infringement	Foley and Lardner LLP	Application Serial No 10/304,121 and U.S. Patent No. 7,084,529, Patent Interference No. 105,755(RES)	EnOcean GMBH	Complete				21-Jul-10	USPTO	
Patent Infringement	Mayer Brown	MOSAID v Cisco	MOSAID	Complete	Y			9/10/10	D. Del.	10-cv-00687
Patent Infringement	Kilpatrick Townsend LLP	Golden Bridge v Motorola.	Motorola	Complete				5/20/11	D. Del.	1:2010-cv-00428
Patent Infringement	Quinn Emanuel	Barnes & Noble v ISI	Barnes & Noble	Complete				6/14/11	N.D. CA	11-cv-02709
Patent Infringement	Covington LLP; Fish and Richardson LLP; Brinks Hofer Gilson & Lione	Interdigital v Huawei et al.	Huawei; LG; ZTE; Nokia	Complete	Y		Y	8/18/11	ITC	337-TA-800
Patent Infringement	Cravath LLP	Parkervision v Qualcomm	Qualcomm	Complete	Y		Y	11/2/11	MDFL	11-cv-00179
Patent Infringement	Latham & Watkins LLP	Sprint Communications v Time Warner Cable et al.	Time Warner Cable	Complete				1/30/12	D. KS	2:2011-cv-02686
Patent Infringement	Kilpatrick Townsend LLP	Digitide v Motorola	Motorola	Complete				14-Feb-12	ITC.	337-TA-827

Dr Tim A Williams Case History

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement I	Venue	Case Number(s)
Patent Infringement	Dechert LLP	Intellectual Ventures I LLC and Intellectual Ventures II LLC v. AT&T Mobility LLC; AT&T Mobility II LLC; New Cingular Wireless Services Inc.; SBC Internet Services Inc.; Wayport Inc.; T-Mobile USA Inc.; Nextel Operations Inc.; Sprint Spectrum L.P.; United States Cellular Corporation; and Telephone and Data Systems Inc.	Intellectual Ventures I LLC and Intellectual Ventures II LLC	Complete	Y			7/5/12	D. Del.	1:2012-cv-00193
Patent Infringement	McKenna Long & Aldridge LLP	Comerica v Maxim Integrated Products	Comerica	Complete				8/1/12	W.D. PA	12-mc-00244
Patent Infringement	DLA Piper LLP	Technology Properties Limited LLC ("TPL"); Phoenix Digital Solutions LLC ("PDS") and Patriot Scientific Corporation ("PTSC") v Samsung Electronics Co. Ltd. And Samsung Electronics America Inc.	Samsung	Complete				11/7/12	ITC	337-TA-853
Patent Infringement	Goodwin Procter LLP	WIAV Solutions v. ZTE Corporation. et al.	ZTE Corporation and ZTE (USA)	Complete				17-Dec-12	E.D. VA	1:12CV907
Patent Infringement	Fish and Richardson LLP	Ericsson v Samsung	Samsung	Complete				10-Jan-13	ITC	337-TA-862
Patent Infringement	Kirkland & Ellis	SimpleAir Inc. v. Microsoft Corp. et al.	Samsung Electronics Co.; Ltd.; Samsung Electronics America; Inc.; and Samsung Telecommunications	Complete				19-Mar-13	E.D. TX	2:11-cv-00416-JRG
Patent Infringement	Winston & Strawn LLP	Adaptix v Motorola Mobility LLC et al.	America LLC Mobility	Complete				22-Mar-13	E.D. TX Tyler	6:12-cv-00016-MHS
Patent Infringement	Winston & Strawn LLP	Adaptix v Motorola Mobility LLC et al.	Motorola Mobility	Complete				22-Mar-13	N.D. CA	5:13-cv-01774-PSG
Patent Infringement	Bunsow De Mory Smith & Allison LLP	Cassidian Communications v. microData GIS Inc.; microData LLC; and TeleCommunications Systems Inc.	Cassidian Communications	Complete	Y			1-Apr-13	E.D. TX Marshall	2:09-cv-00395-JRG
Patent Infringement	Kilpatrick Townsend & Stockton LLP	SimpleAir Inc. v. Microsoft Corporation et al.	Google Inc.	Complete	Y			2-Apr-13	E.D. TX	2:11-cv-00416-JRG
Patent Infringement	Ropes & Gray LLP	InterDigital Technology Corp. IPR Licensing Inc. and InterDigital Holdings Inc	Samsung Electronics Co.; LTD.; Samsung Electronics America; Inc.; and Samsung Telecommunications America; LLC	Complete	Y			8-Apr-13	ITC Del.	337-TA-868 and Case No. 13-cv-00011
Patent Infringement	Covington & Burling LLP	InterDigital Technology Corp. IPR Licensing Inc. and InterDigital Holdings Inc	Huawei	Complete	Y			12-Jun-13	ITC Del.	337-TA-868 and Case No. 13-009 (RGA).

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement	L Venue	Case Number(s)
Patent Infringement	Covington & Burling LLP	InterDigital Technology Corp. IPR Licensing Inc. and InterDigital Holdings Inc	Huawei	Complete				12-Jun-13	Arbitration	
Patent Infringement	Brinks Hofer Gilson & Liore	InterDigital Technology Corp. IPR Licensing Inc. and InterDigital Holdings Inc	ZTE Corporation and ZTE (USA) Inc.	Complete				12-Jun-13	ITC Del.	337-TA-868 and Case No. 13-009 (RGA)).
Patent Infringement	Alston & Bird LLP	InterDigital Technology Corp. IPR Licensing Inc. and InterDigital Holdings Inc	Nokia Corporation and Nokia Inc	Complete				20-Jun-13	ITC Del.	337-TA-868 and Case No. 13-010 (RGA)).
Patent Infringement	Tensegrity Law Group LLP	Intellectual Ventures I LLC and Intellectual Ventures II LLC v Canon Inc. Canon U.S.A. Inc. and Canon Solutions America Inc.	Intellectual Ventures I LLC and Intellectual Ventures II LLC	Complete	Y			12-Jul-13	Del.	1:13-CV-00473-SLR (D. Del.)
Patent Infringement	Tensegrity Law Group LLP	Intellectual Ventures I LLC and Intellectual Ventures II LLC v Ricoh Company Ltd. Ricoh Americas Corporation and Ricoh Electronics Inc	Intellectual Ventures I LLC and Intellectual Ventures II LLC	Complete				12-Jul-13	Del.	1:13-CV-00474-SLR (D. Del.)
Patent Infringement	OMelveny & Myers LLP	Commonwealth Scientific and Industrial Research Organisation v. MediaTek Inc. et al.	Samsung Electronics Co.; Ltd.; Samsung Semiconduct or Inc.; and Samsung Telecommuni cations America; LLC	Complete				19-Jul-13	E.D. TX	6:12-cv-578-LED
Patent Infringement	Feinberg Day Alberti & Thompson LLP	Intellectual Ventures v PNC Bank, Capital One, First National Bank of Omaha, JP Morgan Chase, Fifth Third Bank, Bank of America, BBVA Compass Bank, Commerce Bank, Suntrust, and M&T	Intellectual Ventures	Complete	Y			30-Aug-13	E.D. VA	1:13-cv-740-AJT/TRJ
Patent Infringement	Feinberg Day Alberti & Thompson LLP	Intellectual Ventures v PNC Bank, Capital One, First National Bank of Omaha, JP Morgan Chase, Fifth Third Bank, Bank of America, BBVA Compass Bank, Commerce Bank, Suntrust, and M&T	Intellectual Ventures	Complete				30-Aug-13	W.D. PA	2: 13-cv-00740-AJS
Patent Infringement	Gibson Dunn	AIP Acquisition LLC v. Cablevision Systems Corporation, et al.	CSC Holdings LLC	Complete				3-Sep-13	D. Del.	1:12-cv-01688-GMS)
Patent Infringement	Cooley LLP	Monec Holding AG v. Motorola Mobility LLC, et al.,	Exedea, Inc	Complete				27-Sep-13	CA	11-798-LPS-SRF
Patent Infringement	Cooley LLP	Monec Holding AG v. Motorola Mobility LLC, et al.,	HTC Corporation	Complete	Y			27-Sep-13	CA	11-798-LPS-SRF
Patent Infringement	Kilpatrick Townsend & Stockton	Monec Holding AG v. Motorola Mobility LLC, et al.,	Motorola Mobility LLC	Complete	Y			27-Sep-13	CA	11-798-LPS-SRF

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement L Venue	Case Number(s)
Patent Infringement	Fish & Richardson P.C.	Monect Holding AG v. Motorola Mobility LLC, et al.,	Samsung Electronics America, Inc. and Samsung Electronics, Inc.	Complete	Y			27-Sep-13 CA	1:1-798-LPS-SRF
Arbitration	Covington & Burling LLP	Sasken Communication Technologies Limited v. Spreadtrum Communications, Inc. and Spreadtrum Communications USA Inc	Spreadtrum	Complete	Y			30-Sep-13 Resolution	50-117-T-00924-12
Patent Infringement	FINNEGAN, HENDERSON, LLP and HOLLAND & HART LLP	Cellport v. ZTE et al.	HTC Corp., et al	Complete				27-Oct-13 CO	1:13-cv-173 - RBJ
Patent Infringement	Dickstein Shapiro LLP, Lathrop & Gage, LLP	Cellport v. ZTE et al.	LG Electronics, Inc., et al	Complete				27-Oct-13 CO	1:13-cv-175 - RBJ
Patent Infringement	FOX ROTHCHILD LLP, KING & SPALDING LLP	Cellport v. ZTE et al.	Nokia Corp., et al.	Complete				27-Oct-13 CO	1:13-cv-178 - RBJ
Patent Infringement	BAKER & MCKENZIE LLP	Cellport v. ZTE et al.	Pantech Co. Ltd., et al	Complete				27-Oct-13 CO	1:13-cv-179 - RBJ
Patent Infringement	GREENBERG TRAURIG, LLP Sheppard	Cellport v. ZTE et al.	Samsung Electronics Co., Ltd., et al	Complete				27-Oct-13 CO	1:13-cv-180 - RBJ
Patent Infringement	Mullin Richter & Hampton LLP	Cellport v. ZTE et al.	Corporation and ZTE	Complete				27-Oct-13 CO	1:12-cv-3296
Patent Infringement	Ropes & Gray LLP	Broadcom Corp. v. NXP Semiconductors USA, Inc.	Broadcom	Complete				11-Feb-14 CDCA	CV SA 8:13-829-MRP(MANX)
Patent Infringement	Quinn Emanuel LLP	GENBAND US LLC v. Metaswitch Networks Ltd., et. al.	Metaswitch Networks Ltd.	Complete	Y			27-Feb-14 E.D. TX	2:14-CV-33-JRG-RSP
Patent Infringement	O'Melveny & Myers LLP	Concinnitas, LLC and George Hindman v. Samsung Telecommunications America, LLC, et al,	Electronics America, Inc. and Samsung	Complete				22-Apr-14 E.D. TX	2: 13-CV-824-JRG-RSP
IPR	Hill, Kertscher & Wharton, LLP	Regarding the U.S. Patent No. 8,400,926 B2	HTC Corporation	Complete				9-May-14 USPTO	U.S. Patent No. 8,400,926 B2
IPR	Hill, Kertscher & Wharton, LLP	Regarding the U.S. Patent No. 8,134,600, 8,477,197, 8581,991	HTC Corporation	Complete				9-May-14 USPTO	U.S. Patent No. 8,134,600, 8,477,197, 8581,991
IPR	Morgan, Lewis & Bockius LLP	Regarding the U.S. Patent No. 6,819,923	NEC Casio Mobile Communications Ltd. and NEC Corp of America	Complete				25-Jun-14 USPTO	U.S Patent No. 6,819,923

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc Engagement	L Venue	Case Number(s)
IPR	Everett Upshaw, PLLC	Regarding the U.S. Patent No. 7,215,962	ZTE Corporation and ZTE (USA)	Complete	Y			25-Jun-14 USPTO	U.S. Patent No. 7,215,962
Patent Infringement	Fenwick & West LLP			Complete				1-Jul-14 E.D. TX	TXED-6-13-cv-00569; consolidated with Case No. 6-13-cv-00507
Patent Infringement	Pillsbury Winthrop Shaw Pittman	Cellular Communications Equipment LLC v. Amazon.com, Inc. et al	HTC Corporation	Complete				1-Jul-14 E.D. TX	6:13-cv-00507
IPR	H.C. Park & Associates, PLC	Regarding the U.S. Patent No. 7,218,923	Pantech Co. Ltd., et al	Complete				2-Jul-14 USPTO	U.S. Patent No. 7,218,923
Patent Infringement	Pillsbury Winthrop Shaw Pittman		ZTE Corporation and ZTE (USA) Inc.	Complete				10-Jul-14 ED TX	3:13-cv-02326
Patent Infringement	Pillsbury Winthrop Shaw Pittman	Novatel Wireless, Inc. v. ZTE Corp. et. al.	ZTE Corporation and ZTE (USA) Inc.	Complete				16-Jul-14 ED TX	3:12-cv-02576
IPR	Pillsbury Winthrop Shaw Pittman	Regarding Vringo patents	ZTE Corporation and ZTE (USA) Inc.	Complete				21-Aug-14 USPTO	U.S. Patents
Patent Infringement	Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.	OpenTV Inc. et. al. v. Apple, Inc.	OpenTV, Inc. and NagraVision, SA of the Kudelski Group	Complete				22-Sep-14 N.D. CA	14-cv-01622-JST
IPR	Foley and Lardner LLP	Regarding the U.S. Patent No. 8,532,231, 8,565,346	Huawei Technologies Co., Ltd., Futurewei Technologies, Inc. and Huawei Device USA,	Complete				14-Oct-14 USPTO	Regarding the U.S. Patent No. 8,532,231, 8,565,346
Patent Infringement	Desmarais LLP	Intellectual Ventures I LLC and Intellectual Ventures 11 LLC v. Nikon Corp., et al	Intellectual Ventures I LLC and Intellectual Ventures II LLC	Complete				11-Nov-14 Del.	1:11-CV-1025-SLR
Patent Infringement	Cooley LLP	ParkerVision, Inc. v Qualcomm Incorporated, et al	Qualcomm	Complete				15-Dec-14 MDL	6:14-cv-00687
Patent Infringement	DLA Piper LLP	Technology Properties Ltd LLC et al. v. Samsung Electronics Co., Ltd	Samsung Electronics Co., Ltd.	Complete				22-Jan-15 N.D. CA	3:12-cv-03879

Dr Tim A Williams Case History

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement	L Venue	Case Number(s)
Patent Infringement	Paul Hastings	Summit 6 LLC v. HTC Corp.	HTC Corp and HTC America	Complete				3-Apr-15	NDTX	7:14-cv-00014
Patent Infringement	Kolpatrick Townsend & Stockton LLP	Summit 6 LLC v. Motorola	Google/Motorola	Complete				8-Apr-15	NDTX	7:14-cv-00014
Patent Infringement	Quinn Emanuel	Cellular Communications Equipment LLC v. Samsung Electronics Co.Ltd et al	Samsung Electronics Co., Ltd.,	Complete				8-Jun-15	E.D. TX	6:14-cv-759-JRG
IPR	Sterne, Kessler, Goldstein&Fox PLLC	Int'l Bus. Machines Corp. v IV	IV	Complete	Y			10-Jun-15	USPTO	2015-00089, 2015-00092
Patent Infringement	Novak, Druce Connolly Bove + Quigg LLP	Sonus Networks, Inc. v Inventergy, Inc. and Inventergy Global, Inc	Inventergy, Inc. and Inventergy Global, Inc	Complete				24-Jul-15	N.D. CA	15-cv-00322
Patent Infringement	Novak, Druce Connolly Bove + Quigg LLP	Sonus Networks, Inc. v Inventergy, Inc. and Inventergy Global, Inc	Inventergy, Inc. and Inventergy Global, Inc	Complete				24-Jul-15	MA	15-cv-10207
Patent Infringement	Novak, Druce Connolly Bove + Quigg LLP	Sonus Networks, Inc. v Inventergy, Inc. and Inventergy Global, Inc	Inventergy, Inc. and Inventergy Global, Inc	Complete				24-Jul-15	E.D. TX	14-cv612
Report	Norton Rose Fulbright US LLP	The Smallest Salable Patent-Practicing Unit (SSPPU): Theory and Evidence	Qualcomm	Complete				8-Sep-15	N/A	N/A
Arbitration	Mayer Brown LLP	Nokia Technologies Ltd and LG Electronics, Inc.	LG Electronics, Inc.	Complete	Y			25-Sep-15	Arbitration	None
IPR	Sterne, Kessler, Goldstein&Fox PLLC	LM Ericsson v IV	Intellectual Ventures I LLC and Intellectual Ventures II LLC	Complete	Y			18-Dec-15	USPTO	2015-01872
IPR	Sterne, Kessler, Goldstein&Fox PLLC	Old Republic Group Inc. v IV	Intellectual Ventures I LLC and Intellectual Ventures II LLC	Complete	Y			18-Dec-15	USPTO	IPR2015-01992, CBM2015-00184
IPR	Sterne, Kessler, Goldstein&Fox PLLC	LM Ericsson v IV	Intellectual Ventures I LLC and Intellectual Ventures II LLC	Complete	Y			26-Dec-15	USPTO	2015-01873
Patent Infringement	Cooley LLP	ParkerVision, Inc. v Qualcomm Incorporated, et al	Qualcomm Electronics Co., Ltd. and Samsung	Complete				1-Feb-16	ITC	337-TA-982
Patent Infringement	Fish & Richardson P.C.	TiVo Inc. v. Samsung Electronics Co., Ltd., et al.,	Samsung	Complete				14-Mar-16	EDTX	2:15-CV-1503

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement	L Venue	Case Number(s)
Patent Infringement	RuyakCherian LLC	Brocade Communications Systems, Inc.	Brocade Communications Systems,	Complete				4-May-16	None	None
Report	Norton Rose Fulbright US LLP	European Commission Sapphire Investigation (Case AT.40220 - Qualcomm)	Qualcomm	Ongoing				5-May-16	European Commission	
IPR	Bragalone Conroy PC	Securus Technologies, Inc. v. Global Tel*Link Corporation	Securus Technologies, Inc	Complete	Y			6-May-16	USPTO	IPR2016-01123
Patent Infringement	Cooley LLP	Skky, LLC v. Facebook, Inc. et al.	Facebook, Inc.	Complete				7-Jun-16	?	16-cv-00094-WMW-FLN
IPR	Pillsbury Winthrop Shaw Pittman	Cellular Communications Equipment LLC v. AT&T et al	HTC Corporation, HTC America	Complete	Y			7-Jul-16	USPTO	Regarding U.S. Patents 8,457,676 and 8,570,957
IPR	Pillsbury Winthrop Shaw Pittman	Cellular Communications Equipment LLC v. AT&T et al	ZTE Corporation and ZTE (USA), Inc.	Complete				7-Jul-16	USPTO	Regarding U.S. Patents 8,457,676 and 8,570,957
Patent Infringement	Desmarais LLP	Uniloc USA, Inc. and Uniloc Luxembourg S.A. v. Cisco Systems, Inc.	Cisco Systems, Inc.	Complete				15-Jul-16	E.D. TX	6:15-CV-1175-JRG
Patent Infringement	Quinn Emanuel LLP	GENBAND US LLC v. Metaswitch Networks Ltd., et. al.	Metaswitch Networks Ltd.	Complete	Y			15-Jul-16	E.D. TX	2:16-cv-582-JRG-RSP
Patent Infringement	Duane Morris Singularity IP & Foster Pepper PLLC	Ruckus Wireless, Inc. v Chiramar Systems d/b/a CMS Technologies and Chiramar Holding Company LLC	Ruckus Wireless	Complete				27-Jul-16		
Patent Infringement	Quinn Emanuel LLP	CommScope Technologies LLC v. Dali Wireless, Inc.,	CommScope Technologies LLC	Complete				17-Aug-16	N.D. Tx	3:16-cv-00477
Patent Infringement	Foster Pepper PLLC	Huawei Technologies, Co. Ltd et al v. Samsung Electronics Co, Ltd. et al	Electronics Co., Ltd. and Samsung Electronics	Complete	Y			23-Aug-16	NDCA	3:16-cv-02787
Technology Review	Foster Pepper PLLC	CommScope Technologies LLC v. Dali Wireless, Inc.,	CommScope Technologies LLC	Complete				15-Oct-16	N.D. Tx	3:16-cv-00477
Patent Analysis	Foster Pepper PLLC	Dali Wireless, Inc.	Dali Wireless, Inc.	Complete				28-Oct-16	None	None
Patent Infringement	Finnegan, Henderson, Farabow, Garrett & Dunner, LLP.	Certain Digital Cable and Satellite Products, Set-Top Boxes, Gateways, and Components Thereof	Dali Wireless, Inc	Complete				29-Oct-16		
Patent Infringement	Irell & Manella, LLP	various patent disputes involving Mobile Telecommunications Technology, LLC ("MTel") and regarding United States Patents Nos. 5,590,403, 5,659,891, and 5,915,210.	Sony Corporation Juniper Networks, Inc.	Complete				8-Dec-16	ITC	337-TA-1049
Patent Infringement				Complete				29-Dec-16		

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement L Venue	Case Number(s)
Patent Infringement	Dechert, LLP, Winston & Strawn	Tech Pharmacy Services, LLC v. Alixa RX LLC, et al.	Alixa RX LLC	Complete	Y			6-Jan-17 EDTX	4:15-cv-766
Patent Infringement	Sheppard Mullin Richter & Hampton LLP	Papst Licensing GMBH & Co. KG v. ZTE Corporation and ZTE (USA), Inc.	ZTE (USA), Inc.	Complete	Y			27-Jan-17 EDTX	6: 15-cv-1100
Antitrust	Freitas Angell & Weinberg LLP	Intellectual Ventures LLC v Capital One	Intellectual Ventures	Complete				15-Feb-17 MD	8:14-cv-111 (PWG)
IPR	Knobbe, Martens, Olson, & Bear LLP	Symantec Corporation ("Symantec") v. IV's U.S. Patent No. 7,757,298	IV	Complete				16-Feb-17 USPTO	2016-01433
Patent Infringement	Cooley LLP	Uniloc USA, Inc. et al. v. Facebook, Inc. et al.	Facebook, Inc.	Complete				17-Feb-17 EDTX	2:16-cv-00728
Patent Infringement	Feinberg Day Alberti & Thompson LLP	OpenTV Inc. v. NFL Enterprises, LLC	OpenTV, Inc.	Complete				23-Mar-17 EDTX	6:17-cv-00031
IPR	Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.	Unified Patents (6,014,089, 7,346,313)	Unified Patents	Complete				4/8/17 USPTO	(6,014,089, 7,346,313
Patent Infringement	Irell & Manella, LLP	Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. v. Sirius XM Radio, Inc.,	Fraunhofer	Complete				17-May-17	17-184-VAC-SRF
Technology Review	RuyakCherian LLC	XR Communications, LLC, dba Vivato Technologies v. Ruckus Wireless, Inc.	Ruckus Wireless	Complete				13-Jun-17 CDCA	2:17-cv-02961
Patent Infringement	DLA Piper LLP	Mobile Telecommunications Technologies, LLC v. Aruba Networks, Inc., et al.,	Aruba/HPE and HP	Complete				25-Aug-17 MD	16-md-2722
Patent Infringement	Dechert, LLP	Intellectual Ventures I LLC v. T-Mobile USA, Inc., T-Mobile US, Inc., Ericsson Inc., and Telefonaktiebolaget LM Ericsson	IV	Complete	Y		Y	29-Aug-17 EDTX	2:17-cv-00577-JRG
Patent Infringement	Cooley LLP	Silver State Intellectual Tech., Inc. v. Facebook, Inc. et al.	Facebook, Inc.	Complete				19-Sep-17 ND CA	4:17-cv-03349-JSW
Patent Infringement	Quinn Emanuel LLP	QCOM v Apple SD Cal	Qualcomm	Complete	Y			15-Nov-17 SD. Cal,	5:17-cv-0108-GPC-MDD,
Patent Infringement	Norton Rose	QCOM v Apple	Qualcomm	Complete	Y			15-Nov-17 ND Cal	5:17-md-02773-LHK,
Patent Infringement	Norton Rose	QCOM v Apple	Qualcomm	Complete	Y			15-Nov-17 ND Cal	5:17-cv-00220-LHK
Patent Infringement	Quinn Emanuel LLP	In the Matter of CERTAIN MOBILE ELECTRONIC DEVICES AND RADIO FREQUENCY AND PROCESSING COMPONENTS THEREOF	Qualcomm	Complete	Y			10-Jan-18 ITC	U.S. PATENT NO. 9,608,675
Patent Infringement	Paul Hastings	3G Licensing, S.A. et al v. HTC Corporation	HTC Corporation	Complete				7-Mar-18 Del.	1:17-cv-00083-LPS-CJB
Patent Infringement	Fish & Richardson P.C.	Sonus Networks, Inc. v. Metaswitch Networks Ltd. et al,	Metaswitch Networks Ltd.	Complete				19-Jun-18 EDTX Marshall	18-cv-00057-RWS, 18-cv-00058-RWS, IPR
Request for Reexam	Dentons US LLP	Request for Reexam re: patent 7,814,216	Dentons	Complete				6-Sep-18 USPTO	US Patent 7,814,216

Dr Tim A Williams Case History

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement L Venue	Case Number(s)
Contract Dispute	Jones Day	Qualcomm, Inc. v. Apple, Inc.	Qualcomm	Complete	Y			28-Sep-18 San Diego Superior Ct	37-2017-00041389-CU-BC-NC
Patent Infringement	O'Melveny & Myers LLP	Top Victory Electronics (Taiwan) Co. Ltd. v. American Patents LLC	Top Victory Electronics	Complete				13-Dec-18 EDTX	4:18-cv-00768-ALM
Patent Infringement	Birch, Stewart, Kolasch & Birch, LLP	Blitzsafe Texas LLC v Mitsubishi Electric Corp, et al.	Mitsubishi	Complete				19-Feb-19 EDTX	2:17-cv-00430-JRG
IPR	Jones Day	Qualcomm/Intel PTAB Matters (U.S. Patent No. 9,608,675)	Qualcomm	Complete	Y			20-Feb-19 USPTO	IPR2018-01326 to 01330 and IPR2018-01340
Patent Infringement	Finnegan, Henderson, Farabow, Garrett & Dunner, LLP	Uniloc Luxembourg S.A., Uniloc 2017 LLC ("Uniloc") v LG Electronics Inc., LG Electronics U.S.A., Inc., and LG Electronics MobileComm U.S.A., Inc. ("LG")	LG	Complete				11-Mar-19 NDCA	3:18 cv-06737-JST, 5:18-cv-06738-LHK, 3:18-cv-06739-JST, 3:18-cv-06740-JST) and PTO
Ex Parte	Finnegan, Henderson, Farabow, Garrett & Dunner, LLP	TCL Communication Technology Holdings Ltd. ("TCL")	TCL	Complete				13-Mar-19 USPTO	U.S. Patent No. 7,149,510
Patent Infringement	Mayer Brown LLP	Maxell, Ltd., et al., v. Apple Inc.	Maxell	Complete	Y			15-Apr-19 EDTX	5:19-cv-00036-RWS
Patent Infringement	Maschoff Brennan	ICON Health & Fitness, Inc. v. Tme Fitness Technology, Inc	ICON	Complete				29-May-19 Missouri	4:18-cv-00439
Patent Infringement	Gibson Dunn	Sprint Communications Co. L.P. v. Cequel Communications, UC et al.	Alice USA	Complete	Y			17-Jun-19 Del.	1:18-cv-01752-RGA
Patent Infringement	Charhon Callahan Robson & Garza, PLLC	United Access Technologies, LLC ("UAT") in connection with UAT's lawsuits against AT&T, Verizon, Frontier and CenturyTel	UAT	Complete	Y			17-Jun-19	1:05-cv-00866-LPS, 1:11-cv-00338-LPS, 1:11-cv-00341-LPS
Patent Infringement	Susman Godfrey LLP	Sol IP, LLC v. AT&T Mobility LLC, et al.	Sol IP	Complete	Y			24-Jul-19 E.D. Tex.	2:18-cv-00526; 2:18-cv-00528
IPR	Kelley Dye & Warren LLP	Zomm / Apple PTAB Matters (U.S. Patent No. 9,608,675)	Zomm, LLC	Complete	Y			30-Jul-19 USPTO	IPR2019-275, IPR2019-277, IPR2019-1030
Patent Infringement	Fish & Richardson P.C.	Bell Northern Research, LLC v. LG Electronics Inc., et al.,	LG Electronics, Inc.	Complete				6-Aug-19 SD. Cal	18-cv-2864-CAB-BLM
Technology Consulting	Norton Rose Fulbright US LLP	Sanyo v. Intel	Sanyo	Complete	Y			3-Dec-19 Chancery of Delaware	C.A. No. 2018-0723-MTZ
Patent Infringement	Sidley Austin LLP	LG Electronics Inc. v. Hisense Electronics Manufacturing Company of America	LG	Complete				15-Jan-20 COCA	2:19-cv-09474-SJO-E
Patent Infringement	Ahmad, Zavitsanos, Anapakis, Alavi, Mensing	Cellular Evolution, LLC v. AT&T Mobility, LLC and Cricket Wireless, LLC	Cellular Evolution	Complete				30-Jan-20 EDTX	19-cv-00228

Dr Tim A Williams Case History

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement	L Venue	Case Number(s)
Patent Infringement	Ahmad, Zavitsanos, Anapakos, Alavi, Mensing	Cellular Evolution, LLC v. T-Mobile, US, Inc. and T-Mobile USA, Inc.,	Cellular Evolution	Complete				30-Jan-20	EDTX	19-cv-00232
Patent Infringement	Cooley LLP	ParkerVision v. Apple	Qualcomm	Complete				11-Feb-20	MDFL	3:15-cv-01477
Patent Infringement	Cooley LLP	ParkerVision v. Qualcomm	Qualcomm	Complete	Y			11-Feb-20	MDFL	6:14-cv-00687
IPR	Wolf Greenfield LLP	MediaTek v NTT	MediaTek	Complete	Y			2-Jul-20	USPTO	Re U.S. Patent Nos. 7,280,551 and 7,400,616
Patent Infringement	Mintz, Levin	Parus Holdings, Inc.	Parus Holdings	Complete				31-Aug-20	WDTX	Not specified
Patent Infringement	Venable LLP	Blitzsafe Texas LLC v. Fiat Chrysler Automobiles N.V., FCA US LLC et al.	Maserati North America Inc. and FCA US LLC	Complete	Y			8-Sep-20	EDTX	2:19-cv-00378-JRG
IPR	Wolf Greenfield LLP	Bose Corporation v. KOSS Corporation	Bose	Complete	Y			20-Oct-20	USPTO	U.S. Patent No. 10,368,155
Patent Infringement	Shearman & Sterling LLP	StratosAudio, Inc. v. Volkswagen Group of America, Inc	Volkswagen	Complete	Y			13-Jan-21	WDTX	6:20-cv-1131
Patent Infringement	Fish & Richardson P.C.	Ericsson Inc v. Samsung Electronics Co.	Samsung	Complete				11-Mar-21	ITC and EDTX	337-TA-1248 and No. 2:20-cv-380 (E.D. Tex.),
Patent Infringement	Dechert, LLP	IPCom v AT&T Inc, Verizon, Sprint	IPCom	Settled	Y			17-Mar-21	EDTX	IPCom GmbH & Co. KG v. AT&T Inc. et al., Case No. 2:20-cv-00322 (E.D. Tex.); IPCom GmbH & Co. KG v. Verizon Communications Inc. et al., Case No. 2:20-cv-00323 (E.D. Tex.); and IPCom GmbH & Co. KG v. Sprint Spectrum L.P. et al., Case No. 2:20-cv-00321 (E.D. Tex.)
Patent Infringement	Desmarais LLP	Cellspin Soft, Inc. v. Google Fitbit, Inc.	Google / Fitbit	Complete				1-Jun-21	NDCA	4:17-cv-05928-YGR
Patent Infringement	Sidley Austin LLP	WSOU v. Hewlett Packard	Hewlett Packard	Settled				4-Jun-21	WDTX	U.S. Patent Nos. 7,280,534; 7,386,630; 7,443,832; 7,519,056; 7,646,729; 8,462,774; and 9,398,629
Patent Infringement	DLA Piper LLP	Cellspin Soft, Inc. v. Nike Inc	Nike	Complete				28-Jul-21	NDCA	4:17-cv-05931-YGR
Patent Infringement	Harness Dickey	Cellspin Soft, Inc. v. Under Armour, Inc.	Under Armour	Complete				4-Aug-21	NDCA	4:17-cv-05932-YGR
Patent Infringement	Lanikin IP	Cellspin Soft, Inc. v. Garmin, Inc.	Garmin	Complete				6-Aug-21	NDCA	4:17-cv-05934-YGR

Dr Tim A Williams Case History

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement	L Venue	Case Number(s)
Patent Infringement	Fish & Richardson P.C.	Cellspin Soft, Inc. v. Fossil, Inc.	Fossil	Complete				18-Aug-21	NDOCA	4:17-cv-05933-YGR
Patent Infringement	Morrison & Foerster	Cellspin Soft, Inc. v. Nikon, Inc.	Nikon	Complete				23-Aug-21	NDOCA	4:17-cv-05936-YGR
Patent Infringement	Fish & Richardson P.C.	Smart Mobile Technologies, LLC v. Samsung Electronics	Samsung	Complete				1-Oct-21	CDTX	6:21-cv-00701-ADA
Patent Infringement	Ruyak Cherian LLP	Bright Data Ltd. v. NetNut Ltd.	Bright Data	Complete	Y			7-Oct-21	EDTX	2:21-cv-00225-JRGRSP
Patent Infringement	Quinn Emanuel LLP	Verkada, Inc. v. Motorola Solutions Inc.	Verkada	Complete	Y	Y		25-Oct-21	ITC	Inv. No. 337-TA-1281
Patent Infringement	Mayer Brown LLP	Maxell, Ltd., v. Lenovo Group Ltd., Lenovo (United States) Inc., and Motorola Mobility LLC	Maxell	Complete				9-Nov-21	WDTX	6:21-cv-01169
Patent Infringement	Mayer Brown LLP	Maxell, Ltd., v. Lenovo Group Ltd., Lenovo (United States) Inc., and Motorola Mobility LLC	Maxell	Complete				9-Nov-21	ITC	Inv. No. 337-TA-1324
Patent Review		Collision Communications	Collision	Complete				1-Feb-22		
Patent Infringement	Kasowitz Benson Torres LLP	IV v GM	IV	Complete				18-Feb-22	WDTX	6:21-cv-01088-ADA
Patent Infringement	Kasowitz Benson Torres LLP	IV v Toyota	IV	Complete				18-Feb-22	WDTX	2:21-CV-00389-JRG-RSP
Patent Infringement	Kasowitz Benson Torres LLP	IV v Honda	IV	Complete				18-Feb-22	WDTX	2:21-CV-03090-JRG-RSP
Patent Infringement	LTL Attorneys LLP	Howlink Global LLC v. Verizon Comm'ns, et al.	Howlink	Complete				21-Mar-22	EDTX	22-cv-00040
Patent Infringement	LTL Attorneys LLP	Howlink Global LLC v. AT&T, Inc., et al.	Howlink	Complete				21-Mar-22	EDTX	22-cv-00042
Patent Infringement	Heim Payne Chorus LLP	Telecom Network Solutions v. AT&T	Telecom Network Solutions	Complete				20-Apr-22	EDTX	2:21-cv-00415-JRG,
Patent Infringement	Heim Payne Chorus LLP	Telecom Network Solutions v. Verizon,	Telecom Network Solutions	Complete				20-Apr-22	EDTX	2:21-cv-00416-JRG,
Patent Infringement	Heim Payne Chorus LLP	Telecom Network Solutions v. T-Mobile	Telecom Network Solutions	Complete				20-Apr-22	EDTX	2:21-cv-00418-JRG,
Patent Infringement	Baker Botts LLP	LG Electronics Inc. v. TCL Electronics Holdings Ltd. et al.,	LG Electronics, Inc.	Complete				17-May-22	EDTX	2:22-cv-00122
Patent Infringement	Ruyak Cherian LLP	Bright Data Ltd. Various IPRs	Bright Data	On Hold	Y			1-Jun-22	USPTO	IPR 2022-00861, IPR 2022-00862
Report	Norton Rose Fulbright US LLP	A Study of the IPlytics Platform and its Semantic Essentiality Score	Qualcomm	Complete				11-Sep-22	N/A	N/A
Patent Infringement	K&L Gates LLP	Competitive Access Systems, Inc. v. Oracle Corporation	CAS	Complete				23-Sep-22	EDTX	2:22-cv-00287

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement L Venue	Case Number(s)
Patent Infringement	Jones Day	BI's Wholesale Club Holdings, Inc. v. Walmart Apollo, LLC	Walmart	Complete	Y			11-Nov-22 USPTO	IPR2022-01471, IPR2022-01528, IPR2022-01561, IPR2022-01563, IPR2022-01564
Patent Infringement	Ruyak Chierian LLP	Metacuster LT, UAB v. Bright Data Ltd.	Bright Data	On Hold	Y			1-Feb-23 EDTX	2:22-cv-11-JRG-RSP
Patent Infringement	BartlitBeck LLP	General Access Solutions Ltd. V. Verizon, et. al.	GAS	Complete				7-Feb-23 USPTO	IPR
Patent Infringement	Sterne, Kessler, Goldstein & Fox PLLC	Roku, Inc. v Dolby International AB	Roku	Complete				8-Feb-23 USPTO	IPR - '757 Patent
Patent Infringement	Susnan Godfrey LLP	Koninklijke KPN N.V. v Ericsson	KPN	Complete				7-Mar-23 EDTX	2:22-cv-282
Patent Infringement	Jones Day	The Talisman Group, LLC. v Light and Wonder (LNW Gaming, Inc)	LNW	Complete				14-Apr-23 USPTO	IPR
Patent Infringement	Mintz Levin	Mullen Industries v Apple Inc.	Mullen	Complete	Y			3-May-23 USPTO	IPR
Patent Infringement	Baker Botts, LLP	AGIS Software Development, LLC v Samsung Electronics Co. Ltd.	Samsung	Complete				16-May-23 EDTX	2:22-cv-00263-JRG-ADA
Patent Infringement	Fish & Richardson P.C.	Entropic Communications, LLC v DISH Network Corp.	DISH	Complete	Y			30-Jun-23 USPTO	IPR
Patent Infringement	Russ August & Kabat	Headwater Research LLC	Headwater	Complete				8-Sep-23	
Patent Infringement	Russ August & Kabat	Cobblestone Wireless, LLC v. T-Mobile USA, Inc.,	Cobblestone	Ongoing	Y			1-Dec-23 EDTX	2:22-cv-477
Patent Infringement	Russ August & Kabat	Cobblestone Wireless, LLC v. Celco Partnership d/b/a Verizon Wireless,	Cobblestone	Ongoing	Y			1-Dec-23 EDTX	2:23-cv-382
Patent Infringement	Anand & Anand	QCOM v Transsion (India - Anand & Anand)	Qualcomm	Complete				1-Dec-23 India High Court	
Patent Infringement	Anand & Anand	LG Electronics Inc. versus Vivo Mobile India Private Limited & Ors.	LG	Complete				12-Dec-23 Delhi High Court	CS. (Comm) 665 of 2023
Patent Infringement	twobirds, Licks Attorneys	QCOM v Transsion (Brazil, The Philippines, Indonesia)	Qualcomm	On Hold				1-Feb-24	
Patent Infringement	Susnan Godfrey LLP	Pegasus Wireless Innovation LLC v. AT&T Inc. et al.	Pegasus	Ongoing				7-Feb-24 ED TX	23-cv-638
Patent Infringement	Susnan Godfrey LLP	Pegasus Wireless Innovation LLC v. Verizon Comm. Inc. et al.	Pegasus	Ongoing				7-Feb-24 ED TX	23-cv-640
Patent Infringement	Susnan Godfrey LLP	Pegasus Wireless Innovation LLC v. T-Mobile US, Inc. et al.	Pegasus	Ongoing				7-Feb-24 ED TX	23-cv-639
Patent Infringement	King Spalding	Fleet Connect Solutions, LLC v. Peloton Interactive, Inc.	Peloton	Ongoing				14-Mar-24 WD TX	1:23-cv-00682
Patent Infringement	Kramer Alberti	Adaptive Spectrum and Signal Alignment, Inc. v. Charter Communications, Inc., et al.,	ASSIA	Ongoing				25-Apr-24 ED TX	2:24-cv-00124-JRG-RSP
Patent Infringement	Kramer Alberti	RavenWhite Licensing LLC v. The Home Depot, Inc. et al.,	RavenWhite	Ongoing				7-May-24 EX TX	
Patent Infringement	Mayer Brown	Powermat Technologies Ltd. v. Anker Innovations Ltd.	Powermat	Ongoing	Y			11-May-24 EX TX	5:23-cv-00052-RWS
Patent Infringement	Finnegan	DIRECTV, LLC v. Entropic Communications, LLC:	DirectTV	Complete	Y			30-Jun-24 USPTO	IPR2024-01064 (PTAB) , 01063, 01061, IPR2024-01446 and case 1-23-cv-01106
Patent Infringement	Jones Day	Rally AG LLC v. Apple (Jones Day) (Matt Johnson)	Rally	Ongoing				30-Oct-24 D Del	

Dr Tim A Williams Case History

Case Type	Firm	Case Name	Client	Status	Deposition	Trial	Testimc	Engagement L	Venue	Case Number(s)
Patent Infringement	Fish	VideoAmp v Nielson	VideoAmp	Ongoing				9-Dec-24	USPTO	IPRs