

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHENZHEN TUOZHU TECHNOLOGY CO., LTD.,
Petitioner

v.

STRATASYS, INC.
Patent Owner.

IPR2025-00611
U.S. PATENT NO. 11,886,774

PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

I.	Introduction.....	1
II.	The '774 Patent and the Challenged Claims.....	4
A.	Summary of the '774 Patent (EX1001).....	4
III.	Level of Ordinary Skill.....	9
IV.	Claim Construction.....	10
V.	Applicable Legal Standards	10
VI.	The Petition Does Not Show That The Challenged Claims Are Unpatentable Under Grounds 1A-1D.....	12
A.	Overview of <i>Douglas</i> (EX1005)	12
B.	Overview of <i>Mark</i> (EX1006).....	12
C.	Overview of <i>Dahlin</i> (EX1008).....	12
D.	Overview of <i>Batchelder</i> (EX1007).....	13
E.	Overview of <i>Pax</i> (EX1013)	13
F.	Ground 1A Does Not Render the Challenged Claims Unpatentable	13
1.	The <i>Douglas-Mark</i> combination does not teach or suggest claim elements [1.2] and [1.3]	13
2.	The <i>Douglas-Mark</i> combination does not teach or suggest claim element [1.4] 17	
3.	The <i>Douglas-Mark</i> combination does not teach or suggest claim element [1.5] 20	
4.	Dependent Claims.....	25
G.	Ground 1B	27
1.	Claim 6.....	27
2.	Claim 7.....	29
3.	Claims 9 and 10	30
H.	Ground 1C	31
1.	Claim 8.....	31
I.	Ground 1D	32
1.	Claim 19.....	32

VII. The Petition Does Not Show That The Challenged Claims Are Unpatentable Under Grounds 2A-2E	34
A. Overview of <i>Hamilton</i> (EX1010).....	34
B. Overview of <i>Evans</i> (EX1011).....	34
C. Overview of <i>KISSlicer</i> (EX1012)	34
D. Overview of <i>Pettis</i> (EX1009).....	35
E. Overview of <i>Wang</i> (EX1014)	35
F. <i>Evans</i> Is Not Prior Art	35
G. <i>KISSlicer</i> Is Not Prior Art	37
H. Ground 2A Does Not Render the Challenged Claims Unpatentable.....	39
1. The <i>Hamilton-Evans</i> combination (with or without <i>KISSlicer</i>) does not teach or suggest claim element [1.1]	39
2. The <i>Hamilton-Evans</i> combination (with or without <i>KISSlicer</i>) does not teach or suggest claim elements [1.2] and [1.3]	40
3. The <i>Hamilton-Evans</i> combination (with or without <i>KISSlicer</i>) does not teach or suggest claim element [1.4]	45
4. The <i>Hamilton-Evans</i> combination (with or without <i>KISSlicer</i>) does not teach or suggest claim element [1.5]	47
5. The <i>Hamilton-Evans</i> combination (with or without <i>KISSlicer</i>) does not teach or suggest claim element [1.6]	49
6. Dependent Claims.....	50
I. Ground 2B Does Not Render the Challenged Claims Unpatentable	50
J. Ground 2C Does Not Render the Challenged Claims Unpatentable	50
K. Ground 2D Does Not Render the Challenged Claims Unpatentable.....	51
1. Claim 8.....	51
L. Ground 2E	52
VIII. Conclusion.....	52

TABLE OF AUTHORITIES**Page(s)****Federal Cases**

<i>Arendi S.A.R.L. v. Apple Inc.</i> , 832 F.3d 1355 (Fed. Cir. 2016)	18, 46
<i>AT&T Services Inc. et. al. v. Innovative Sonic Ltd.</i> , IPR2024-01143, Paper 15 (PTAB Feb. 11, 2025).....	22
<i>CFMT, Inc. v. YieldUp Int'l Corp.</i> , 349 F.3d 1333 (Fed. Cir. 2003)	10
<i>eBay, Inc. v. Paid, Inc.</i> , CBM2014-00125, Paper 15 (PTAB Sept. 30, 2014).....	11
<i>Eizo Corp. v. Barco N.V.</i> , IPR2014-00358, Paper 11 (PTAB July 23, 2014).....	11
<i>Garmin Int'l, Inc. v. Patent of Cuozzo Speed Techs. LLC</i> , IPR2012-00001, Paper 15 (PTAB Jan. 9, 2013)	10
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1966).....	11
<i>In re Kahn</i> , 441 F.3d 977 (Fed. Cir. 2006)	11
<i>KSR Int'l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007).....	11
<i>LG Elecs., Inc. v. Cellular Commc'ns Equip. LLC</i> , IPR2016-00197, Paper 7 (PTAB Apr. 29, 2016)	12
<i>Medivis, Inc. v. Novarad Corp.</i> , IPR2023-00042, Paper 37 (PTAB Apr. 23, 2024)	38
<i>Mintz v. Dietz & Watson, Inc.</i> , 679 F.3d 1372 (Fed. Cir. 2012)	22
<i>Moses Lake Indus., Inc. v. Enthone, Inc.</i> , IPR2014-00243, Paper 6 (PTAB June 18, 2014)	11

<i>Moses Lake Indus., Inc. v. Enthone, Inc.</i> , IPR2014-00246, Paper 6 (PTAB June 18, 2014)	11
<i>In re Rijckaert</i> , 9 F.3d 1531 (Fed. Cir. 1993)	10
<i>In re Royka</i> , 490 F.2d 981 (C.C.P.A. 1974)	10
<i>SRI Int'l, Inc. v. Internet Sec. Sys., Inc.</i> , 511 F.3d 1186 (Fed. Cir. 2008)	37, 39
<i>TALtech Ltd. v. Esquel Apparel, Inc.</i> , 279 F. App'x 974 (Fed. Cir. 2008)	14
<i>TCL Commc'n Tech. Holdings Ltd. v. DataQuill Ltd.</i> , IPR2020-00746, Paper 21 (Sept. 18, 2020)	36, 39
<i>United States v. Dunkel</i> , 927 F.2d 955 (7th Cir. 1991)	36
<i>Wellman, Inc. v. Eastman Chem. Co.</i> , 642 F.3d 1355 (Fed. Cir. 2011)	10
Federal Statutes	
35 U.S.C. § 102	36, 38
35 U.S.C. § 103	10
35 U.S.C. § 311(b)	19, 46
35 U.S.C. § 312(a)(3)	36, 38
Regulations	
37 C.F.R. § 42.6(a)(3)	38
37 C.F.R. § 42.22	36, 38
Other Authorities	
U.S. Patent No. 9,694,544	1

U.S. Patent No. 9,862,149.....2

U.S. Patent No. 11,886,774.....*passim*

EXHIBIT LIST

Exhibit No.	Description
2001	Docket Navigator – Judge Rodney Gilstrap Motion Success for Stay Pending IPR and Time to Milestones
2002	United States District Courts — Judicial Caseload Profiles for Eastern District of Texas (Sept. 30, 2024 and Dec. 31, 2024), available at https://www.uscourts.gov/data-news/reports/statistical-reports/federal-court-management-statistics
2003	Minute Entry for proceedings held before District Judge Gilstrap on Nov. 7, 2024, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG (E.D. Tex. Nov. 14, 2024)
2004	Discovery Order, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 35 (E.D. Tex. Dec. 2, 2024)
2005	Protective Order, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 36 (E.D. Tex. Dec. 3, 2024)
2006	e-Discovery Order, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 41 (E.D. Tex. Dec. 19, 2024)
2007	Invalidity and Ineligibility Contentions, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, (E.D. Tex. Jan. 30, 2025)
2008	Transcript of Hearing on the Nomination of Howard Lutnick, of New York, to be Secretary of Commerce (Jan. 29, 2025)
2009	Order Denying Defendants' Motion to Dismiss for Failure to Join Indispensable Party, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt. No. 53 (E.D. Tex. May 29, 2025)
2010	Plaintiff's Unopposed Motion to Consolidate Case No. 2:25-cv-00465-JRG with Case Nos. 2:24-cv-00644-JRG and 2:24-cv-00645-JRG, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt. No. 54 (E.D. Tex. May 30, 2025)
2011	Lex Machina, Patent Litigation Report 2024 (Feb. 2024)
2012	U.S. District Court, Eastern District of Texas [Live] Calendar Events Set for 6/1/2026-8/1/2026
2013	Declaration Pro Hac Vice of Dexter Hamilton

2014	Declaration of Dr. Denis Cormier
2015	Transcript of the Deposition of Dr. Michael Hickner

I. INTRODUCTION

Stratasys, Inc. (“Stratasys” or “Patent Owner”) hereby submits this Response to the Petition for *inter partes* review (“Petition” or “Pet.”) filed by Shenzhen Tuozy Technology Co., Ltd. (“Petitioner”), challenging claims 1-10, 12-13, and 19-20 (“challenged claims”) of U.S. Patent No. 11,886,774 (“the ’774 Patent”) (EX1001).

Petitioner alleges that the challenged claims are invalid based on 9 grounds (1A-1D, 2A-2E (with or without *KISSlicer*)). Petitioner argues that claims 1-5, 9-10, 12-13, and 20 are obvious over U.S. Patent Publication No. 2014/0117585 (“*Douglas*”) (EX1005) in view of U.S. Patent No. 9,694,544 (“*Mark*”) (EX1006) in Ground 1A. Petitioner further argues that claims 6-7 and 9-10 are obvious over the combination of Ground 1A in view of European Patent No.1,087,862 (“*Dahlin*”) (EX1008) in Ground 1B, claim 8 is obvious over the combination of Ground 1A in view of U.S. Patent Publication No. 2014/0127524 (“*Batchelder*”) (EX1007), and claim 19 is obvious over the combination of Ground 1A in view of International Patent Publication No. 2014/039825 (“*Pax*”) (EX1013).

Petitioner additionally argues that claims 1-5, 9-10, and 12-13 would have been obvious over U.S. Patent Publication No. 2014/0236773 (“*Hamilton*”) (EX1010) in view of *Evans* (with and without *KISSlicer*) (EX1011) in Ground 2A. Ground 2B adds *Pax* to the combination of Ground 2A and challenges claims 6-7

and 19. Ground 2C further adds U.S. Patent Publication No. 2013/0329258 (“*Pettis*”) (EX1009) to the combination of Ground 2B and challenges claim 19. Ground 2D, challenging claim 8, adds *Batchelder* to the combination of Ground 2A, and Ground 2E adds U.S. Patent No. 9,862,149 (“*Wang*”) (EX1014) to the combination of Ground 2A and challenges claim 20.

As explained below, Petitioner has failed to demonstrate that any of the challenged claims are unpatentable because each of the asserted grounds has fatal defects.

The challenged claims of the '744 Patent are directed to solutions that include receiving a request to fabricate an object from a three-dimensional model, determining a target printer to fabricate the object, querying the target printer for configuration information of the target printer relevant to creation of a printable model for fabrication of the object on the target printer, receiving, from the target printer, a dictionary of configuration information containing one or more properties from the target printer that affect fabrication capabilities of the target printer, and creating a fabrication profile based on the one or more properties.

The primary reference in Ground 1A (*Douglas*) discloses a solution that, unlike the '744 Patent, does not query the target printer for configuration information or explain how data is received from the printer. The secondary reference in Ground 1A (*Mark*) does not remedy these deficiencies and the

combination also fails to teach creating a fabrication profile based on the one or more properties from the target printer that affect fabrication capabilities of the target printer.

Similarly, the primary reference in Ground 2A (*Hamilton*) discloses a solution that, unlike the '744 Patent, does not query the target printer for configuration information or explain how data is received from the printer. The secondary references (*Evans* and *KISSlicer*) do not remedy these deficiencies and the combination also fails to teach creating a fabrication profile based on the one or more properties as *Hamilton* teaches that the instructions for the 3-D printer are already available.

Further, the *Evans* and *KISSlicer* references are not prior art. The Petition is devoid of any argument or citation to evidence that would satisfy Petitioner's burden to show the public accessibility of these documents.

Because Grounds 1A and 2A each fail to teach the limitations of independent claim 1, upon which all other claims depend, and no other ground challenges that claim, Petitioner has failed to show that any challenged claim of the '774 Patent is unpatentable. Many other grounds have additional defects with respect to the dependent claims they challenge. In summary, each of Petitioner's grounds are deficient and thus Petitioner cannot satisfy its burden to prove unpatentability.

II. THE '774 PATENT AND THE CHALLENGED CLAIMS

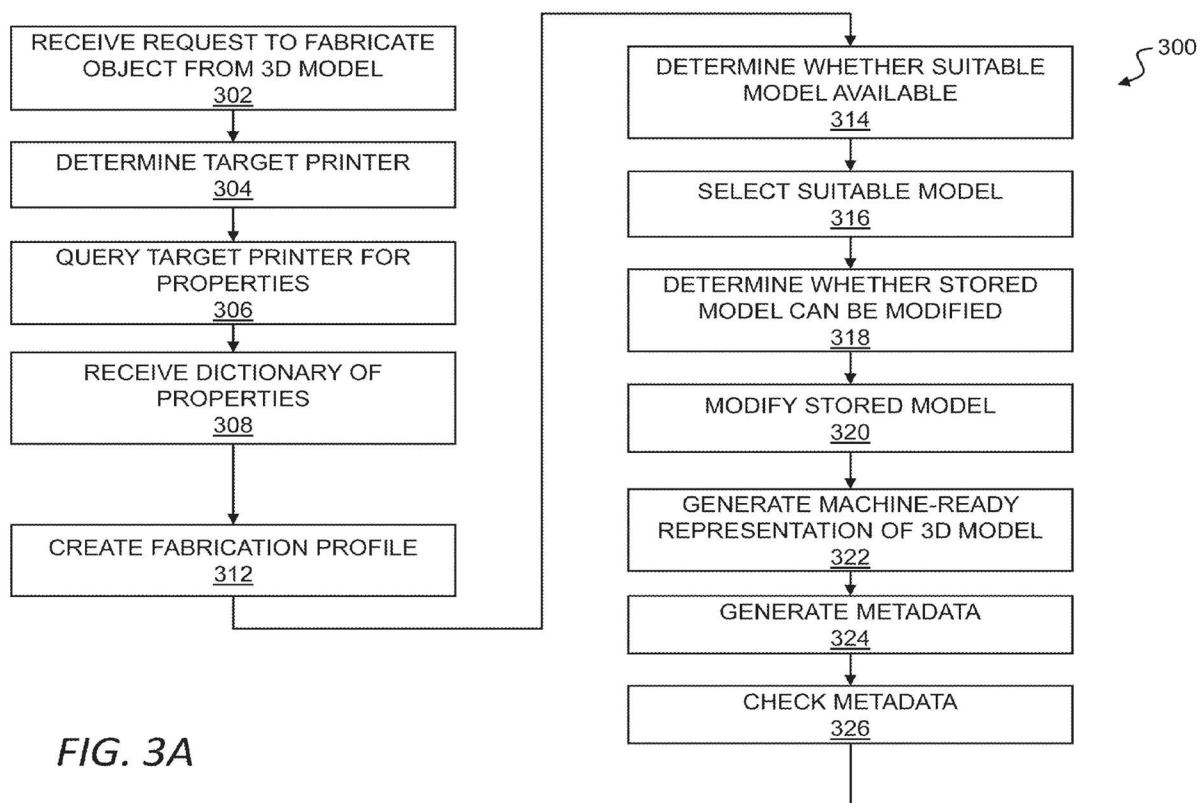
A. Summary of the '774 Patent (EX1001)

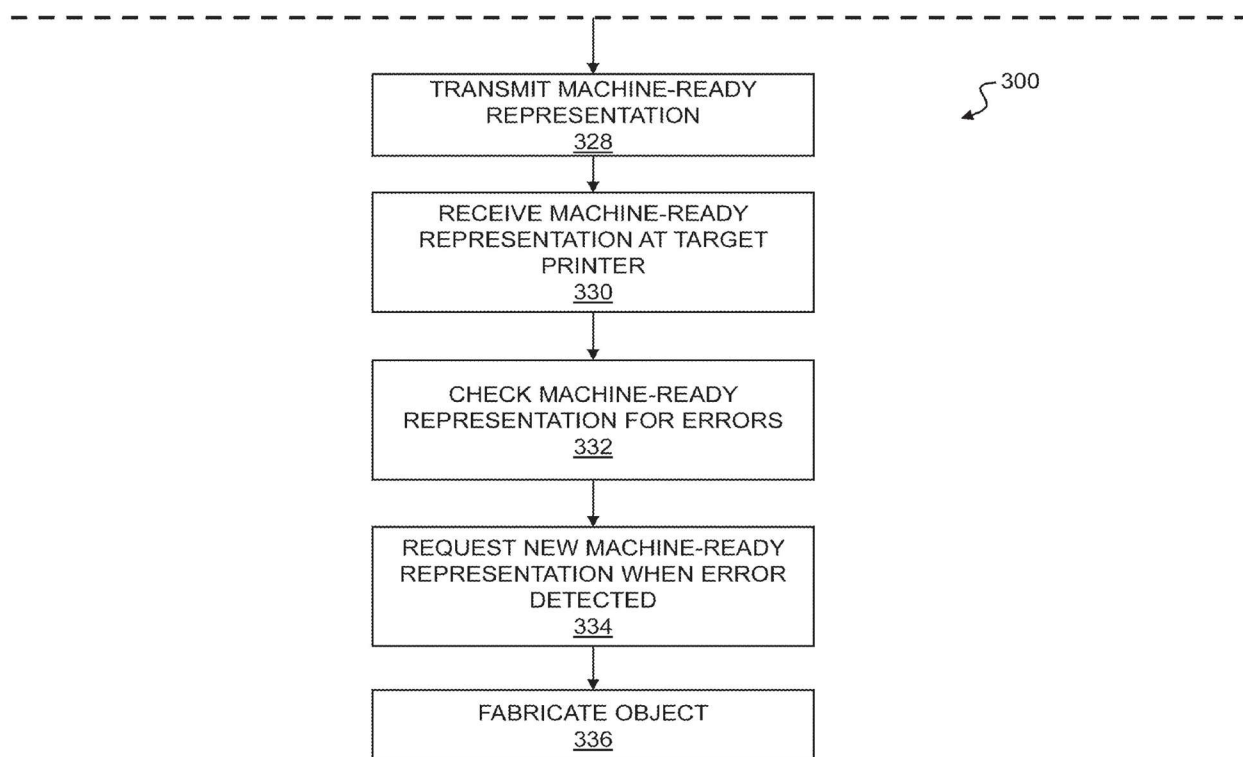
The '744 Patent relates to “three-dimensional printer[s]” and the “use of configuration information . . . to select suitable machine-ready models.” EX1001 at 1:18-20. As the patent explains, three-dimensional printers generally “execute machine-ready representations of three-dimensional models for fabricating objects.” *Id.* at 1:24-26. The models are “typically dependent on the configuration or properties of the three-dimensional printers,” such as “the hardware configuration, software configuration, user settings, firmware version(s).” *Id.* at 1:26-29. “While a three-dimensional printer may know its own hardware and software configuration, a service providing machine-ready models may not.” *Id.* at 1:30-32. Thus, there is “a need for providing machine-ready models based on a three-dimensional printer's configuration, and for improved matching of models to printers.” *Id.* at 1:32-35; EX2014, ¶58.

The '744 Patent discloses that “hardware and software properties of a three-dimensional printer can be queried and applied” for selecting “suitable directly printable models for the printer” or identifying “situations where a new machine-ready model must be generated.” *Id.* at 1:39-43. These properties may include “physical properties of the printer, printer firmware, user settings, [and] hardware configurations.” *Id.* at 1:43-45. A three-dimensional printer may respond to

configuration queries “with a dictionary of capabilities or properties” that may be used to “select suitable models” or “determine when a new model must be created.” *Id.* at 1:46-49. When a “printable model is sent to the printer, metadata for the printable model may be compared to printer properties in the dictionary to ensure that the model can be fabricated by the printer.” *Id.* at 1:49-52; EX10125 ¶59.

Figures 3A and 3B of the '774 Patent show a flowchart of a method for providing machine-ready models based on printer configuration.

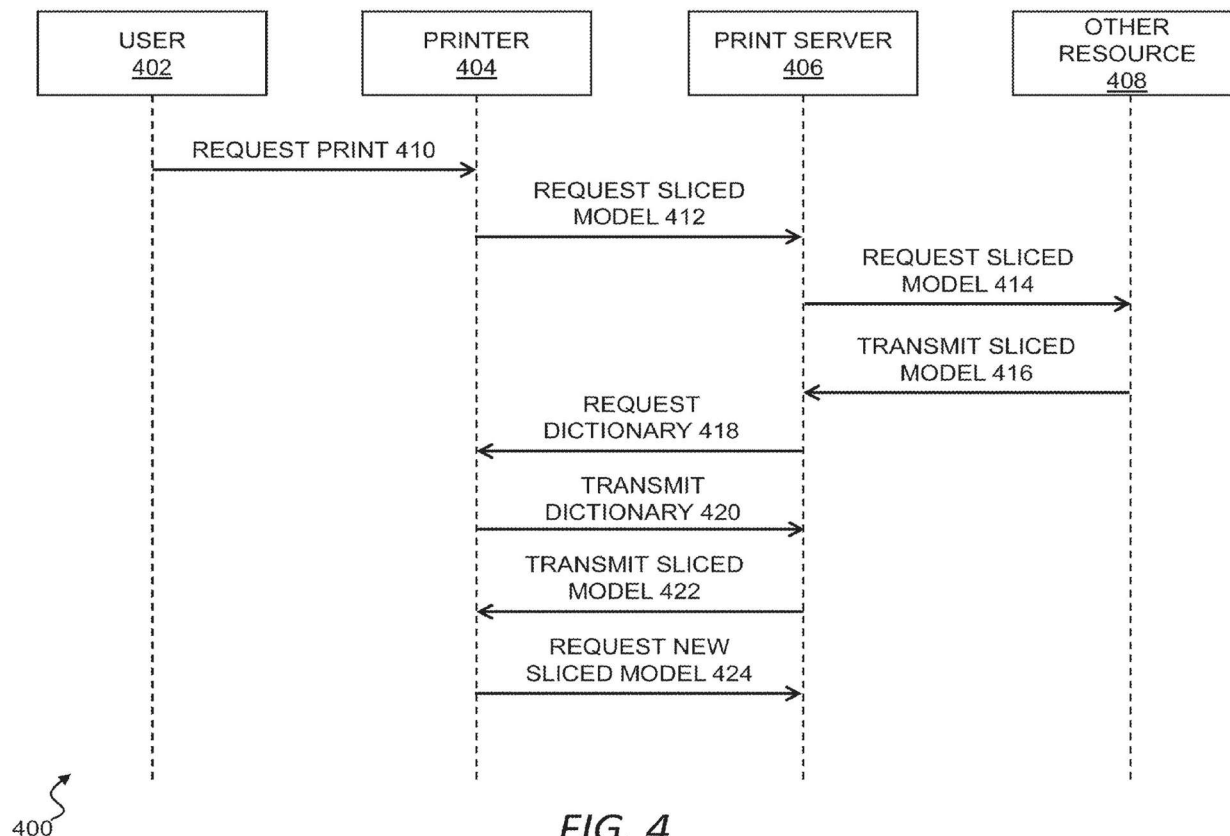


**FIG. 3B**

Id. at Figs. 3A-3B, 17:21-22. At step 302, a request to fabricate an object from a three-dimensional model is received. *See id.* at 17:54-56. At step 304, a target printer to fabricate the object is determined. *See id.* at 18:42-43. The selection criteria may include information related to “the three-dimensional model,” “the object to be fabricated,” “a print queue, a prioritization, a location of the printer or requester, a timeline, [or] printer attributes.” *Id.* at 18:57-64. At step 306, the target printer is queried for one or more properties relevant to fabrication of the object. *Id.* at 19:1-3. The query may request specific properties of the target printer or properties or information relevant to fabrication of an object on the target printer. *Id.* at 19:5-8. The properties may include “a hardware configuration of the target

printer, a software configuration, a user setting or preference, or a firmware configuration of the target printer.” *Id.* at 19:22-25. At step 308, a dictionary of one or more properties is received from the target printer. *Id.* at 21:19-21. At step 312, a fabrication profile is created based on the one or more properties. *See id.* at 23:32-34. Thereafter, a suitable model available for the fabrication profile is selected and a machine-ready representation of the 3-D model is generated (*see* steps 314 to 322). *See id.* at 24:23-26:22. The machine-ready representation may be transmitted to be received at the target printer, which fabricates the object based on the machine-ready representation (steps 328 to 336). *See id.* at 27:7-28:7; EX2014, ¶60.

Figure 4 of the '774 Patent shows a sequence diagram of a system to provide machine-ready models based on printer configuration.



Id. at Fig. 4, 28:27-28. As shown, Figure 4 provides an example of the communications in the system. Arrow 410 shows that user 402 may send a request to printer 404 or another component or device that controls printer 404 to print an object. *See id.* at 28:63-66. Arrow 412 shows that printer 404 may request a sliced model from a printer server 406, which may request and receive a sliced model from another resource 408. *Id.* at 29:3-25. Arrow 418 shows that print server 406 may request a dictionary of one or more properties from printer 404, which may transmit the dictionary (arrow 420). *Id.* at 28:26-52. Print server 406 may transmit a sliced model (arrow 422) and if there are errors with the model, printer 404 may request a new sliced model (arrow 424). *Id.* at 28:53-29:6; EX2014, ¶61.

Numerous claims embody these solutions, including independent claim 1. For instance, claim 1 recites “receiving a request to fabricate an object from a three-dimensional model;” “determining a target printer to fabricate the object;” “querying the target printer for configuration information of the target printer relevant to creation of a printable model for fabrication of the object on the target printer;” “receiving, from the target printer, a dictionary of configuration information containing one or more properties from the target printer that affect fabrication capabilities of the target printer;” “creating a fabrication profile based on the one or more properties;” and “generating a machine-ready representation of the three-dimensional model executable by the target printer to fabricate the object.” *Id.* at 35:19-32; EX2014, ¶62.

As explained below, the asserted grounds fail to teach the elements of claim 1. Because claims 2-10, 12-13, and 19-20 depend from claim 1, the asserted grounds also fail to teach the elements of dependent claims 2-10, 12-13, and 19-20 for at least the same reasons. EX2014, ¶63.

III. LEVEL OF ORDINARY SKILL

For the purpose of this Response, a person of ordinary skill in the art (a “POSITA”) in relation to the subject matter of the ’774 Patent would have had a bachelor’s degree in Mechanical Engineering, Computer Engineering, Electrical Engineering, Chemical Engineering, Materials Science, or a comparable field and

at least two years of experience related to 3D printing, with additional experience potentially being a substitute for a formal degree or training (and vice versa).

EX2014, ¶¶21-25.

As explained below, the Petition has failed to show that the claims of the '774 Patent are unpatentable irrespective of the level of skill of a skilled artisan.

IV. CLAIM CONSTRUCTION

For the purposes of this Response, Patent Owner submits that the Board does not need to construe any claim terms in any particular way to conclude that the Petition is deficient. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“need only be construed ‘to the extent necessary to resolve the controversy’”).

V. APPLICABLE LEGAL STANDARDS

Each of Petitioner's grounds relies on obviousness under 35 U.S.C. § 103. A claim cannot be considered obvious if even one element of the claim is absent from the prior art. *See CFMT, Inc. v. YieldUp Int'l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (“Obviousness requires a suggestion of all limitations in a claim.”) (citing *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974)); *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (reversing obviousness rejection as not all claim elements were taught or suggested); *Garmin Int'l, Inc. v. Patent of Cuozzo Speed Techs. LLC*, IPR2012-00001, Paper 15 at 15 (PTAB Jan. 9, 2013) (denying

institution of IPR in part as prior art did not disclose all claim limitations in obviousness challenge).

Obviousness is resolved based on several factual determinations including the scope and content of the prior art, any differences between the claimed subject matter and the prior art, and the level of ordinary skill in the art. *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). IPR petitions “must address the *Graham* factors.” *Eizo Corp. v. Barco N.V.*, IPR2014-00358, Paper 11 at 29-30 (PTAB July 23, 2014) (citing *Graham*, 383 U.S. at 17-18) (faulting Petitioner for its failure to identify differences between the claimed subject matter and the prior art and its conclusory assertions about the teachings of the prior art); *see also Moses Lake Indus., Inc. v. Enthone, Inc.*, IPR2014-00243, Paper 6 at 18 (PTAB June 18, 2014); *Moses Lake Indus., Inc. v. Enthone, Inc.*, IPR2014-00246, Paper 6 at 17 (PTAB June 18, 2014); *eBay, Inc. v. Paid, Inc.*, CBM2014-00125, Paper 15 at 21 (PTAB Sept. 30, 2014).

The conclusion of obviousness based on the combination of references must be supported by an explicit analysis of a reason to combine such references. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Mere conclusory statements are insufficient. Instead, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *see also LG Elecs., Inc. v. Cellular Commc'ns Equip.*

LLC, IPR2016-00197, Paper 7 at 7-11 (PTAB Apr. 29, 2016) (petition's conclusion of obviousness lacked sufficient articulated reasons with rational underpinnings for modifying references to achieve specific elements of the claims).

VI. THE PETITION DOES NOT SHOW THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUNDS 1A-1D

A. Overview of *Douglas* (EX1005)

Douglas discloses a tagged build material for three-dimensional printing that provides information from the tag to determine how to use the build material. *See* EX1005 at Title, Abstract; EX2014, ¶65.

B. Overview of *Mark* (EX1006)

Mark discloses methods for fiber reinforced additive manufacturing that generate an anisotropic fill tool path for controlling a three-dimensional printer to deposit a substantially anisotropic fill material defining at least part of an interior of a layer. *See* EX1006 at Title, Abstract; EX2014, ¶66.

C. Overview of *Dahlin* (EX1008)

Dahlin is a European Patent. *Dahlin* discloses a “filament spool, and a filament supplied rapid prototyping system that comprises a circuit for monitoring data concerning the filament on the filament spool.” EX1008, ¶[0007]; EX2014, ¶70.

D. Overview of *Batchelder* (EX1007)

Batchelder discloses “marked consumable material” for use in an “additive manufacturing system.” EX1007, Abstract, ¶¶[0008]-[0010], [0049]-[0055]; EX2014, ¶72.

E. Overview of *Pax* (EX1013)

Pax appears to be an International Patent Publication. *Pax* discloses a 3D printer capable of using multiple colors of build material. EX1013, ¶¶[0064]-[0067], Fig. 3A; EX2014, ¶71.

F. Ground 1A Does Not Render the Challenged Claims Unpatentable

Ground 1A challenges claims 1-5, 9-10, 12-13, and 20 of the '774 Patent. As explained below, Petitioner has failed to show that the *Douglas-Mark* combination teaches all elements of the challenged claims. EX2014, ¶75-76.

1. The *Douglas-Mark* combination does not teach or suggest claim elements [1.2] and [1.3]

The Petition fails to show that the combination in Ground 1A teaches claim elements teaches claim elements [1.2] (“determining a target printer to fabricate the object;”) and [1.3] (“querying the target printer for configuration information of the target printer relevant to creation of a printable model for fabrication of the object on the target printer;”). In particular, Petitioner has not shown that the combination determines a target printer to fabricate the object and then queries the target printer for configuration information of the target printer. EX2014, ¶79.

When claim language logically or grammatically requires steps to be performed in the order in which they are recited, the steps must be performed in that order. *TALtech Ltd. v. Esquel Apparel, Inc.*, 279 F. App'x 974, 978 (Fed. Cir. 2008). The language of claim 1 of the '774 Patent requires an order, both logically and grammatically. Claim element [1.3] relies on “querying the target printer for configuration information of the target printer relevant to creation of a printable model for fabrication of the object on the target printer.” *See* EX1001 at 35:22-24. In order to query specifically the target printer, the target printer must have been determined. While the '774 Patent's specification describes that queries may be used to select a target printer (EX1001 at 19:8-14), it does not follow that the '774 Patent claims those embodiments. One such embodiment refers to querying multiple printers, which is not reflected in claim 1, which only claims querying the target printer of the '774 Patent. EX1001 at 19:8-10. The query of the other described embodiment is expressly “sent to a printer that is not necessarily the target printer as described herein.” EX1001 at 19:11-14. But again, claim 1 only claims querying the target printer. Therefore, claim element [1.2] “determining a target printer to fabricate the object” must be performed prior to claim element [1.3]. *See* EX1001 at 35:21-24; EX2014, ¶77.

Claim element [1.4] recites “receiving, from the target printer, a dictionary of configuration information,” logically a response to “querying the target printer for

configuration information of the target printer” as performed in claim element [1.3]. *See* EX1001 at 35:22-28. Claim element [1.5] requires “creating a fabrication profile based on the one or more properties,” and those properties are part of the dictionary of configuration information received in claim element [1.4]. *See* EX1001 at 35:25-32. Therefore, to create the fabrication profile, those properties must have already been received by performing the step of claim element [1.4] in advance of the step of claim element [1.5]. Claim element [1.6] requires performance of previous claim elements, as the “machine-ready representation” must be “of the three-dimensional model.” *See* EX1001 at 35:30-32. Thus, the method steps of claim 1 must be performed in order. EX2014, ¶77.

Petitioner argues that *Douglas* discloses a print server that automatically selects a printer for a job. Pet. at 12. In addition, the print server can request the printer to transmit tag data that includes configuration information of the target printer. *See id.* at 13-14. However, Petitioner fails to explain how, or if, the print server determines a target printer to fabricate the object and then requests from that determined target printer configuration information of the target printer. *See* Pet. at 13. Contrary to Petitioner’s conclusory assertion that the print server’s request for information is for the target printer, *Douglas* discloses that a print server may request information from a printer to be used “as an input to a process on the print server for allocating print requests to various three-dimensional printers.” EX1005,

¶[0074]. Thus, *Douglas* ' print server determines the target printer (“allocating [a] print request[.]”) *after* requesting information. EX2014, ¶80.

To the extent Petitioner relies on the disclosure of *Douglas* that “a remote client device 206 may request an object 314 be printed on the network connected three-dimensional printer 306” (EX1005, ¶[0073]) as disclosure of selecting a target printer prior to querying the target printer, this disclosure also fails to teach performing the steps of claim 1. If a received request already identifies the printer, there is no need for “determining a target printer” as recited in claim element [1.2]. Further, Petitioner argues that it is the “print server 208” or “printer server 208” of *Douglas* that performs steps of claim 1, such as determining a target printer and querying the target printer for configuration information. *See, e.g.*, Pet. at 12-13; *see also id.* at 21. The disclosure of paragraph 73 of *Douglas* is explicitly that “remote client device 206” performs the actions described in that paragraph. EX1005, ¶[0073]. The petition never refers to such a “remote client device,” and thus presents no argument regarding its capabilities. Additionally, neither paragraph [0060] or [0073] discloses that “remote client device 206” *receives* a request, as it is the remote client device that *performs* the requesting. *Id.* at ¶¶[0060], [0073]; EX2014, ¶81.

Thus, Petitioner fails to show that the combination teaches determining a target printer to fabricate the object before querying *the target printer* for

configuration information of the target printer. For at least this reason, Ground 1A fails to render claim 1 of the '774 Patent obvious. EX2014, ¶82.

2. The *Douglas-Mark* combination does not teach or suggest claim element [1.4]

The Petition also fails to show that the combination in Ground 1A teaches claim element [1.4] (“receiving, from the target printer, a dictionary of configuration information containing one or more properties from the target printer that affect fabrication capabilities of the target printer;”). Petitioner argues that “Douglas’ accumulated data tag 304 data received from the printer constitutes a dictionary of configuration information because it similarly includes a collection of ‘information on characteristics of the build material 312’ . . . which ‘may include at least one of a material identification number, a build material type, a build material diameter...a build material color...or other characteristic information.’” Pet. at 14; *see also* Pet. at 15. However, Petitioner fails to explain why the data sent from the target printer is a collection of configuration information (which Petitioner asserts to be the claimed “dictionary of configuration information”). *See* Pet. at 14-15; EX2014, ¶83.

To the extent Petitioner is relying on its expert to supply the details as to the data from the data tag in the combination being sent and received as a collection of configuration information, doing so is improper. *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016) (“common sense is typically invoked to provide a

known motivation to combine, not to supply a missing claim limitation”). As the Federal Circuit explained in *Arendi*, the Court’s cases “repeatedly warn that references to ‘common sense’—whether to supply a motivation to combine or a missing limitation—cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, especially when dealing with a limitation missing from the prior art references specified.” *Id.* at 1362. In the rare case where common sense “is used to supply a missing limitation” the search for “a reasoned basis for resort[ing] to common sense must be searching” and “this is particularly true where the missing limitation goes to the heart of an invention.” *Id.* “Furthermore, because an *inter partes* review may only be requested ‘on the basis of prior art consisting of patents or printed publications,’ 35 U.S.C. § 311(b), expert testimony cannot take the place of disclosure from patents or printed publications.” CTPG at 36 (“[E]xpert testimony may explain ‘patents and printed publications,’ but is not a substitute for disclosure in a prior art reference itself.”).

Douglas simply discloses, for example, that “data concerning a type of build material” can be provided to a controller without explaining how the data is provided. EX1005, at ¶[0063]; *see also id.* at ¶[0064]. In fact, Petitioner’s expert admits that *Douglas* does not talk about “any, well, way to – method to transmit that information.” EX2015 at 21:9-12 (emphasis added). Thus, *Douglas* does not teach how its data is provided from the printer and received by the print server and

thus does not teach receiving a dictionary of configuration information containing one or more properties from the target printer that affect fabrication capabilities of the target printer. EX2014, ¶84.

In addition, even if a “dictionary” is simply a collection of properties, *Douglas* does not disclose *any* organization or collection of properties used to transmit said properties. Petitioner refers to “Douglas’ accumulated data tag 304 data,” but nowhere does Petitioner actually identify such accumulation of data in *Douglas*, and *Douglas* does not describe accumulation. Pet. at 14. To the extent Petitioner would rely on the “data tag 304” *itself* (rather than the data it may hold) as an accumulation, *Douglas* still fails to teach claim element [1.4] because the data tag itself is not transmitted. EX2014, ¶84.

Further, as explained above, there is no teaching of determining a target printer to fabricate the object and then querying *the target printer* for configuration information of the target printer. *Supra* § VI.F.1. Thus, any information received under claim element [1.4] is not “from the target printer” because the target printer has not been determined. EX2014, ¶85.

For each of these reasons, Petitioner has failed to show that the combination in Ground 1A teaches claim element [1.4]. EX 2014, ¶86.

3. The *Douglas-Mark* combination does not teach or suggest claim element [1.5]

The Petition also fails to show that the combination in Ground 1A teaches claim element [1.5] (“creating a fabrication profile based on the one or more properties”). Petitioner asserts that *Douglas* creates a fabrication profile and also that it would have been obvious “that determining operational parameters for fabrication of the object would have been ‘creating a fabrication profile’ as these operational parameters are used ‘for a fabrication process using the build material 312’ and ‘for the fabrication of the object 314.’” Pet. at 15. Petitioner also asserts that a POSITA would have found obvious “that the accumulation of operational parameters constitutes a ‘profile,’ or that a ‘profile’ would have been created based on Douglas’ operational parameter(s) . . . for better data transmission and printing efficiency” because a variety of operational parameters “would be transmitted to the 3D printer.” *Id.* at 16-17. Further, relying on the teachings of *Mark*, Petitioner asserts it would have been obvious “to organize Douglas’ operational parameters into a ‘profile’” because it “facilitates the use of these parameters for the generation of toolpaths/G-code,” “provide[s] better storage and computational efficiency, and “allow[s] easier rendering of such operational parameters for [a] user [to] view.” *See id.* at 17-19; EX2014, ¶87.

Petitioner’s assertions ignore the teachings of *Douglas*, lack supporting evidence, and/or are driven by impermissible hindsight. First, Petitioner tacitly

admits that *Douglas* does not teach creating a fabrication profile by relying on obviousness and *Mark*'s teachings to argue that a fabrication profile is created. *See* Pet. at 16-17, 17-19. But each of Petitioner's theories is flawed, as discussed below. EX2014, ¶88.

Second, Petitioner's assertions that *Douglas* teaches creating a fabrication profile lack supporting evidence and are driven by impermissible hindsight. Petitioner fails to explain why the use of operational parameters in a fabrication process teaches creating a fabrication profile. *See, e.g.*, Pet. at 15. There is no evidence cited or explanation provided that using operational parameters in a fabrication process creates a fabrication profile. In fact, Petitioner's rationales that are based on "better data transmission and printing efficiency" and "data compilation, organization, and storage and improve [sic] user experience" lack any supporting evidence. Petitioner cites to paragraphs 73, 97, and 99 of *Douglas* but none of those disclosures discuss "better data transmission and printing efficiency" or "data compilation, organization, and storage and improve [sic] user experience." *See* EX1005, ¶¶[0073], [0097], [0099]. Petitioner's expert also admits that, in relation to paragraph 73, he "didn't perform that analysis of better or more efficient data transmission." EX2015 at 27:5-8; EX2014, ¶89.

Thus, Petitioner fails to provide any source for this rationale, which appears to have been created by Petitioner itself, guided by impermissible hindsight and

without any guidance from prior art. *See Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1377 (Fed. Cir. 2012) (It is hindsight to use “the invention to define the problem the invention solves” because “when someone is presented with the identical problem and told to make the patented invention, it often becomes virtually certain that the artisan will succeed in making the invention.”); *see also AT&T Services Inc. et. al. v. Innovative Sonic Ltd.*, IPR2024-01143, Paper 15 at 38 (PTAB Feb. 11, 2025) (denying institution after finding no motivation to combine because of an overly broad conclusion that “suffers from hindsight bias”); EX2014, ¶89.

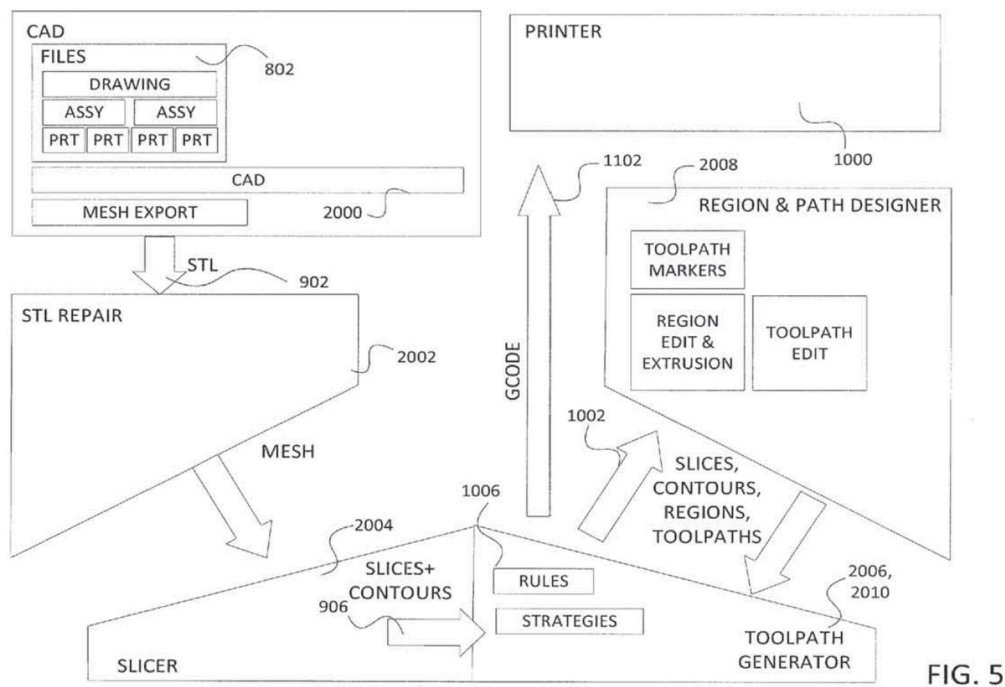
Third, Petitioner's assertions that the combination teaches creating a fabrication profile ignores the teachings of the references themselves. *See Pet.* at 17-19. Petitioner asserts that organizing “Douglas’ operational parameters into a ‘profile’” would “facilitate[] the use of these parameters for the generation of toolpaths/G-code.” *Pet.* at 19. But Petitioner ignores the teachings of *Douglas* that Petitioner relies upon in which the operational parameters are sent to the printer rather than being used to generate toolpaths, so there would be no need to “facilitate[] the use of these parameters for the generation of toolpaths/G-code,” as Petitioner asserts. *See EX1005*, ¶[0073] (“transmit the operational parameters back to the three-dimensional printer 306 for fabrication of the object 314”) (cited by *Pet.* at 15, 17). There is no explanation of why a profile would be created using the

parameters if the parameters are sent to the printer. Petitioner, for example, does not argue that the *printer* uses the parameters for the generation of toolpaths, whereas a fabrication profile would be used for that purpose. EX2014, ¶90.

To the extent Petitioner would prefer to rely on the disclosure of paragraph 75 of *Douglas* describing that operational parameters “may be combined,” Petitioner does not cite to this paragraph of *Douglas* in relation to claim element [1.5] or anywhere else in Ground 1A. *See* Pet. 4-21; EX1005, ¶[0075]; EX2014, ¶90.

Petitioner also asserts that organizing “*Douglas*’ operational parameters into a ‘profile’” would provide “better storage and computational efficiency.” *See* Pet. at 19. But like Petitioner’s assertions about “better data transmission and printing efficiency” and “data compilation, organization, and storage and improve [sic] user experience” that are discussed above, Petitioner’s rationales lack any supporting evidence and thus are guided by impermissible hindsight. Neither *Douglas* or *Mark* discuss storage or computational efficiency. Instead, Petitioner uses the hindsight provided by the ’774 Patent to create this justification. *See* Pet. at 19 (citing EX1005, ¶¶[0065]-[0066] and EX1006, 11:33-65, 13:4-19, 17:34-44, 53-58, FIGS. 5-7, 9-10, 21-22, which do not discuss better storage and computational efficiency); EX2014, ¶91.

Petitioner further asserts that organizing “Douglas’ operational parameters into a ‘profile’” would “allow easier rendering of such operational parameters for user view in a user interface.” Pet. at 19. But Petitioner ignores the teachings of the references themselves. As discussed above, *Douglas* sends the operational parameters to the printer for the printer to use them; there is no need for rendering the operational parameters. See EX1005, ¶[0073] (cited by Pet. at 15, 17). And as shown in Figure 5 of *Mark* (reproduced below), the printer simply receives GCODE (1102) and is not involved with the generation of such GCODE.



EX1006 at Fig. 5. Thus, the rule/parameter database in *Mark* is not a “fabrication profile based on the one or more properties” which are “from the target printer” and “that affect fabrication capabilities of the target printer” (see claim element

[1.4]). *See id.* at Fig. 5 (Rules 1006); *see also id.* at Fig. 20 (RULE/PARAMETER DATABASE). Nor does *Mark* teach that its rule/parameter database would be appropriate to send to the printer, unlike the operational parameters that *Douglas* sends to its printer. For those reasons, *Mark* fails to provide an example fabrication profile for use with the system of *Douglas*, as substantial modifications would need to be made to that system. Accordingly, any parameters viewed according to *Mark* are not and do not correspond to one or more properties that are from the target printer and that affect fabrication capabilities of the target printer, and any parameters according to *Douglas* are not viewed but rather are sent to the printer. Thus, the combination does not support Petitioner's conclusion that organizing "Douglas' operational parameters into a 'profile'" would "allow easier rendering of such operational parameters for user view in a user interface." *See Pet.* at 19; EX2014, ¶92.

For each of these reasons, Petitioner has failed to show that the combination teaches claim element [1.5]. EX2014, ¶93.

4. Dependent Claims

For the reasons described above, the *Douglas-Mark* combination fails to teach or suggest claim 1 of the '774 Patent. Thus, Ground 1A additionally fails to teach or suggest claims 2-5, 9-10, 12-13, and 20 of the '774 Patent. Ground 1 further fails to

teach or suggest dependent claims of the '774 Patent for the following reasons. EX2014, ¶94.

a) Claims 9 and 10

Claim 9 of the '774 Patent recites “The method of claim 1 wherein the one or more properties include one or more user settings on the target printer.” EX1001, at 36:4-6. Claim 10, which depends upon claim 9, recites “The method of claim 9 wherein the one or more user settings include user setting from a previous fabrication process.” EX1001, at 36:7-9. Ground 1A fails to teach or suggest these claims. EX2014, ¶95.

The Petition cites the disclosure of *Douglas* but fails to directly identify any such “user setting” present in that reference. Pet. at 26. Instead, Petitioner makes the convoluted argument that it would be obvious that data tag data would have been “one or more user settings on the target printer” simply because “the material is chosen and installed into the printer by the user and the printer is set to reflect the material (e.g., *by the data tag*).” *See id.* (emphasis added). Petitioner illustrates why this does not disclose a user setting, as petitioner admits that the setting is changed “by the data tag,” rather than the user. *See id.* Therefore, Petitioner fails to show that claim 9 is unpatentable, and, by extension, fails to show that claim 10 is unpatentable. EX2014, ¶96.

G. Ground 1B

Ground 1B adds *Dahlin* to the *Douglas-Mark* combination, challenging claims 6-7 and 9-10. Ground 1B does not independently challenge claim 1, upon which all other challenged claims depend, and therefore is defective for at least the same reasons as Ground 1A. Ground 1B has the following additional defects.

EX2014, ¶¶97-98.

1. Claim 6

Claim 6 recites “[t]he method of claim 4 wherein the hardware configuration includes an automatically detected hardware reconfiguration.” EX1001 at 35:47-49. Claim 4, upon which claim 6 depends, recites “[t]he method of claim 1 wherein the one or more properties include a hardware configuration of the target printer.” EX1001 at 35:38-40. Ground 1B fails to teach or suggest claim 6. EX2014, ¶99.

The disclosure of *Dahlin*, as cited by Petitioner, is limited to monitoring characteristics of a filament spool. *See* Pet. at 32-33; EX1008, ¶[0022]-[0023]. *Dahlin* does not disclose creating or modifying any fabrication profile in response to a detected change, nor does it disclose regenerating print instructions after a spool is replaced. Instead, *Dahlin* merely pauses the process and allows a user to manually intervene by replacing the filament, after which printing continues using preexisting instructions. EX1008, ¶¶[0022]-[0023]. *Douglas* and *Mark* do not cure this deficiency: neither reference discloses automatically detecting a hardware

reconfiguration and then incorporating that detection into the profile-based generation of a machine-ready representation. EX2014, ¶100.

The filament monitoring of *Dahlin* is incompatible with the requirements of claim elements [1.5] and [1.6], which recite “creating a fabrication profile based on the one or more properties,” and thus in the context of claim 6 require “creating a fabrication profile based on an automatically detected hardware reconfiguration.” *Dahlin* explains explicitly that the filament monitoring is used to “calculate whether a spool 42 or 56 contains enough filament to complete the job” and verify “that the modeling filament material on the spool is the same material specified in object data.” EX1008, ¶¶[0022]-[0023]. These determinations logically require that print settings and a machine-ready representation have already been set and generated, respectively. This is particularly clear for checking if the material on the spool matches the material specified in object data, as that object data must already exist. Thus, *Dahlin* does not disclose “creating a fabrication profile based on the one or more properties,” which in the case of claim 6 are alleged by Petitioner to be “the automatically detected new or replacement material.” *See* Pet. at 33. Therefore, Ground 1B fails to teach claim 6. EX2014, ¶101.

2. Claim 7

Claim 7 recites “[t]he method of claim 4 wherein the hardware configuration includes a manually specified hardware reconfiguration.” EX1001 at 35:50-52.

Ground 1B fails to teach or suggest this claim. EX2014, ¶102.

As Petitioner explains, *Dahlin* discloses notifying a user to replace materials. Pet. at 33; EX1008, ¶¶[0022]-[0023]. However, while Petitioner suggests that these materials are “chosen and loaded by the user,” the disclosure Petitioner cites does not establish that as the case or mention the user choosing materials at all. *See* Pet. at 33; EX1008, ¶¶[0022]-[0023]. Instead, *Dahlin* suggests that the user *should not* choose the filament, as *Dahlin* seeks to ensure alignment between the loaded material and the “material specified in object data.” EX1008, ¶[0023]. Similarly, the language of claim 7 requires that the hardware reconfiguration be “manually *specified*,” not just manually performed. In *Dahlin*, it is the system that specifies, and, as Petitioner argues regarding claim 6, this is automatic, rather than manual. Pet. at 32-33; EX1008, ¶[0023]; EX2014, ¶103.

Further, even if the materials *were* “chosen and loaded by the user,” it does not follow that *Dahlin* discloses “a manually specified hardware reconfiguration” as required by claim 7. In arguing regarding claim 7, the sole disclosure Petitioner relies on from *Dahlin* is “notifying a user to replace materials.” *See* EX1008, ¶¶[0022]-[0023]; EX2014, ¶104.

Additionally, as described regarding claim 6, *Dahlin* makes no suggestion of generating a fabrication profile or machine-ready representation, and is not compatible with such a process. *Dahlin* instead teaches the system confirming that material is suitable for already existing “object data.” EX1009, ¶[0023]. For the reasons described, Ground 1B fails to teach or suggest claim 7. EX2014, ¶105.

3. Claims 9 and 10

Claim 9 of the '774 Patent recites “The method of claim 1 wherein the one or more properties include one or more user settings on the target printer.” EX1001, at 36:4-6. Claim 10, which depends upon claim 9, recites “The method of claim 9 wherein the one or more user settings include user setting from a previous fabrication process.” EX1001, at 36:7-9. Ground 1B fails to teach or suggest these claims. EX2014, ¶106.

Claims 9 and 10 are not taught by Ground 1B, as Petitioner solely relies on the conclusory statement that “a user loads the type of material in the printer, which is ‘one or more user settings on the target printer.’” *See* Pet. at 34. Petitioner presents no argument regarding why this would be “one or more user settings on the target printer.” *See id.* The '774 Patent states that “user settings may be *inputted* directly onto the printer...or by using a GUI or the like on the printer or on a device in communication with the printer.” EX1001 at 20:66-21:3. Loading the material is not inputting a setting. Therefore, Ground 1B fails to teach that “one

or more properties include one or more user settings on the target printer.” Claims 9 and 10 are additionally not taught because the filament monitoring of *Dahlin* is incompatible with the system of the ’774 Patent, as described regarding claim 6. EX2014, ¶107.

H. Ground 1C

Ground 1C combines *Douglas* and *Mark* with *Batchelder*, and challenges claim 8. Like Ground 1B, Ground 1C does not independently challenge claim 1, upon which all other challenged claims depend, and therefore is defective for at least the same reasons as Ground 1A. Ground 1C has the following additional defects. EX2014, ¶108.

1. Claim 8

Claim 8 recites “[t]he method of claim 1 wherein the one or more properties include a firmware configuration of the target printer.” EX1001 at 36:1-3. Ground 1C fails to teach or suggest this claim. EX2014, ¶109.

Petitioner relies on *Batchelder*’s disclosure of “encoded markings” that may include “firmware updates.” EX1007, ¶[0054]. But, a “firmware update” is distinct from a “firmware configuration,” and providing a firmware update does not provide a firmware configuration. Instead, of conveying information regarding the configuration of firmware, firmware updates *change* that configuration. Petitioner’s expert agrees, noting that “firmware updates are *updating* the firmware

configuration.” EX2015 at 66:14-15. Thus, rather than provide information regarding a firmware configuration, the “firmware updates” of *Batchelder* modify that configuration. EX2014, ¶110.

Petitioner's expert additionally admits that using “*Batchelder*'s encoded markings,” which in his view only “*might* give an indication of what software and firmware are most suitable for printing that specific material” is “an example that [he] just came up with.” EX2015 at 68:19-69:1. He further admitted that the example was “based on [his] understanding of how this *might* work or a POSITA's understanding of how this *might* work, that *might* be one example where *Batchelder could* be used.” EX2015 at 69:5-11. (emphasis added). A reference that merely *could* be modified to perform a method is not sufficient to make that method obvious. Instead, Petitioner must show that a POSITA *would* have made the modification. For the above reasons, Ground 1C fails to teach or suggest claim 8. EX2014, ¶111.

I. Ground 1D

Ground 1D combines *Douglas* and *Mark* with *Pax*, and challenges claim 19. Ground 1D also does not independently challenge claim 1, upon which all other challenged claims depend, and therefore is defective for at least the same reasons as Ground 1A. Ground 1D has the following additional defects. EX2014, ¶112.

1. Claim 19

Claim 19 recites “[t]he method of claim 1 further comprising generating descriptive metadata to accompany the machine-ready representation, the descriptive metadata specifying one or more properties for comparison to properties of printers selected for fabricating the model.” EX1001 at 36:44-48. Ground 1D fails to teach or suggest this claim. EX2014, ¶113.

The sole disclosure of “metadata” in *Pax* referred to by Petitioner is that “color and material requirements for fabricating an object...may be contained in metadata of the object model, fabrication instructions, or a related file.” Pet. 40-41; EX1013, ¶[0097]. But claim 19 requires *generating* metadata, and that the metadata “specify one or more properties for comparison to properties of printers.” *Pax* does not disclose such generation, as instead *Pax* teaches *identifying* requirements, which therefore must already exist (as must the metadata they are contained in). EX1013, ¶[0097]; EX2014, ¶114.

Petitioner also cites *Douglas*'s disclosure of “metadata concerning print jobs.” Pet. 40; EX1005, ¶¶[0040]-[0041]. However, Petitioner makes no attempt to argue that this metadata is generated or that it “specif[ies] one or more properties for comparison to properties of printers selected for fabricating the model” as required by claim 19. *See* Pet. at 40. Therefore, Ground 1D fails to teach claim 19. EX2014, ¶115.

VII. THE PETITION DOES NOT SHOW THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUNDS 2A-2E

Ground 2A combines *Hamilton* (EX1010) and *Evans* (EX1011), optionally additionally with *KISSlicer* (EX2012). Ground 2B adds *Pax* (EX1013), and Ground 2C further adds *Pettis* (EX1009) to the combination of Ground 2B. Ground 2D adds *Batchelder* (EX1007) to the combination of Ground 2A, and Ground 2E adds *Wang*.

A. Overview of *Hamilton* (EX1010)

Hamilton discloses a product delivery system and methods that are based on a 3D printer. *See* EX1010 at Title. The system delivers a virtual product that is manufactured locally using a 3D printer. *See id.* at Abstract, Fig. 1; EX2014, ¶67.

B. Overview of *Evans* (EX1011)

Evans is a book about the science and art of three-dimensional printing. *See* EX1011 at 1; EX2014, ¶68.

C. Overview of *KISSlicer* (EX1012)

KISSlicer is a short “Quick-Start Guide” for creating a “first print file.” EX1012 at 1. The guide describes an overview of settings (*id.* at 2-6), loading a file and viewing and positioning a part (*id.* at 6-8), setting printer parameters (*id.* at 8-9), and a parameter quick reference guide (*id.* at 9-11). EX2014, ¶69.

D. Overview of *Pettis* (EX1009)

1. *Pettis* is a U.S. Patent Publication. *Pettis* discloses a “networked three-dimensional printing environment.” EX1009, ¶[0024], Fig. 2. *Pettis* is disclosed on the face of the '774 Patent. EX1001 at (56). During prosecution of the '774 Patent, the examiner explained that *Pettis* and the other references of record, did not teach the invention of the '774 Patent. EX1002 at 16; EX2014, ¶73.

E. Overview of *Wang* (EX1014)

2. *Wang* is a U.S. Patent. *Wang* relates to “techniques for providing 3D printing services.” EX1014, 2:19-20; EX2014, ¶74.

F. *Evans* Is Not Prior Art

Petitioner fails to present any argument or cite any evidence as to why *Evans* is prior art. As such, Petitioners bare assertion that *Evans* has a publication date of “2012” is unsupported and insufficient. *See* Pet. at 2.

Further, like the other references asserted in the Petition, there is no explanation of how *Evans* qualifies as prior art. For example, Petitioner fails to identify if the reference qualifies under any sub-section of 35 U.S.C. § 102. *See id.*

It is Petitioner's burden to establish *Evans* as prior art by presenting its arguments and providing citations to evidence. The petition must identify “in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. § 312(a)(3); *see also* 37 C.F.R. § 42.22 (The

petition must include a “full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence including material facts”); *see also United States v. Dunkel*, 927 F.2d 955, 956 (7th Cir. 1991) (“Judges are not like pigs, hunting for truffles buried in briefs.”). By failing to provide its arguments and supporting evidence with particularity, Petitioner has improperly asked the Board to piece together evidence or speculate as to Petitioner's arguments. *See TCL Commc'n Tech. Holdings Ltd. v. DataQuill Ltd.*, IPR2020-00746, Paper 21 at 22 (Sept. 18, 2020) (denying institution and explaining that it is “Petitioner's responsibility to cite specific evidence to support its arguments, not the Board's responsibility to piece together evidence or speculate as to Petitioner's position”).

Further, even if Petitioner did somehow provide evidence of a publication date¹, Petitioner fails to provide any arguments as to why *Evans* was disseminated or otherwise made available to persons interested and ordinarily skilled in the subject matter or art that exercise reasonable diligence to locate it. *See SRI Int'l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008).

¹ Exhibit 1016, Declaration of June Munford, appears to address information about *Evans*, but Petitioner never cites to Exhibit 1016, much less explain the import of Exhibit 1016, in the Petition. Thus, Exhibit 1016 should not be considered.

By failing to present any argument or cite any evidence in its Petition as to why it believes *Evans* is prior art, Petitioner cannot show a reasonable likelihood that the reference is prior art. As such, any ground relying on *Evans* is an improper ground for *inter partes* review.

G. *KISSlicer* Is Not Prior Art

Petitioner has also failed to show that *KISSlicer* in Ground 2A (*Hamilton* and *Evans*, with or without *KISSlicer*) is a printed publication. Like the *Evans* reference discussed above, the Petition is devoid of any argument to support a conclusory assertion that *KISSlicer* is a printed publication with a publication date of “Jan.-2012.” *See* Pet. at 2.

Further, like *Evans* and the other references asserted in the Petition, there is no explanation of how *KISSlicer* qualifies as prior art. For example, Petitioner fails to identify if the reference qualifies under any sub-section of 35 U.S.C. § 102. *See id.*

It is Petitioner's burden to establish that *KISSlicer* is prior art by presenting its arguments and providing citations to evidence. *See* 35 U.S.C. § 312(a)(3) (the petition must identify “in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim”); 37 C.F.R. § 42.22 (Petition

must include a “full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence including material facts”).

To the extent Petitioner relies on arguments in the declaration (EX1015) that it has cited for the argument that “another publicly available slicing application, ‘KISSlicer,’ creates ‘profiles’ for each print that are based on printer capabilities, for example, the printer’s available materials” (Pet. 59), the PTAB’s “rules prohibit parties’ incorporation of arguments by reference.” *See* Decision Denying Petitioner’s Request on Rehearing of Final Written Decision, *Medivis, Inc. v. Novarad Corp.*, IPR2023-00042, Paper 37 at 10 (PTAB Apr. 23, 2024); *see also* 37 C.F.R. § 42.6(a)(3).

Further, it is improper for Petitioner to ask the Board to “piece together” potential arguments that Petitioner might have been made. *See TCL Commc’n Tech. Holdings Ltd. v. DataQuill Ltd.*, IPR2020-00746, Paper 21 at 22 (Sept. 18, 2020) (denying institution and explaining that it is “Petitioner’s responsibility to cite specific evidence to support its arguments, not the Board’s responsibility to piece together evidence or speculate as to Petitioner’s position”).

Further, even if Petitioner did somehow provide evidence of a publication date, there is no argument in the Petition that *KISSlicer* was disseminated or otherwise made available to persons interested and ordinarily skilled in the subject

matter or art that exercise reasonable diligence to locate it. *See SRI Int'l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008).

By failing to present any argument in its Petition as to why it believes *KISSlicer* is prior art, Petitioner cannot show a reasonable likelihood that the reference is prior art. As such, any ground relying on *KISSlicer* is an improper ground for *inter partes* review.

H. Ground 2A Does Not Render the Challenged Claims Unpatentable

Ground 2A combines *Hamilton* and *Evans*, while challenging claims 1-4, 9-10, and 12-13. As explained below, Petitioner has failed to show that the *Hamilton-Evans* combination (with or without *KISSlicer*) teaches all elements of the challenged claims, including independent claim 1. EX2014, ¶¶117-119.

1. The *Hamilton-Evans* combination (with or without *KISSlicer*) does not teach or suggest claim element [1.1]

The Petition fails to show that the combination in Ground 2A teaches claim element [1.1] (“receiving a request to fabricate an object from a three-dimensional model;”). Petitioner asserts *Hamilton* discloses receiving a request to fabricate an object from a three-dimensional model because *Hamilton*'s process in Figure 3 begins with “a request for a design” and his process in Figure 4 includes a step to “[r]eceive [d]esigns and assembly instructions.” *See* Pet. at 51-53; EX2014, ¶120.

However, *Hamilton* does not support Petitioner's conclusion that a request for a design would have been a request to fabricate an object from a three-dimensional model. *Hamilton* does not mention the term "model" and defines what the "designs" of his printer consist of: "the necessary printer requirements for the design, information on the materials required, instructions for the 3 D printer, separately numbered individual parts, and instructions for assembly of the product for the user." EX1010, ¶[0019]. *Hamilton's* designs includes instructions for the printer, but Petitioner's expert acknowledges that "[i]t's not clear, everything that's included in instructions for the 3D printer in *Hamilton*." EX2015 at 51:6-8. Further, Petitioner's expert admits that *Hamilton* does not discuss slicing or G-code. EX2015 at 50:15-16, 53:17. Because the process of *Hamilton* does not include slicing or generation of G-code, there is no motivation to alter the process to include a model. In particular, the reason to include a model in the process would have been to slice the model and use the resulting instructions to fabricate an object. *Hamilton's* request for a design is a request for requirements, information on the materials, and instructions, but not a request to fabricate an object from a three-dimensional model. EX2014, ¶121.

2. The *Hamilton-Evans* combination (with or without KISSlicer) does not teach or suggest claim elements [1.2] and [1.3]

The Petition fails to show that the combination in Ground 2A teaches claim elements [1.2] ("determining a target printer to fabricate the object;") and [1.3]

(“querying the target printer for configuration information of the target printer relevant to creation of a printable model for fabrication of the object on the target printer;”). For claim element [1.2], Petitioner asserts that “the user’s 3D printer” in *Hamilton* would be a target printer to fabricate the object because the user requests a product and the system waits for a response from the user to ensure that the printer is attached and ready (purported target printer). *See* Pet. at 54. Petitioner also asserts that the target printer would have been determined before querying the printer for its accuracy and material abilities. *See id.* For claim element [1.3], Petitioner asserts that per [1.2], *Hamilton*’s process of 3D printing performs a “query” of the printer to be used that includes the printer’s “accuracy and material capabilities.” Pet. at 54. According to Petitioner, *Hamilton*’s system compares the capabilities of the printer to design requirements to determine whether to send the design file to the printer. *See* Pet. at 54-55; EX2014, ¶122.

But Petitioner’s assertions are contrary to the teachings of *Hamilton* that query the printer for information and then use that information to determine if the printer is appropriate for the design (i.e., determine a target printer to fabricate the object corresponding to the design). Figure 3 of *Hamilton* shows a flow chart for a method from the perspective of the supplier of designs:

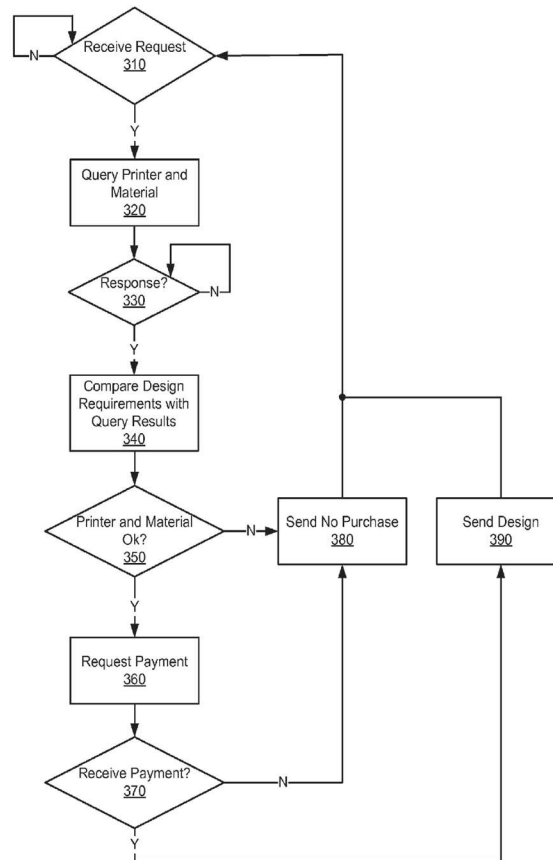


Fig. 3

EX1010 at Fig. 3. As shown, step 320 queries the printer and material, and step 330 receives a response from the printer. Step 320 is performed *before* step 340, which compares the design requirements with the query results, and step 350, which determines if the printer and material are okay. If the printer and material are okay and the supplier of designs receives payment (at step 370), the supplier will send the design (at step 390). *See id.* Thus, a target printer to fabricate the object corresponding to the design is not determined until the supplier determines if the printer and material are okay at step 350. EX2014, ¶123.

Petitioner's assertion that the "attached printer would have been the target printer," because the system waits for the user to ensure the printer is attached and ready (*see* Pet. 54), fails to explain why confirming that the printer is attached teaches "determining a target printer to fabricate the object." Indeed, the user in *Hamilton* does not know the requirements of the object to be fabricated when it responds to the system to ensure the printer is attached and ready. *See* EX1010 at Fig. 2 (steps 240 and 260); EX2014, ¶124.

As shown below in Figure 2 of *Hamilton*, which shows a flow chart for a method from the perspective of the user, the printer in *Hamilton* is not a target printer to fabricate the object until the print material is okay at step 260.

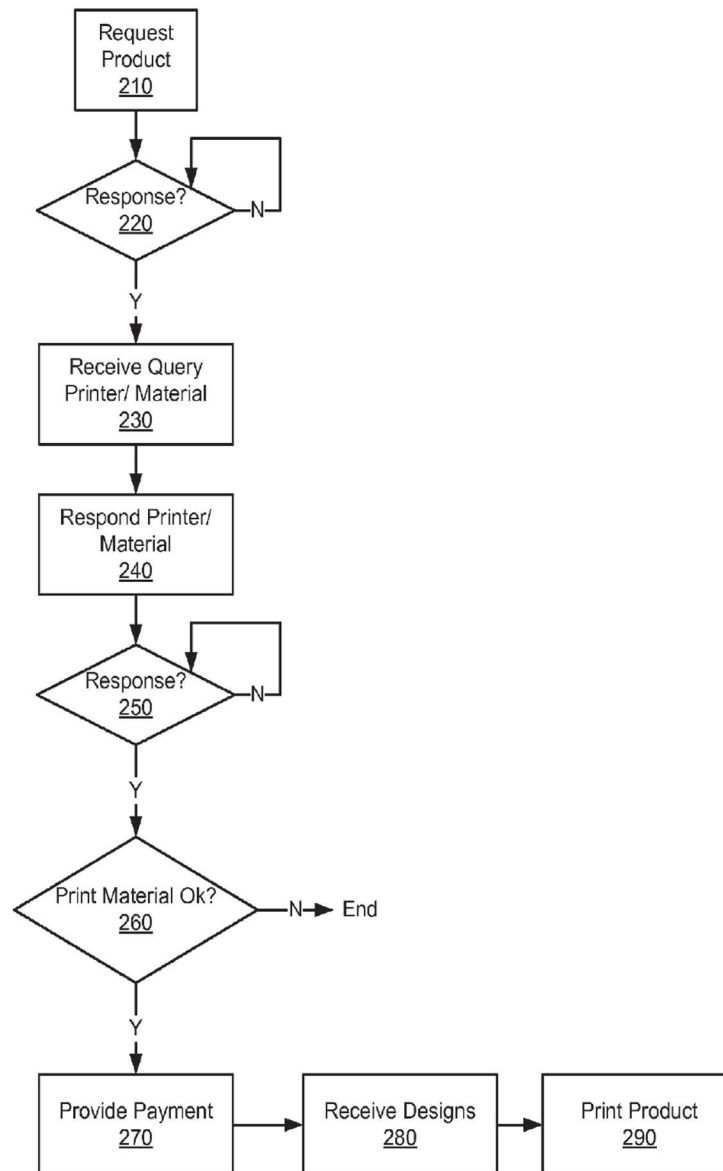


Fig. 2

EX1010 at Fig. 2, [0020] (“If the material available matches the design requirements 260 and the accuracy of the printer is correct it then proceeds to allow the user to provide payment for the design 270.”). If the print material is okay and payment is provided, the user will receive the design for fabrication at step 280. Thus, the printer in *Hamilton* is not a target printer until after querying

the printer because the user in *Hamilton* does not know the requirements of the design, which are compared to the query results by the supplier. *See id.* at Figs. 2-3. Accordingly, there is no teaching in *Hamilton* of determining a target printer to fabricate the object such that the target printer is then queried for configuration information. EX2014, ¶125.

3. The *Hamilton-Evans* combination (with or without KISSlicer) does not teach or suggest claim element [1.4]

The Petition also fails to show that the combination in Ground 2A teaches claim element [1.4] (“receiving, from the target printer, a dictionary of configuration information containing one or more properties from the target printer that affect fabrication capabilities of the target printer”). Petitioner asserts that the printer in *Hamilton* responding with its accuracy and material capabilities amounts to receiving, from the target printer, a dictionary of configuration information, because the information in *Hamilton* is a collection of properties and defines the printer capabilities. Pet. at 56. However, like *Douglas* in Ground 1A, Petitioner fails to explain why the accuracy and material capabilities in *Hamilton* that are sent from the printer is a collection of properties (which is what Petitioner asserts as disclosing a dictionary of configuration information). EX2014, ¶126.

To the extent Petitioner is relying on its expert to supply the details as to how *Hamilton*'s accuracy and material capabilities are sent and received as a dictionary of configuration information, doing so is improper. *See Arendi S.A.R.L.*,

832 F.3d at 1361 (“common sense is typically invoked to provide a known motivation to combine, not to supply a missing claim limitation”). As the Federal Circuit explained in *Arendi*, in the rare case where common sense “is used to supply a missing limitation” the search for “a reasoned basis for resort[ing] to common sense must be searching” and “this is particularly true where the missing limitation goes to the heart of an invention.” *Id.* at 1362. “Furthermore, because an *inter partes* review may only be requested ‘on the basis of prior art consisting of patents or printed publications,’ 35 U.S.C. § 311(b), expert testimony cannot take the place of disclosure from patents or printed publications.” CTPG at 36 (“[E]xpert testimony may explain ‘patents and printed publications,’ but is not a substitute for disclosure in a prior art reference itself.”); EX2014, ¶126.

Hamilton merely discloses that the printer sends its accuracy and material capabilities. *See, e.g.*, EX1010, ¶[0021] (“The user’s 3D printer will then respond with its accuracy and material capabilities.”). It does not teach whether those capabilities are sent and received as a collection of information, and Petitioner’s expert states that the information is sent in “some unspecified manner.” *See id.*; EX2015 at 55:10-18; EX2014, ¶127.

Further, Petitioner tacitly admits to other deficiencies in *Hamilton* by relying upon *Evans* in the combination to assert that *Hamilton*’s accuracy and material capabilities would include “additional information” (filament diameter, extruder

nozzle size, layer height) as disclosed by *Evans*. See Pet. at 57. But *Evans* does not teach receiving its “additional information” from the target printer. Rather, a user manually measures and enters those measurements into the software. See EX1011 at 67-68 (explaining how to “work[] out” the “nozzle and filament diameters” so that “you can enter these measurements” into the slicer application), 66 (explaining that the “layer height” is based on the “nozzle’s diameter”). Thus, there is no support for the rationale that adds *Evan*’s “additional information” to *Hamilton*’s accuracy and material capabilities. EX2014, ¶128.

Further, as explained above, because the supplier in *Hamilton* uses the requested information received from the printer to determine if the design requirements are met by the printer, the information received under claim element [1.4] is not “from the target printer” because the target printer has not been determined. EX2014, ¶129.

For each of these reasons, Petitioner has failed to show that the combination in Ground 2A teaches claim element [1.4]. EX2014, ¶130.

4. The *Hamilton-Evans* combination (with or without KISSlicer) does not teach or suggest claim element [1.5]

The Petition also fails to show that the combination in Ground 2A teaches claim element [1.5] (“creating a fabrication profile based on the one or more properties”). Petitioner asserts it would have been obvious that, in the *Hamilton-Evans* combination, upon receiving the printer properties from the printer, a slicer

application would have created a fabrication profile. *See* Pet. at 57-58. Petitioner also asserts that *KISSlicer*, a slicer application, would have created a fabrication profile. *See id.* at 59; EX2014, ¶131.

However, Petitioner ignores the teachings of *Hamilton* in reaching its conclusions. In particular, *Hamilton* teaches that there is no need for a slicer application at all because his designs already include “instructions for the 3 D printer.” EX1010, ¶[0019]. As *Hamilton* explains, the supplier “compare[s] the capabilities of the printer to the requirements of the design.” *Id.* at ¶[0021]. If “the requirements are met by the user’s 3D printer” and if “payment is received,” “a design is sent.” *Id.* When “the design is sent [] by the supplier,” the system “will then proceed to print the first piece of the design” followed by any additional pieces until “all parts of the design are printed and finished.” *Id.* at [0022], Fig. 4. Thus, no slicer application is run in *Hamilton*’s solution to generate machine-ready code because instructions for the 3-D printer are already included in *Hamilton*’s designs, which are only sent by the supplier of the designs if the requirements of the design are met by the user’s 3D printer. Thus, there is no motivation for using a slicer application for *Hamilton*’s solution, as *Evans* and *KISSlicer* purportedly disclose. EX2014, ¶132.

Further, *Evans* and *KISSlicer* do not teach creating a fabrication profile based on one or more properties from the target printer. *Evans* teaches that the user

must manually measure the nozzle and filament diameters and enter them along with the layer height into the software, and *KISSlicer* simply shows a dialog for the user to enter material settings. EX1011 at 66-68; EX1012, 3. Thus, there is no disclosure that a fabrication profile is created based on one or more properties *from the target printer*. EX2014, ¶133.

For each of these reasons, Petitioner has failed to show that the combination in Ground 2A teaches claim element [1.5]. EX2014, ¶134.

5. The *Hamilton-Evans* combination (with or without *KISSlicer*) does not teach or suggest claim element [1.6]

The Petition further fails to show that the combination in Ground 2A teaches claim element [1.6] (“generating a machine-ready representation of the three-dimensional model executable by the target printer to fabricate the object”). Petitioner asserts that *Evans* discloses, via the “process of slicing the model,” generating the “machine-ready representation of the three-dimensional model” of claim element [1.6]. Pet. at 60. However, like with claim elements [1.1] and [1.5], petitioner ignores the teachings of Hamilton. Hamilton explains that its designs already include printer instructions. These designs exist before the printer is identified or queried, and thus bear no relation to the fabrication profile of element [1.5]. There is therefore no need for a slicer or slicing. Additionally, Petitioner’s expert admits that Hamilton has *no* discussion of G-code or of slicing. EX2015 at 50:15, 53:17. Further still, as described regarding claim element [1.1], the

Hamilton-Evans combination fails to teach the existence of a model, as would be necessary to “generate a machine-ready representation” of said model. EX2014, ¶135.

6. Dependent Claims

For the reasons described above, the *Hamilton-Evans* combination, with or without KISSlicer, fails to teach or suggest claim 1. Thus, Ground 2A additionally fails to teach or suggest claims 2-5, 9-10, and 12-13 of the '774 Patent. EX2014, ¶136.

I. Ground 2B Does Not Render the Challenged Claims Unpatentable

Ground 2B adds *Pax* to the combination of Ground 2A, and challenges claims 6, 7, and 19. Ground 2B does not independently challenge claim 1, upon which all other challenged claims depend, and therefore is defective for at least the same reasons as Ground 2A. Ground 2D has the following additional defects.

EX2014, ¶137

J. Ground 2C Does Not Render the Challenged Claims Unpatentable

Ground 2B adds *Pettis* to the combination of Ground 2B to challenge claim 19. Ground 2B also does not independently challenge claim 1, upon which all other challenged claims depend, and therefore is defective for at least the same reasons as Ground 2A. EX2014, ¶137.

K. Ground 2D Does Not Render the Challenged Claims Unpatentable

Ground 2D adds *Batchelder* (which also appears in Ground 1C) to the combination of *Hamilton* and *Evans* (with or without *KISSlicer*). Pet. at 1, 80-84. Ground 2D does not independently challenge claim 1, upon which all other challenged claims depend, and therefore is defective for at least the same reasons as Ground 2A. Ground 2D has the following additional defects. EX2014, ¶138.

1. Claim 8

Claim 8 of the '774 Patent recites “The method of claim 1 wherein the one or more properties include a firmware configuration of the target printer.” EX1001, at 36:1-3. Ground 2D fails to teach or suggest this claim. EX2014, ¶139.

Petitioner relies solely on its expert's opinion to argue the proposition that “a 3D printer's firmware was typically detected when setting up or sending jobs to a 3D printer.” Pet. at 82. *Evans* is additionally cited, but *Evans* does not disclose querying or receiving a printer's firmware configuration. See Pet. at 82-83; EX1011, 35, 41-43, 76-80. The addition of *Batchelder* to Ground 2B fails to remedy the failure to teach or suggest this claim for the same reasons *Batchelder* was insufficient in Ground 1C to teach or suggest this claim. *Supra* § VI.H.1; EX2014, ¶140.

L. Ground 2E

Ground 2E adds *Wang* to the combination of Ground 2A in order to challenge claim 20. Ground 2E does not challenge claim 1, and is thus deficient for the same reason. EX2014, ¶137.

VIII. CONCLUSION

For the foregoing reasons, Patent Owner has failed to show by a preponderance of the evidence that any of the asserted grounds render any of the challenged claims obvious. The Board should find in favor of Patent Owner and uphold the validity of the challenged claims.

Respectfully submitted,

Dated: January 14, 2026

/s/Brian W. Oaks

Brian W. Oaks (Reg. No. 44,981)
MCDERMOTT WILL & EMERY LLP
300 Colorado Street, Suite 2200
Austin, TX 78701
TEL: 512-726-2574
EMAIL: boaks@mwe.com

Attorney for Patent Owner

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Response complies with the type-volume limits of 37 C.F.R. § 42.24(b)(1) because it contains 10,626 words, excluding the parts that are exempted by 37 C.F.R. § 42.24(a), according to the word processing system used in preparation of this Response.

Dated: January 14, 2026

/s/ Brian W. Oaks

Brian W. Oaks (Reg. No. 44,981)
MCDERMOTT WILL & EMERY LLP
300 Colorado Street, Suite 2200
Austin, TX 78701
TEL: 512-726-2574
EMAIL: boaks@mwe.com

Attorney for Patent Owner

CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4), the undersigned certifies that on January 14, 2026, a complete copy of the foregoing Patent Owner's Response was served on Lead and Back-up Counsel for Petitioner at the service address provided in Petitioner's Mandatory Notices:

Email: IPR56224-0013IP1@fr.com

Dated: January 14, 2026

/s/ Brian W. Oaks

Brian W. Oaks (Reg. No. 44,981)
MCDERMOTT WILL & EMERY LLP
300 Colorado Street, Suite 2200
Austin, TX 78701
TEL: 512-726-2574
EMAIL: boaks@mwe.com

Attorney for Patent Owner