

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ROKU, INC. and VIZIO, INC.,
Petitioner,

v.

ANCORA TECHNOLOGIES, INC.,
Patent Owner.

IPR2021-01406
Patent 6,411,941 B1

Before THU A. DANG, JONI Y. CHANG, and KEVIN W. CHERRY,
Administrative Patent Judges.

CHANG, *Administrative Patent Judge.*

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Roku, Inc. and VIZIO, Inc. (collectively, “Petitioner”) filed a Petition requesting an *inter partes* review (“IPR”) of claims 1–3, 6–14, and 16 (“the challenged claims”) of U.S. Patent No. 6,411,941 B1 (Ex. 1001, “the ’941 patent”). Paper 3 (“Pet.”), 7. Ancora Technologies, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 8, “Prelim. Resp.”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the petition “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” For the reasons stated below, we determine that Petitioner has established a reasonable likelihood that it would prevail with respect to at least one claim. We hereby institute an *inter partes* review as to all of the challenged claims of the ’941 patent and all of the asserted grounds of unpatentability.

A. Related Matters

The parties indicate that the ’941 patent is involved in the following cases: *Ancora Technologies, Inc. v. Nintendo Co., Ltd.*, No. 6:21-cv-00738 (W.D. Tex.); *Ancora Technologies, Inc. v. Apple Inc.*, No. 11-cv-06357 YGR (N.D. Cal.) (“the *Apple* case”); *Ancora Technologies, Inc. v. VIZIO, Inc.*, No. 6:21-cv-00739 (W.D. Tex.); *Ancora Technologies, Inc. v. Roku, Inc.*, No. 6:21-cv-00737 (W.D. Tex.); *Ancora Technologies, Inc. v. Google, LLC*, No. 6:21-cv-00735 (W.D. Tex.); *Ancora Technologies, Inc. v. TCT Mobile (US) Inc.*, Nos. 8:19-cv-02192, 2:20-cv-01252 (C.D. Cal.) (“the *TCT* case”); *Ancora Technologies, Inc. v. Lenovo Group Limited*, No. 1:19-cv-

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01712 (D. Del.); *Ancora Technologies, Inc. v. Sony Corp.*, No. 1:19-cv-01703 (D. Del.); *Ancora Technologies, Inc. v. LG Electronics, Inc.*, No. 1:20-cv-00034 (W.D. Tex.) (“the LG case”); *Ancora Technologies, Inc. v. Samsung Electronics Co., Ltd.*, No. 6:19-cv-00385 (W.D. Tex.); and *Ancora Technologies, Inc. v. HTC America, Inc.*, No. 2:16-cv-01919 (W.D. Wash.). Pet. 4–5; Paper 4, 1–2 (Patent Owner Mandatory Notices).

The ’941 patent also is involved in *Nintendo Co., Ltd. v. Ancora Technologies, Inc.*, IPR2021-01338 (Instituted).

In addition, the ’941 patent was involved in *ex parte* Reexamination No. 90/010,560. Ex. 1001, 8–9 (*Ex Parte* Reexamination Certificate issued on June 1, 2010, confirming the patentability of claims 1–19 and indicating that no amendments have been made to the patent).

The ’941 patent also was involved in the following proceedings: *Apple Inc. v. Ancora Technologies, Inc.*, CBM2016-00023 (Institution Denied); *HTC America, Inc. v. Ancora Technologies, Inc.*, CBM2017-00054 (Institution Denied); *Samsung Electronics Co., Ltd. v. Ancora Technologies, Inc.*, IPR2020-01184 (Institution Denied); *TCT Mobile (US) Inc. v. Ancora Technologies, Inc.*, IPR2020-01609 (Terminated after Institution); *HTC Corporation v. Ancora Technologies, Inc.*, IPR2021-00570 (Institution Denied); *LG Electronics, Inc. v. Ancora Technologies, Inc.*, IPR2021-00581 (Institution Denied); *Samsung Electronics Co., Ltd. v. Ancora Technologies, Inc.*, IPR2021-00583 (Termination before Institution); and *Sony Mobile Communications AB v. Ancora Technologies, Inc.*, IPR2021-00663 (Joined with IPR2020-01609; Terminated after Institution).

B. The '941 patent

The '941 patent discloses a method of restricting software operation within a license limitation that is applicable for a computer having a first non-volatile memory area, a second non-volatile memory area, and a volatile memory area. Ex. 1001, code (57). According to the '941 patent, the method includes the steps of selecting a program residing in the volatile memory, setting up a verification structure in the non-volatile memories, verifying the program using the structure, and acting on the program according to the verification. *Id.*

Figure 1 of the '941 patent is reproduced below.

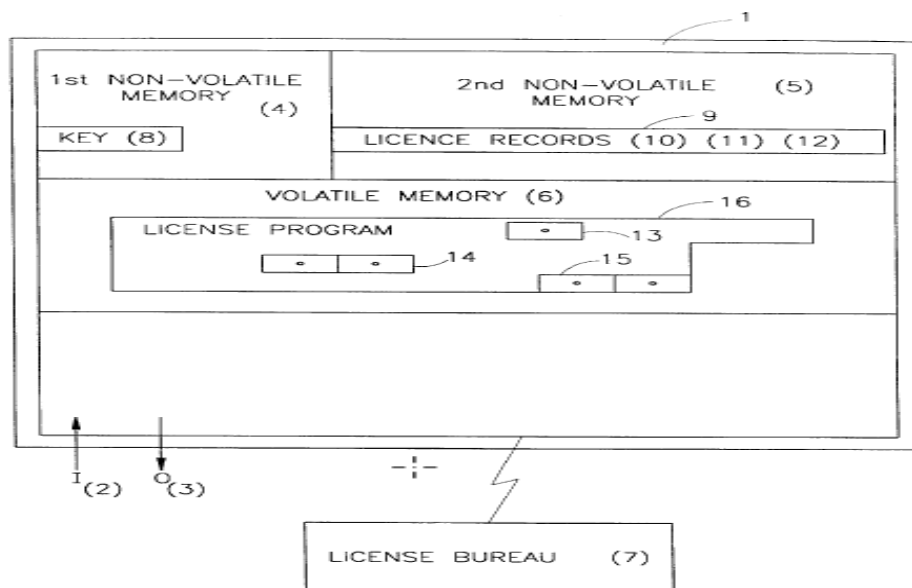


Figure 1 above shows a schematic diagram of computer processor 1 and license bureau 7. *Id.* at 5:9–19. Computer processor 1 is associated with input operations 2 and output operations 3. *Id.* Computer processor 1 contains first non-volatile memory area 4 (e.g., the read-only memory (“ROM”) section of the Basic Input / Output System (“BIOS”)), second

non-volatile memory area 5 (e.g., the electrically erasable programmable read-only memory (“EEPROM”) section of the BIOS), and volatile memory area 6 (e.g., the internal random access memory (“RAM”) of the computer).
Id.

C. Illustrative Claim

Of the challenged claims, only claim 1 is independent. Claims 2, 3, 6–14, and 16 directly or indirectly depend from claim 1. Claim 1 is illustrative:

1. A method of restricting software operation within a license for use with a computer including an erasable, non-volatile memory area of a BIOS of the computer, and a volatile memory area; the method comprising the steps of:
selecting a program residing in the volatile memory,
using an agent to set up *a verification structure in the erasable, non-volatile memory of the BIOS, the verification structure accommodating data that includes at least one license record*,
verifying the program using at least the verification structure from the erasable non-volatile memory of the BIOS, and
acting on the program according to the verification.
- Ex. 1001, 6:59–7:4 (emphasis added).

1. Prior Art Relied Upon

Petitioner relies upon the references listed below (Pet. 7–8):

Reference	Date	Exhibit No.
Hellman, U.S. Patent No. 4,658,093	Apr. 14, 1987	Ex. 1004
Chou, U.S. Patent No. 5,892,906	Apr. 6, 1999	Ex. 1005

Reference	Date	Exhibit No.
Schneck, U.S. Patent No. 5,933,498	Aug. 3, 1999	Ex. 1006

2. *Asserted Grounds of Unpatentability*

Petitioner asserts the following grounds of unpatentability (Pet. 8):

Claims Challenged	35 U.S.C. §	References
1, 2, 11, 13	103(a)	Hellman, Chou
1–3, 6–14, 16	103(a)	Hellman, Chou, Schneck

II. ANALYSIS

A. *Claim Construction*

In an *inter partes* review, we construe a patent claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b).” 37 C.F.R. § 42.100(b) (2019). Under this standard, the words of a claim are generally given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

Petitioner asserts that the claims of the ’941 patent have been construed by the District Court in three cases—namely, the *Apple* case, the *LG* case, and the *TCT* case. Pet. 20–21 (citing Ex. 1011 (Final Claim

Construction Order in the *Apple* case); Ex. 1012 (Final Claim Construction Order in the *LG* case); Ex. 1013 (Supplemental Claim Construction Order in the *LG* case); Ex. 1014 (Joint Claim Construction and Prehearing Statement in the *TCT* case); Ex. 1020 (First Telephonic *Markman* Hearing Order in the *TCT* case, entered on October 15, 2020); Ex. 1021 (Second Telephonic *Markman* Hearing Order in the *TCT* case, entered on November 19, 2020). Petition states that it does not believe that any claim construction is needed for purposes of this review. *Id.* at 21.

Patent Owner proposes its constructions for the following terms: “a computer,” “agent,” “to set up a verification structure,” and “memory of the BIOS.” Prelim. Resp. 17–40.

In light of the parties’ arguments and supporting evidence in this preliminary record, we find that it is necessary to address only the claim terms identified below expressly for purposes of this Institution Decision. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’”).

“computer”

A portion of the preamble of claim 1 recites “a computer including an erasable, non-volatile memory area of a BIOS of the computer, and a volatile memory area.” Ex. 1001, 6:60–62. Patent Owner argues that this portion of the preamble is a claim limitation because it provides antecedent

basis for the following terms recited in the body of claim 1: (1) “the volatile memory,” (2) “the erasable, non-volatile memory of the BIOS,” and (3) “the erasable non-volatile memory of the BIOS.” Prelim. Resp. 17–18. Petitioner argues that, even if the preamble is considered limiting, the combination of Hellman and Chou would have rendered the preamble of claim 1 obvious. Pet. 33, 46–47.

Regardless of whether the preamble is limiting, as discussed below, we find that Petitioner shows sufficiently for purposes of institution that the recitation in the preamble is satisfied by the prior art. Therefore, it is not necessary for us to determine whether the aforementioned portion of the preamble is limiting.

Patent Owner also argues that the term “computer” should be construed as “a digital data processor that includes one or more non-volatile memory and volatile memory areas.” Prelim. Resp. 17–20. However, Patent Owner’s proposed claim construction would render the language “a computer including . . . *non-volatile memory area* . . . and a *volatile memory area*” superfluous.

“[C]laims are interpreted with an eye toward giving effect to all terms in the claim.” *Bicon Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006); *see also Stumbo v. Eastman Outdoors, Inc.*, 508 F.3d 1358, 1362 (Fed. Cir. 2007) (denouncing claim constructions which render phrases in claims superfluous). “A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.” *Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (citing *Elekta Instrument S.A. v. O.U.R. Sci. Int’l, Inc.*, 214 F.3d 1302, 1307 (Fed.

Cir. 2000)); *see also Gen. Am. Transp. Corp. v. Cryo-Trans, Inc.*, 93 F.3d 766, 770 (Fed. Cir. 1996) (rejecting district-court claim construction that rendered claim requirement superfluous).

Therefore, for purposes of this Decision, we decline to adopt Patent Owner’s proposed claim construction for the term “computer.”

“agent”

Claim 1 recites “using an *agent* to set up a verification structure in the erasable, non-volatile memory of the BIOS, the verification structure accommodating data that includes at least one license record.” Ex. 1001, 6:64–67 (emphasis added).

Patent Owner proposes that the term “agent” should be construed as “‘an OS-level software program or routine running on the recited conventional computer to write and/or erase data’ (*i.e.*, performing the task of writing and/or erasing data without the need for additional or specialized hardware).” Prelim. Resp. 20–31. Patent Owner argues that “the Federal Circuit and other courts uniformly recognize [that] this ‘agent’ is an OS-level software program or routine running on the recited conventional computer to write and/or erase data (*i.e.*, it executes without the need for additional or specialized hardware).” *Id.*

However, the cases cited by Patent Owner do not support Patent Owner’s proposed claim construction. Only the District Court in the *LG* case construed the claim term “agent.” The District Court in the *LG* case determined that “a plain and ordinary meaning is appropriate” and that “the plain and ordinary meaning of ‘agent’ is ‘*a software program or routine*’”

because, “[a]s demonstrated by [Patent Owner] through its references to intrinsic and extrinsic evidence, agent has a well-established meaning of ‘a software program or routine.’” Ex. 1012, 3; Ex. 1013, 36–37 (emphasis added).

The District Court in the other related cases (the *Apple* case and the *TCT* case) did not construe the term “agent.” Ex. 1011, 20; Ex. 1020, 19–20. Moreover, the Federal Circuit, in both *Ancora v. Apple* and *Ancora v. HTC*, also did not construe the term “agent.” *Ancora Technologies, Inc. v. Apple Inc.*, 744 F.3d 732 (Fed. Cir. 2014); *Ancora Technologies, Inc. v. HTC America, Inc.*, 908 F.3d 1343 (Fed. Cir. 2018).

As such, for purposes of this Decision, we decline to adopt Patent Owner’s proposed claim construction for the term “agent” as it would improperly import extraneous requirements into the claims that are not supported by evidence. It is well-settled that if a feature is not necessary to give meaning to what the inventor means by a claim term, it would be “extraneous” and should not be read into the claim. *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998); *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988).

B. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective indicia of nonobviousness.¹ See *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

C. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quotation marks omitted).

Here, Petitioner asserts that a person of ordinary skill in the art in the context of the ’941 patent “would have had been at least a B.S. degree in computer science, computer engineering, or electrical engineering (or equivalent experience)” and “would have had at least two years of experience with computer science and computer engineering, including information encryption, computer architecture, and firmware programming,” citing to the declaration of Andrew Wolfe, Ph.D., for support. Pet. 21–22

¹ Neither party presents evidence or arguments regarding objective evidence of nonobviousness in the instant proceeding at this time.

(citing Ex. 1003 ¶¶ 21–25). At this juncture, Patent Owner does not dispute that assessment. *See generally* Prelim. Resp.

For purposes of this Decision, we adopt the level of ordinary skill as articulated by Petitioner because, based on the current record, this proposal appears to be consistent with the '941 patent, the asserted prior art, and supported by the testimony of Dr. Wolfe.

D. Overview of the Asserted Prior Art

Hellman (Exhibit 1004)

Hellman discloses a method and an apparatus in which use of a software package can be authorized for a particular base unit a specific number of times. Ex. 1004, 4:37–40. Figure 1 of Hellman is reproduced below:

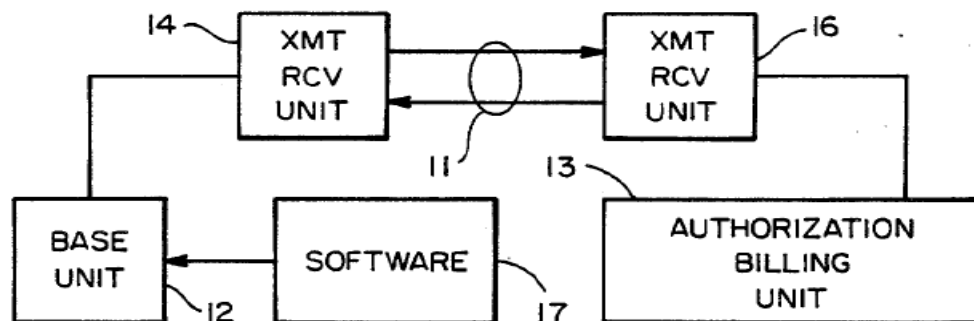


Figure 1 above illustrates a block diagram of a pay-per-use software control system. *Id.* at 5:1–2. Base unit 12 communicates with authorization and billing unit 13 over an insecure communication channel 11, using transmitter-receiver units 14, 16. *Id.* at 5:39–42. The user at base unit 12 obtains software package 17 by purchasing it and requests for software use. *Id.* at 5:51–59. Authorization and billing unit 13 receives the user's request,

generates authorization A for unit 12 to use software package 17 an additional N times, and sends authorization A to base unit 12. *Id.* at 6:3–8.

Figure 8 of Hellman is reproduced below.

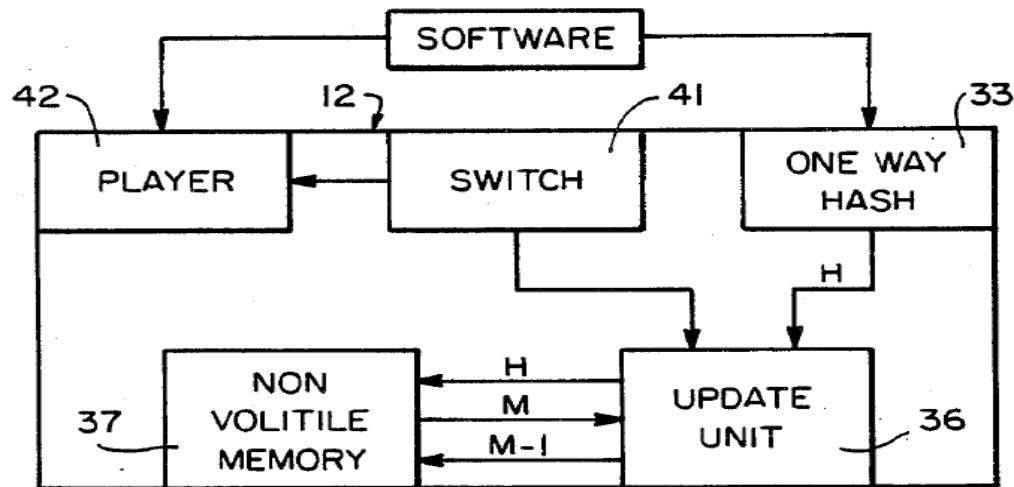


Figure 8 above depicts an implementation of base unit 12 during use of a software package. *Id.* at 10:33–34. Software package 17 is connected to base unit 12 and a signal representing software package 17 is operated on by one-way hash function generator 33 to produce an output signal which represents hash value H. *Id.* at 10:34–38. Signal H is transmitted to update unit 36 to indicate which software package is being used. *Id.* at 10:38–40. Update unit 36 uses value H as an address to non-volatile memory 37, which responds with a signal representing M, the number of uses of software package 17 which are still available. *Id.* at 10:40–43.

If value M is greater than 0, then update unit 36 sends a control signal to switch 41 which activates software player 42, allowing it to use software package 17. *Id.* at 10:44–46. Update unit 36 also decrements M to M–1 and stores this as the new value in address H in non-volatile memory 37. *Id.* at 10:46–49. If M=0, then update unit 36 does not change the contents of non-

volatile memory 37, but neither does it send a control signal to activate software player 42. *Id.* at 10:50–53. Thus, the user is prevented from using software package 17 for which he does not have current authorized use. *Id.* at 10:53–54.

Chou (Exhibit 1005)

Chou discloses an apparatus and a method for discouraging computer theft. Ex. 1005, code (57). Chou’s invention requires that a user enters a unique word or number related to the particular computer each time the computer is powered up. *Id.* at 2:11–14. Chou discloses a security routine that is stored in the BIOS memory. *Id.* at 2:14–16. The security routine requires verification of a password entered by the user, or a verification of a quantity read from an externally connected memory device. *Id.* at 2:16–18.

Chou also discloses that, at the time of its invention, “[r]ecent changes in the computer BIOS memory storage devices permit writing data to the BIOS memory, offering the opportunity to provide password protection within the same memory which stores the BIOS routines.” *Id.* at 1:63–66. And, “any attempt to delete the protection will result in the BIOS routine being disabled, disabling the boot up process.” *Id.* at 1:66–2:1. “EEPROM flash devices may be programmed with BIOS routines which permit the user to enter data without requiring the computer to be returned to the manufacture.” *Id.* at 2:2–4. According to Chou, its “invention makes use of these new BIOS memory devices for effecting security measures which discourage theft.” *Id.* at 2:4–7.

Schneck (Exhibit 1006)

Schneck discloses a technique that “controls access to and use and distribution of data.” Ex. 1006, 6:49–50. Schneck’s technique can be used to “control how much of the software’s functionality is available.” *Id.* at 6:53–56. Schneck prevents the authorization to use software on one device from being used on another, unauthorized device, to address the “secondary distribution” problem. *Id.* at 2:40–67, 6:57–62.

E. Obviousness Over Hellman, Chou, and Schneck

Petitioner asserts that claims 1, 2, 11, and 13 are unpatentable under § 103(a) as obvious over Hellman and Chou (Ground 1), and that claims 1–3, 6–14, 16 are unpatentable as obvious over Hellman, Chou, and Schneck (Ground 2). Pet. 22–64. For each of the prior art combination, Petitioner provides detailed explanations as to how the combination teaches or suggests each claim limitation, and articulates reasons to combine the prior art teachings, citing to Dr. Wolfe’s Declaration for support. *Id.* at 22–64 (citing Ex. 1003).

Upon consideration of the parties’ arguments and supporting evidence, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on its assertion that claims 1–3, 6–14, and 16 are unpatentable under § 103(a) for the reasons discussed below.

a. Motivation to combine Hellman and Chou

Petitioner asserts that “Hellman discloses almost all of the features of claim 1, including authorizing a software use through verification data stored in a non-volatile memory such as EEPROM,” and acknowledges that

Hellman does not explicitly disclose storing M value (the claimed “license record”) in the BIOS memory. Pet. 28.

Petitioner argues that Chou discloses that “embedding sensitive information in the BIOS memory reduced the risk of tampering with that information” because Chou explains that, “by storing sensitive information (passwords in Chou) in the BIOS memory, any attempt to delete or disable the sensitive information would also disable the BIOS program.” *Id.* at 31–32 (citing Ex. 1005, 1:63–2:1; Ex. 1003 ¶ 115). Indeed, Chou discloses that “EEPROM flash devices may be programmed with BIOS routines which permit the user to enter data without requiring the computer to be returned to the manufacture,” and that “[t]he present invention makes use of these new BIOS memory devices for effecting security measures which discourage theft.” Ex. 1005, 1:63–2:7.

Petitioner asserts that, in light of Chou, a person of ordinary skill in the art would have been motivated to store value M (the claimed “license record”) in the BIOS EEPROM memory “in order to achieve Hellman’s purpose of discouraging tampering with the license information.” *Id.* at 28–33 (citing Ex. 1004, 4:22–26; Ex. 1003 ¶¶ 112–116). Petitioner explains that it was well-known at the time of the invention that “a computer would have BIOS and that it would be common to store it in EEPROM memory.” *Id.* (citing Ex. 1005, 1:54–62, 2:2–7, 3:21–35; Ex. 1003 ¶¶ 105–111). Indeed, during prosecution of the ’941 patent, Patent Owner admitted that “all computers must have a BIOS.” Ex. 1002, 51 (Prosecution History of the ’941 patent—Office Action Response, dated February 5, 2002). Dr. Wolfe testifies that a person of ordinary skill in the art “would have been motivated

to store BIOS together with the values M in the non-volatile memory 37, in order to discourage users from tampering with the values M.” Ex. 1003 ¶ 115 (citing Ex. 1005, 1:63–2:7).

Based on the evidence in this current record, we determine that Petitioner has articulated a sufficient reason to combine the teachings of Hellman and Chou for purposes of this Decision.

b. Motivation to combine Schneck’s teachings with Hellman and Chou

Petitioner acknowledges that Hellman, as modified by Chou, does not expressly disclose storing M value (the claimed “license record”) in encrypted form. Pet. 44.

According to Petitioner, Schneck discloses that “licensing information is transmitted in encrypted form,” and that any information stored on a non-volatile memory “should be stored in encrypted form to prevent an unauthorized use of a licensed software.” *Id.* at 44–45 (citing Ex. 1006, 9:46–59, 25:64–67). Indeed, Schneck discloses that “packaged data 108 may include access rules 116 in encrypted form,” and that “[s]ince all storage of data on internal non-volatile memory devices (for example, disks, flash memory, and the like) is encrypted, this ensures that a physical attack on the system will not result in compromise of plaintext.” Ex. 1006, 9:46–59, 25:64–67.

Petitioner avers that, in light of Schneck, a person of ordinary skill in the art would have stored Hellman’s value M (the claimed “license record”) in encrypted form in the BIOS EEPROM memory, because storing value M in encrypted form “would have furthered Hellman’s goal of preventing a

license authorization from being improperly duplicated.” Pet. 43–46 (Ex. 1004, 1:39–2:53, 9:64–10:13, 10:55–65; Ex. 1006, 2:40–67, 17:6–12, 25:64–67; Ex. 1003 ¶¶ 141–150). Dr. Wolfe testifies that such an artisan would have recognized that storing value M in encrypted form would “prevent the sort of tampering described . . . and warned against by Schneck.” Ex. 1003 ¶¶ 145–146 (citing Ex. 1006, 16:64–17:12, 25: 64–67).

Based on the evidence in this current record, we determine that Petitioner has articulated a sufficient reason to combine the teachings of Schneck with the teachings of Hellman and Chou for purposes of this Decision.

c. Claim 1

The preamble of claim 1

The preamble of claim 1 recites a “method of restricting software operation within a license for use with a computer including an erasable, non-volatile memory area of a BIOS of the computer, and a volatile memory area.” Ex. 1001, 6:59–62.

Petitioner asserts that, “even if the preamble is considered limiting, Hellman disclose[d] all aspects of the preamble of claim 1, other than explicit mention of a BIOS and a memory storing the BIOS.” Pet. 33, 46. According to Petitioner, “Hellman disclosed the required ‘method of restricting software operation within a license’ in the form of its method of limiting use of software within authorized uses.” *Id.* (citing Ex. 1004, 9:29–10:13, 10:33–54, 10:55–65; Ex. 1003 ¶¶ 98–104). Petitioner notes that Hellman’s base unit 12 has temporary memory 28 (e.g., RAM), and

non-volatile memory 37 (e.g., EEPROM). *Id.* at 34 (citing Ex. 1004, 2:24–27, 8:67–68, 10:1–4, Figs. 1, 6; Ex. 1003 ¶¶ 98–104). Petitioner also argues that Chou discloses a BIOS EEPROM on a computer. *Id.* at 35–36 (citing Ex. 1005, 1:54–2:7, 3:21–35, Figs. 1, 3, 7; Ex. 1003 ¶¶ 104–106). Petitioner argues that, in view of Chou, an ordinarily skilled artisan “would have found it obvious to implement Hellman on a computer in which the *same* erasable, non-volatile memory 37 (e.g., EEPROM) stored both the license information disclosed in Hellman and the BIOS.” *Id.* at 35–36 (citing Ex. 1005, 1:63–2:7, 3:21–35; Ex. 1003 ¶¶ 105–111; Ex. 1002, 51); *see also id.* at 28–33.

Patent Owner counters that “none of the three references discloses the limitation[] ‘a computer including an erasable, non-volatile memory area of a BIOS of the computer, and a volatile memory area.’” Prelim. Resp. 48.

However, Patent Owner admitted during the prosecution of the ’941 patent that “all computers must have a BIOS.” Ex. 1002, 51. As Petitioner explains, Hellman discloses a computer (base unit 12) that includes temporary memory 28 (RAM) and non-volatile memory 37 (EEPROM) and Chou discloses a BIOS EEPROM on a computer. Pet. 36–38 (citing Ex. 1004, 2:24–27, 8:67–68, 10:1–4, Figs. 1, 6; Ex. 1005, 1:54–2:7, 3:21–35, Figs. 1, 3, 7; Ex. 1003 ¶¶ 98–106). Moreover, Dr. Wolfe testifies that a person of ordinary skill in the art “would have been motivated to use non-volatile memory 37 of Hellman to store BIOS because non-volatile memory 37 used a type of memory disclosed by Chou as being advantageous for storing BIOS,” noting that Chou discloses that “a transition had occurred to using EEPROM for BIOS, and that the programmability of

EEPROM made that an advantageous medium for storing BIOS.” Ex. 1003 ¶¶ 112–115 (citing Ex. 1005, 1:63–2:7).

Therefore, we do not find Patent Owner’s argument that “none of the three references discloses the limitation[] ‘a computer including an erasable, non-volatile memory area of a BIOS of the computer, and a volatile memory area’” undermine Petitioner’s obviousness showing on this record for purposes of this Decision. Prelim. Resp. 48. Rather, regardless of whether the preamble of claim 1 is limiting, we determine that Petitioner has shown sufficiently for purposes of this Decision that the combination of Hellman and Chou discloses the subject matter recited in the preamble of claim 1.

“selecting a program residing in the volatile memory”

As to the limitation “selecting a program residing in the volatile memory,” Petitioner argues that Hellman discloses selecting software package 17 (a computer program) residing in temporary RAM memory 28 (volatile memory). Pet. 36–38 (citing Ex. 1004, 5:51–61, 8:67–9:2, 9:15–28, 10:66–11:3; Ex. 1003 ¶¶ 121–129). Based on the evidence in this current record, we determine that Petitioner has shown sufficiently for purposes of this Decision that Hellman discloses the limitation “selecting a program residing in the volatile memory,” as recited in claim 1. At this juncture, Patent Owner does not make any argument regarding this limitation. *See generally* Prelim. Resp.

“using an agent to set up a verification structure in the erasable, non-volatile memory of BIOS, the verification structure accommodating data that includes at least one license record”

Claim 1 recites “using an agent to set up a verification structure in the erasable, non-volatile memory of the BIOS, the verification structure accommodating data that includes *at least one license record*” (the “license record” limitation).

For Ground 1, Petitioner asserts that Hellman discloses “using update unit 36 (acting as the required ‘agent’) to set up a verification structure in non-volatile memory 37 (the required ‘erasable, non-volatile memory’) as the non-volatile memory 37 was preferably implemented as EEPROM.” Pet. 38 (citing Ex. 1004, 10:1–4; Ex. 1003 ¶¶ 133–138). According to Petitioner, “update unit 36 sets up the required ‘verification structure’ in the non-volatile memory 37 at least in the form of storing the value M at a specific address H for a software program identified by that hash value H.” *Id.* at 41 (citing Ex. 1003 ¶¶ 133–138). *Id.* Petitioner argues that “value M is the required ‘license record,’ because it indicates the scope of authorized use—the number of uses, where ‘M’ is the number—for the specific software package 17 identified by hash value H.” *Id.* at 39. Petitioner contends that “[s]toring the value M at the address H constitutes setting up a verification structure because it includes storing a license record at a specific license record location that corresponds to the licensed program.” *Id.* (citing Ex. 1001, 1:59–62, 6:17–21; Ex. 1003 ¶¶ 133–138).

Further, Petitioner argues that a person of ordinary skill in the art would have recognized that authorization and billing unit 13 may cooperate

with update unit 36 to act as the “agent,” and that update unit 36 and authorization and billing unit 13 were both implemented in software or a combination of software and hardware. *Id.* (citing Ex. 1003 ¶¶ 137–138A). Dr. Wolfe testifies that a person of ordinary skill in the art would have been motivated to implement update unit 36 and authorization and billing unit 13 in software in particular because that would have allowed the provider of the units to change the implementation logic of the units over time, without having to physically disassemble, modify, and reassemble the units. Ex. 1003 ¶¶ 137B–138B.

For Ground 2, Petitioner also asserts that, in view of Schneck, a person of ordinary skill in the art would have been motivated to modify Hellman to store an encrypted license record (authorization A) in non-volatile memory 37, in place of the plaintext value M, when an “unlimited number of uses” was licensed, because the “unlimited license” value could be duplicated for any other software package and it would have been important to protect that default value in encrypted form in the non-volatile memory 37. Pet. 48–50 (citing Ex. 1004, 10:50–54; Ex. 1003 ¶¶ 139–150).

Based on the present record, we determine that Petitioner has shown sufficiently for purposes of this Decision that each of the asserted prior art combinations discloses the aforementioned limitation recited in claim 1.

In its Preliminary Response, Patent Owner advances several arguments. Prelim. Resp. 48–64. For the reasons discussed below, we determine that Patent Owner’s arguments do not undermine Petitioner’s

showing at this time for purposes of instituting a review. We address each of Patent Owner's arguments in turn below.

1. Whether Hellman discloses "using an agent"

Patent Owner argues that Hellman fails to disclose the claimed "agent" because Hellman's update unit 36 is a specialized "add-on hardware." *Id.* at 48–52. According to Patent Owner, "Hellman does not disclose the use of an OS-level software program at all," and "Hellman teaches only the use of specialized hardware to perform its methods." *Id.*

We are not persuaded by Patent Owner's argument because it relies upon Patent Owner's proposed claim construction which interprets the claim term "agent" as "an OS-level software program or routine running on the recited conventional computer to write and/or erase data." *Id.* at 51. As discussed above, we decline to adopt that Patent Owner's proposed claim construction as it improperly imports extraneous requirements into the claims.

In addition, as we discussed in our Institution Decision in IPR2021-00663 (Pages 27–28), Patent Owner admitted that Hellman discloses an "agent," but improperly presumed that Hellman's agent is "implemented *exclusively in specialized hardware*." IPR2021-00663, Paper 13 (Patent Owner's Preliminary Response) at 33 (emphasis added).

Furthermore, Dr. Wolfe testifies that a person of ordinary skill in the art would have been motivated to implement update unit 36 and authorization and billing unit 13 in software because that would have allowed the provider of the units to change the implementation logic of the

units over time, without having to physically disassemble, modify, and reassemble the units. Ex. 1003 ¶¶ 137B–138.

Therefore, Patent Owner’s argument that Hellman does not disclose an “agent” is unavailing at this time for purposes of institution.

2. Whether the combinations disclose “set up a verification structure”

Patent Owner argues that the prior art does not teach a “verification structure” or using an agent to “set up a verification structure.” Prelim. Resp. 52–57. According to Patent Owner, Petitioner identifies “nothing in Hellman showing the storing or establishing of any data structure (a ‘verification structure’) in BIOS memory.” *Id.* at 53–55. Patent Owner avers that the “verification structure” cannot be merely an “address location.” *Id.* at 55. Further, Patent Owner contends that “Petitioner nowhere identif[ies] an ‘agent’ as performing the ‘set up a verification structure’ step” because Dr. Wolfe “admits that the asserted agent (Hellman’s ‘update unit 36’) performs none of Claim 7’s recited steps.” *Id.* at 55–57.

On this record, we do not find Patent Owner’s arguments undermine Petitioner’s obviousness showing for purposes of this Decision.

At the outset, attacking Hellman individually does not undermine Petitioner’s obviousness showing that is based on a combination of the prior art references. Non-obviousness cannot be established by attacking references individually where, as here, the ground of unpatentability is based upon a combination of references. *In re Keller*, 642 F.2d 413, 426 (CCPA 1981). Rather, the test for obviousness is whether the combination of

references, taken as a whole, would have suggested the claimed subject matter to one of ordinary skill in the art. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

In addition, Patent Owner's arguments implicitly construe the claim term "verification structure" to require a specific data structure. Prelim. Resp. 53–55. We decline to adopt Patent Owner's implicit claim construction because it would improperly import a limitation from the Specification into the claim. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346–47 (Fed. Cir. 2015).

Furthermore, Patent Owner's argument that the "verification structure" cannot be merely an "address location" is also unavailing. Prelim. Resp. 55. Dr. Wolfe testifies that "Hellman discloses a 'verification structure' in the form of the memory structure of non-volatile memory 37 storing at least one value M at memory addresses *defined by at least one hash value H.*" Ex. 1003 ¶¶ 135–137 (emphasis added). Patent Owner fails to take into account that the memory address is "defined by at least one hash value H."

Also we are not persuaded by Patent Owner's argument that "Petitioner nowhere identifies an 'agent' as performing the 'set up a verification structure' step" because Dr. Wolfe "admits that the asserted agent (Hellman's 'update unit 36') performs none of Claim 7's recited steps." Prelim. Resp. 55–57. Patent Owner improperly attempts to import the limitations of claim 7 into claim 1. Patent Owner also fails to consider Dr. Wolfe's testimony as a whole. Notably, Dr. Wolfe's testimony for claim 7 (Ex. 1003 ¶¶ 189–200) refers back to his testimony for claim 6 (*id.*

¶¶ 185–188), which refers back to his testimony for Element 1b “using an agent to set up a verification structure” recited in claim 1 (*id.* ¶¶ 133–150). Dr. Wolfe expressly testifies that a person of ordinary skill in the art “would additionally have recognized that *the authorization and billing unit 13 may cooperate with the update unit 36* to act as the ‘agent’” because “authorization and billing unit 13 generates the authorization A that leads to the updating of the authorized use value M in the non-volatile memory 37.” *Id.* ¶¶ 138–150. Patent Owner’s argument also narrowly focuses on update unit 36 and fails to consider authorization and billing unit 13.

Therefore, Patent Owner’s argument that the prior art does not teach a “verification structure” or using an agent to “set up a verification structure” is unavailing at this time for purposes of institution. Prelim. Resp. 52–57.

3. Whether the combinations teach using “memory of the BIOS” for storing a “verification structure” or “license record”

First, Patent Owner argues that Chou does not disclose that the “license record” or “verification structure” is stored in “memory of the BIOS.” Prelim. Resp. 57–58. However, attacking Chou individually does not undermine Petitioner’s obviousness showing that is based on a combination of prior art references. *Keller*, 642 F.2d at 426.

Second, Patent Owner argues that the combination of Chou and Hellman does not teach storing the alleged “M” value in the memory area that is “used by the BIOS,” as the “memory of the BIOS” term requires. Prelim. Resp. 59–61.

On this record, we do not find Patent Owner’s argument undermines Petitioner’s obviousness showing for purposes of this Decision.

As noted above, Chou teaches storing sensitive information in the BIOS EEPROM to reduce the risk of tampering with that information. Ex. 1005, code (57), 1:54–2:7, 3:52–62. Dr. Wolfe testifies that, in light of Chou, one of ordinary skill in the art would have been motivated to store Hellman’s license information in the BIOS EEPROM, in order to discourage users from tampering the license information and to provide extra protection to the sensitive information. Ex. 1003 ¶¶ 112–116.

More importantly, “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR*, 550 U.S. at 417. Here, the evidence in the present record shows that storing sensitive information, such as Hellman’s license information, in the BIOS memory is not beyond the skill of a pertinent artisan. As Petitioner points out (Pet. 27–28), Chou discloses that, at the time of its invention, “[r]ecent changes in the computer BIOS memory storage devices permit writing data to the BIOS memory, offering the opportunity to provide password protection within the same memory which stores the BIOS routines.” Ex. 1005, 1:63–66. Chou also discloses “EEPROM flash devices may be programmed with BIOS routines which permit the user to enter data without requiring the computer to be returned to the manufacture.” *Id.* at 2:2–4. Chou further discloses that its “invention makes use of these new BIOS memory devices for effecting security measures which discourage theft.” *Id.* at 2:4–7. Therefore, based on this record, we are not persuaded by Patent Owner’s argument that the combination of Chou and Hellman does not teach

storing the alleged “M” value in the memory area that is “used by the BIOS,” as the “memory of the BIOS” term requires. Prelim. Resp. 59–61.

Finally, Patent Owner argues that Chou teaches away from using a software agent to set up a verification structure in BIOS memory because (1) “Chou discloses that ‘configuration of the BIOS EEPROM’ is done at manufacture, such that altering it in order to write Hellman’s value ‘M’ to Chou’s ‘BIOS Memory’ would require de-coupling the EEPROM memory module from the chip, returning it to the manufacturer, and reconfiguring the ‘BIOS EEPROM;’” and (2) as shown in Figure 7 of Chou, “the ‘configuration of the BIOS EEPROM’ provides for no spare memory space for functions and routines other than those already prescribed by Chou.” Prelim. Resp. 61–63.

Patent Owner’s theory of teaching away is unavailing. Nothing in Chou discourages an ordinarily skilled artisan from storing sensitive information, such as Hellman’s license information, in the BIOS memory. *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) (“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.”). As Petitioner points out, Chou discloses that, “by storing sensitive information (passwords in Chou) in the BIOS memory, any attempt to delete or disable the sensitive information would also disable the BIOS program.” Pet. 32 (citing Ex. 1005, 1:63–2:1). Chou also discloses that “EEPROM flash devices may be programmed with BIOS routines which *permit the user to enter data without requiring the computer to be returned*

to the manufacture,” and that “[t]he present invention makes use of these new BIOS memory devices for effecting security measures which discourage theft.” Ex. 1005, 1:63–2:1 (emphasis added). Therefore, we are not persuaded by Patent Owner’s arguments that: (1) Chou teaches away from using a software agent to set up a verification structure in BIOS memory; or (2) “Chou discloses that ‘configuration of the BIOS EEPROM’ is done at manufacture, such that altering it in order to write Hellman’s value ‘M’ to Chou’s ‘BIOS Memory’ would require de-coupling the EEPROM memory module from the chip, returning it to the manufacturer, and reconfiguring the ‘BIOS EEPROM.’” Prelim. Resp. 61–63.

In addition, Patent Owner’s argument that Chou’s description of Figure 7 reflects that “the ‘configuration of the BIOS EEPROM’ provides for no spare memory space for functions and routines other than those already prescribed by Chou” is misplaced. *Id.* “It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements.” *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) (noting that the criterion for obviousness is not whether the references can be combined physically, but whether the claimed invention is rendered obvious by the teachings of the prior art as a whole). In that regard, one with ordinary skill in the art is not compelled to follow blindly the teaching of one prior art reference over the other without the exercise of independent judgment. *Lear Siegler, Inc. v. Aeroquip Corp.*, 733 F.2d 881, 889 (Fed. Cir. 1984); *see also KSR*, 550 U.S. at 420–21 (stating that a person with ordinary skill in the art is “a person of ordinary creativity,

not an automaton,” and “in many cases . . . will be able to fit the teachings of multiple patents together like pieces of a puzzle”).

Based on the evidence in this present record, we determine that Petitioner has demonstrated sufficiently for purposes of this Decision that each asserted prior art combination teaches “using an agent to set up a verification structure in the erasable, non-volatile memory of the BIOS, the verification structure accommodating data that includes at least one license record” as recited in claim 1.

“verifying the program using at least the verification structure from the erasable non-volatile memory of the BIOS”

Claim 1 also recites “verifying the program using at least the verification structure from the erasable non-volatile memory of the BIOS.” Petitioner argues that Hellman discloses this limitation because Hellman discloses using value M (the claimed “license record”) that is stored in non-volatile memory 37 to verify software package 17. Pet. 39–40 (citing Ex. 1004, 10:33–54; Ex. 1003 ¶¶ 151–152). In particular, Hellman discloses that when an attempt is made to run software package 17, value H is generated and sent to update unit 36, which uses value H as an address in non-volatile memory to verify if a license exists for software package 17. Ex. 1004, 10:33–54. If a license does exist, update unit 36 retrieves the number of remaining authorized uses value M, and a determination is made as to whether the number of authorized uses is greater than zero. *Id.*

Based on the evidence in this current record, we determine that Petitioner has shown sufficiently for purposes of this Decision that Hellman

discloses the limitation “selecting a program residing in the volatile memory,” as recited in claim 1. At this juncture, Patent Owner does not make any argument regarding this limitation. *See generally* Prelim. Resp.

“acting on the program according to the verification”

Lastly, claim 1 recites “acting on the program according to the verification.” Petitioner argues that Hellman discloses this limitation because it discloses allowing software package 17 to be used if a license record is found in non-volatile memory 37 and there are authorized uses remaining. Pet. 40 (citing Ex. 1004, 10:40–49; Ex. 1003 ¶¶ 154–155). Based on the evidence in this current record, we determine that Petitioner has shown sufficiently for purposes of this Decision that Hellman discloses the limitation “acting on the program according to the verification,” as recited in claim 1. At this juncture, Patent Owner does not make any argument regarding this limitation. *See generally* Prelim. Resp.

Conclusion on Claim 1

Upon consideration of the parties’ contentions and evidence in this current record, we determine that Petitioner has shown adequately for purposes of this Decision that claim 1 is unpatentable under § 103(a) as obvious over the combination of Hellman and Chou, as well as over the combination of Hellman, Chou, and Schneck.

d. Remaining challenged claims

Petitioner accounts for claims 2, 3, 6–14, and 16. Pet. 40–64. Petitioner provides detailed explanations as to how the asserted prior art

combinations teach or suggest these claims and articulates reasons to combine the prior art teachings, citing Dr. Wolfe's testimony for support. *Id.* (citing Ex. 1004; Ex. 1005; Ex. 1003). Patent Owner does not make any additional arguments in its Preliminary Response regarding these remaining claims. *See generally* Prelim. Resp. Having reviewed Petitioner's arguments and supporting evidence in the present record, we determine that Petitioner has established a reasonable likelihood of prevailing on its assertion that claims 2, 11, and 13 are unpatentable under § 103(a) as obvious over Hellman and Chou, and that claims 2, 3, 6–14, and 16 are unpatentable under § 103(a) as obvious over Hellman, Chou, and Schneck.

e. Conclusion on Obviousness

Based on the evidence in the present record, we are persuaded that Petitioner has established a reasonable likelihood of prevailing on its assertion that claims 1, 2, 11, and 13 are unpatentable under § 103(a) as obvious over Hellman and Chou, and that claims 1–3, 6–14, and 16 are unpatentable under § 103(a) as obvious over Hellman, Chou, and Schneck.

III. CONCLUSION

For the foregoing reasons, we determine that the information presented in the Petition establishes that there is a reasonable likelihood that Petitioner would prevail with respect to challenged claims 1–3, 6–14, and 16 of the '941 patent. At this juncture in the proceeding, we have not made a final determination with respect to the patentability of the challenged claims, or with respect to claim construction.

IV. ORDER

For the foregoing reasons, it is
ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes*
review is hereby instituted for the following asserted grounds:

Claims Challenged	35 U.S.C. §	References
1–2, 11, 13	103(a)	Hellman, Chou
1–3, 6–14, 16	103(a)	Hellman, Chou, Schneck

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and
37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial
will commence on the entry date of this Decision.

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