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13 UNITED STATES DISTRICT COURT
14 NORTHERN DISTRICT OF CALIFORNIA
15 SAN FRANCISCO DIVISION
16

17 SEMICONDUCTOR DESIGN
18 TECHNOLOGIES, LLC,

19 Plaintiff,

20 v.

21 CADENCE DESIGN SYSTEMS, INC.,

22 Defendant.

Case No. 3:23-cv-01001-AMO

**CADENCE DESIGN SYSTEMS, INC.'S
NOTICE OF MOTION AND MOTION TO
DISMISS PLAINTIFF'S AMENDED
COMPLAINT FOR FAILURE TO STATE
A CLAIM PURSUANT TO FED. R. CIV. P.
12(B)(6) AND 35 U.S.C. § 101**

Date: October 12, 2023

Time: 2:00 p.m.

Courtroom: 10 – 19th Floor

Judge: Hon. Araceli Martínez-Olguín

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NOTICE OF MOTION

TO ALL PARTIES AND THEIR COUNSEL OF RECORD:

PLEASE TAKE NOTICE that on October 12, 2023, at 2:00 p.m. or as soon thereafter as the motion may be heard before the Honorable Araceli Martínez-Olguín, in Courtroom 10, located at 450 Golden Gate Avenue, San Francisco, CA 94102, Defendant Cadence Design Systems, Inc. (“Cadence”) will and hereby does move this Court under Local Rule 7-1(a) and Fed. R. Civ. P. 12(b)(6) for an order to dismiss this case with prejudice on the grounds that Plaintiff Semiconductor Design Technologies, LLC’s (“SDT”) Amended Complaint fails to state a claim upon which relief can be granted. As explained further in the following memorandum of points and authorities, SDT’s claims must be dismissed because the asserted U.S. Patent Nos. 7,603,636 (“the ’636 patent”) and 7,971,167 (“the ’167 patent”) fail to recite patent-eligible subject matter under 35 U.S.C. § 101 and are therefore invalid.

The motion is based upon this Notice, the following Memorandum of Points and Authorities in support thereof, all other papers and pleadings on record on file in this action, all matters of which the Court may take judicial notice, and any other argument or evidence that may be presented to the Court at the hearing in support of this motion.

MEMORANDUM OF POINTS AND AUTHORITIES

SDT's Amended Complaint should be dismissed for failing to state a claim under Rule 12(b)(6) because the claims of the asserted patents are invalid and unenforceable under 35 U.S.C. § 101.

I. INTRODUCTION

The Supreme Court's *Alice Corp. v. CLS Bank Intern* decision established a two-step test for patentability under 35 U.S.C. § 101 to look at whether the claims of a patent are directed to an abstract idea. 573 U.S. 208 (2014). If the claims of a patent fail this test, they are not patent eligible and therefore invalid under § 101. In the years following *Alice*, at least some patent claims were found invalid for over half of all Rule 12 motions that raised § 101.¹ Courts in the Northern District frequently grant motions to dismiss patent cases under § 101,² and the Federal Circuit routinely affirms such dismissals of complaints at the pleading stage.³

The patents in this case—the '636 and '167 patents—issued long before the *Alice* decision. Neither would have issued under *Alice* because their own specifications admit to telltale signs of abstraction that the Federal Circuit has routinely found unpatentable under § 101: namely, the automation of methodologies that were previously done by hand, for example by performing manual steps using a computer or applying pen-and-paper concepts to computer applications. *See, e.g., Int'l Bus. Machs. Corp. v. Zillow Grp., Inc.*, 50 F.4th 1371, 1381-82 (Fed. Cir. 2022) (citing *Univ. of Fla. Rsch. Found., Inc. v. Gen. Elec. Co.*, 916 F.3d 1363, 1367 (Fed. Cir. 2019)).

The '636 patent admits that it seeks to automate a step that engineers typically performed

¹ *See, e.g.*, <https://www.skadden.com/-/media/files/publications/2017/01/alookatpostalicerule12motionsoverthelast2years.pdf> (Figure 1); <https://www.irmi.com/articles/expert-commentary/update-on-alice-and-motions-to-dismiss>.

² *See, e.g., Rearden LLC v. TWDC Enter. 18 Corp.*, No. 22-cv-02464, 2023 WL 3579324 (N.D. Cal. Feb. 21, 2023); *Splunk Inc. v. Cribl, Inc.*, No. 22-cv-07611, 2023 WL 2562875 (N.D. Cal. Mar. 17, 2023); *Ginegar LLC v. Slakc Techs., Inc.*, No. 22-cv-00044, 2022 WL 6837723 (N.D. Cal. Oct. 11, 2022).

³ *See, e.g., Aatrix Software, Inc. v. Green Shades Software, Inc.*, 890 F.3d 1354, 1358 (Fed. Cir. 2018) (“[W]e have continued to uphold decisions concluding that claims were not patent eligible at [the motion to dismiss and summary judgment] stages.”) (citing cases); *Universal Secure Registry LLC v. Apple Inc.*, 10 F.4th 1342, 1345 (Fed. Cir. 2021), cert. denied, 142 S. Ct. 2707 (2022) (affirming motion to dismiss pursuant to § 101).

1 by hand when designing an Integrated Circuit (“IC”). According to the ’636 patent, engineers
 2 wrote statements, called assertions, that helped check whether their code worked as intended. ’636
 3 patent, 1:46-62, 2:24-41. However, engineers could make mistakes when writing assertions by
 4 hand. *Id.*, 4:39-44. The ’636 patent purports to remove the potential for human error by
 5 automatically generating assertion statements using a computer. *Id.*, 3:43-44, 14:61-65. This is
 6 precisely the type of abstract idea that the Federal Circuit has repeatedly found invalid.

7 The ’167 patent applies a pen-and-paper concept—saving information in a table—to prior
 8 art Electronic Design Automation (“EDA”) tools that were used to design ICs. The patent
 9 describes prior art behavioral synthesis tools that converted code from high-level behavioral code
 10 into a low-level language called “RTL” (’167 patent, 1:36-47) and wrote down the correspondence
 11 between the behavioral code and RTL in a table (*id.*, 3:19-26). The ’167 patent does not purport to
 12 invent or improve upon behavioral synthesis; instead, it merely saves this correspondence table for
 13 later use, for example when analyzing latency as was done in the prior art. *See id.*, 1:47-62.
 14 Therefore, the ’167 patent merely takes an abstract idea of saving a cross-reference table and
 15 applies it to pre-existing EDA tools and workflows.

16 Both patents are related to EDA software, which is used to design integrated circuit
 17 chips—the patents are not directed to the manufacture or operation of those chips themselves. The
 18 Federal Circuit has found similar claims relating to EDA tools to be unpatentable under § 101. *See*
 19 *Synopsys, Inc. v Mentor Graphics Corp.*, 839 F.3d 1138, 1150 (Fed. Cir. 2016). Here, the ’636 and
 20 ’167 patent claims are far less technical and, in the patents’ own words, operate “at an increased
 21 **abstract[ion] level**” compared to the claims that the Federal Circuit found unpatentable in
 22 *Synopsys*. *See* ’167 patent, 1:33-47 (emphasis added).

23 Rule 12(b)(6) motions to dismiss are common for patent cases because judgment on § 101
 24 can be based on intrinsic evidence alone, “without need for extraneous fact finding outside the
 25 record.” *See Secured Mail Sols., LLC v. Universal Wilde, Inc.*, 873 F.3d 905, 912 (Fed. Cir. 2017)
 26 (quotations and citations omitted). Here, the intrinsic evidence—the patents themselves—confirm
 27 their own abstractness. Facing clear invalidity under § 101, SDT resorts to extrinsic evidence,
 28 amending its complaint and attaching a declaration from its expert. However, the declaration is

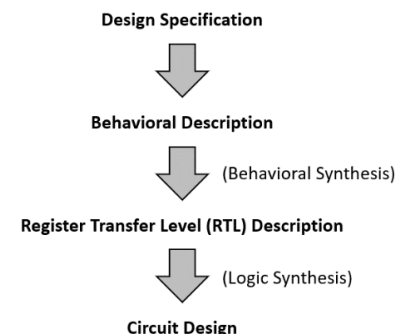
contradicted by the patents that it attempts to save, and the Court need not consider it because the Ninth Circuit is clear: “Generally, a district court may not consider any material beyond the pleadings in ruling on a Rule 12(b)(6) motion.” *See Branch v. Tunnell*, 14 F.3d 449, 453 (9th Cir. 1994).

II. FACTUAL BACKGROUND

The ’636 and ’167 patents approach EDA software from the perspective of end users. Both patents were originally assigned to Ricoh who, as a manufacturer of printers and other office equipment, used software from EDA vendors to design the chips inside their products. The patents rely on EDA tools, such as behavioral and logic synthesizers, that existed in the prior art while purporting to add concepts to the use of those tools. ’636 patent, 1:46-24:30; ’167 patent, 1:25-62. The Complaint, even as amended, does not contend Ricoh ever provided or created EDA tools.

When designing an IC, managers and engineers write a design specification, for example using Microsoft Office to create figures or charts, to provide a vision for what the circuit is supposed to do. Guided by the design specification, engineers design the circuit using a hardware description language (e.g., register transfer language “RTL”) to describe logical operations performed on signals in the circuit. Engineers then run logic synthesis tools to convert the RTL code into a circuit design with registers, gates, and other circuit components.

Rather than write RTL code directly, engineers could instead write their circuit design using a high-level language (such as C) to describe the behavior of the design at “higher levels of abstraction,” without having to worry about lower-level circuit details such as registers or clock cycles as was required with RTL. *See* Am. Compl. ¶ 35; ’167 patent, 1:36-43. Engineers then run behavioral synthesis tools to convert the high-level language into RTL code, which, in turn, was converted by logic synthesis into a circuit design. This methodology is illustrated on the right.



Before logic synthesis, it was common to verify that the RTL code operated as intended. Assertions were used for this purpose. Assertions are statements about how a circuit is expected to

1 operate. '636 patent, 1:55-60. Engineers wrote assertions by looking at the design specification
 2 and describing its properties. *Id.*, 1:46-50, 2:24-41, 4:25-28. For example, for a memory interface
 3 where read and write signals should never be active at the same time, an engineer could write that
 4 property using the property specification language (“PSL”). *Id.*, 2:24-41. During verification, if an
 5 assertion was violated, it meant the RTL code was not operating as its designer expected—e.g., the
 6 read and write signals were active at the same time—and there was a problem that an engineer
 7 should fix.

8 **A. The '636 Patent**

9 The '636 patent seeks to automate the process for generating assertions so that engineers
 10 do not have to write them by hand. According to the '636 patent, engineers wrote assertions
 11 stating their intention of how the circuit was expected to operate using prior-art property⁴
 12 specification languages. '636 patent, 1:55-60, 2:24-41, 4:25-28. Properties were then converted
 13 into assertions. *Id.*, 1:46-54. Unsurprisingly, writing assertions by hand could lead to errors. The
 14 '636 patent identifies the potential for human error as a problem in the prior art. *Id.*, 3:43-50
 15 (“[W]here the assertion description language is written by a manual input . . . there is a possibility
 16 that a mistake may be made.”).

17 The '636 patent purportedly addressed this deficiency of handwritten assertions by
 18 automatically translating a design specification into assertions. *Id.*, 4:39-44. This alleged point of
 19 novelty is reflected in claim 8, which recites “a property generating step” that reads the
 20 specification and generates a property, and then “an assertion generating step” that “automatically
 21 converts the property into an assertion description” (emphasis and annotation labeling added):

22 8[pre]. A computer readable medium encoded with a program for causing a
 23 computer provided in an assertion generating system, that is capable of generating
 24 an assertion description for assertion verification of a semiconductor integrated
 circuit, to execute:

25 [8a] a specification inputting step that generates design data of the
 26 semiconductor integrated circuit by graphically editing a specification of the
 semiconductor integrated circuit based on user operations and inputs the design

27 ⁴ The '636 patent describes a property as “plain text that defines operations intended and expected
 28 in design data to be verified.” '636 patent, 1:20-22.

1 data in storage;

2 [8b] a property generating step that reads the design data generated at the
3 specification inputting step from the storage and generates a property which
4 verifies the specification of the semiconductor integrated circuit using the read
design data and inputs the property in the storage; and

5 [8c] ***an assertion generating step that reads the property*** generated at the
6 property generating step from the storage and ***automatically converts the property***
7 ***into an assertion description*** if the property is to be verified during assertion
verification, wherein

8 [8d] the property generated by the property generating step is a selection
9 condition with respect to a state transition, a logic value of at least one or more
signals, or at least one or more signals in the design data.

10 Claim 8 does not recite particulars of how properties are generated or how they are converted into
11 assertions. It merely recites the end result.

12 The '636 patent does not purport to invent the generation of properties, assertions, or
13 design specifications. For example, limitation [8a] recites graphically editing a specification; the
14 patent admits this was known in the prior art. '636 patent, 7:57-60, 4:12-16, 4:22-23. Limitation
15 [8b] recites a property-generating step; the '636 patent admits that it was known for engineers to
16 manually generate and store properties that verify a design specification. *Id.*, 1:46-54, 2:24-3:42.
17 Limitation [8b] also refers to the reading and storage of data, which have been basic operations
18 since the advent of computers. Limitation [8d] refers to common properties that were known and
19 used in the prior art; the '636 patent admits that generating properties based on a selection
20 condition for a state transition, logic value, or signal was also known in the art. *Id.*, 3:64-4:3
21 (verifying state machine property of state transitions, e.g., what causes the state machine to switch
22 states), 2:31-47, 3:23-42 (verifying properties of signals or timing charts); *see also id.*, 4:20-21
23 (cited art that teaches the state machine example at 3:43-4:3 that describes assertion verification of
24 a state machine state transition property).

25 In short, the '636 patent admits that engineers performed the steps of claim 8 using a
26 manual process. The alleged invention purports to automate those same steps using a computer.

27 **B. The '167 Patent**

28 The '167 patent relates to behavioral synthesis, which as explained above, translates a

1 higher-level description of a circuit's behavior into a lower-level circuit representation (e.g., RTL).
 2 See '167 patent, 1:36-43. Behavioral synthesis allowed engineers to work at a higher layer of
 3 abstraction, further removed from RTL and low-level specifics of physical circuits such as
 4 registers and clock cycles. *Id.*, 1:40-43, 1:45-47 (“The behavioral synthesis tool automatically
 5 synthesizes the behavioral description into the RTL description **to increase the abstract level of**
 6 **the design.**”) (emphasis added), 1:33-36 (describing “a behavioral synthesis tool” as an example
 7 “for describing a design **at an increased abstract level**”) (emphasis added).

8 The '167 patent does not purport to invent behavioral synthesis. The patent admits
 9 behavioral synthesis tools were known and used in the art ('167 patent, 1:33-48) and relies on “a
 10 known algorithm for behavioral synthesization [sic]” (*id.*, 3:19-26). This known behavioral
 11 synthesizer read the behavioral description “to generate the RTL description 4 and the
 12 correspondence table 5[.]” *Id.* In other words, the prior art behavioral synthesizer converted blocks
 13 of behavioral description into RTL code and wrote that correspondence down in a table. *See id.*,
 14 Fig. 3. Since RTL used state machines,⁵ the correspondence table
 15 contained information showing each block of behavioral code and
 16 the resulting states in the RTL code that came from the block. *Id.*

FIG. 3

BLOCK NAME	START STATE	FINISH STATE
file1_102_if	S10	S21
	S12	S30
file1_104_else	S10	S24
	S12	S29

17 Figure 3 shows an exemplary table.

18 Sometimes, it was helpful for engineers to determine which portions of behavioral code led
 19 to which portions of an RTL description. The '167 patent cites an example in the prior art where,
 20 after “the behavioral synthesis tool generates the RTL description,” latency analysis was
 21 performed on the RTL to determine the amount of time (e.g., clock cycles) needed for the circuit
 22 to complete its processing. *Id.*, 1:48-55. If a portion of the RTL was too slow, the corresponding
 23 behavioral description was checked to figure out which portion was taking too long. *Id.*, 1:56-62.

24 However, according to the '167 patent, the process of checking the behavioral description
 25 was inefficient. *Id.* The '167 patent purports to improve efficiency by saving the correspondence
 26 table that was generated during behavioral synthesis, so that it could be referred to when analyzing

27 ⁵ A state machine is a conceptual model that moves from one state to the next, e.g., a stop light
 28 moving between its three states (green, yellow, and red).

the latency of the resulting RTL description (*id.*, 4:39-43, 5:54-64, 6:13-15). This is recited in the last two limitations of claim 1 ([1d] and [1e], emphasis added):

1[pre]. A semiconductor design support device for designing a semiconductor integrated circuit, the device comprising:

[1a] a behavioral description configured to describe an algorithm of processing performed by hardware in a motion level;

[1b] an RTL description generated by reading the behavioral description, the RTL description configured to recognize a concept including register and clock synchronism particular to the hardware;

[1c] a latency analyzer configured to analyze a result of a logic simulation performed on the RTL description to calculate a latency in each block representing an operation in a predetermined unit in the behavioral description;

[1d] **a correspondence table in which each block in the behavioral description corresponds to a state in the RTL description;** and

[1e] **a correspondence table generator** configured to generate the correspondence table.

Claim 2 adds a limitation for using the table: “wherein the latency analyzer refers to . . . the correspondence table.”

Beyond the correspondence table limitations, the ’167 patent

admits the other limitations of claim 1 were known in the art.

Limitation [1a] recites a behavioral description, and [1b] generates

an RTL description from the behavioral description; the ’167 patent

admits this was known in the prior art. ’167 patent, 1:36-45

(describing background art where a “behavioral synthesis tool

generates an RTL (register transfer level) description from a

behavioral description”). Limitation [1c] recites a latency analyzer;

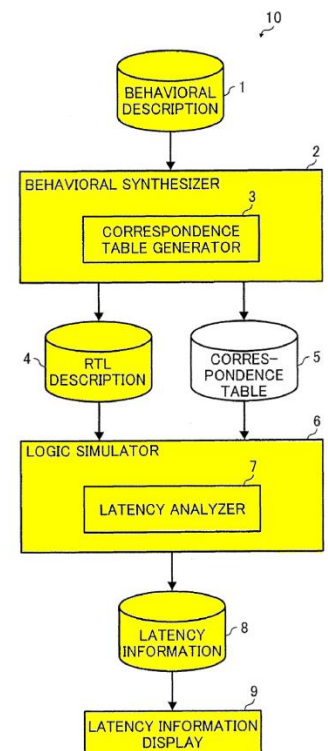
the ’167 patent admits this was known—indeed the ’167 patent’s

description of prior art latency analysis matches the description of

latency analysis in its embodiments. *Compare* ’167 patent, 1:56-61

(In the prior art, “[w]hen the latency is calculated by performing the

FIG. 1



1 RTL simulation ... the behavioral description is checked to determine which part of the behavioral
 2 description consumes a great number of clock cycles (e.g., ***which part of the behavioral***
 3 ***description has a great latency***.”) (emphasis added) *with* 2:9-12 (“The latency analyzer is
 4 configured to analyze a result of a logic simulation performed on the RTL description to ***calculate***
 5 ***a latency in each block . . . in the behavioral description***.”). The limitations of claim 1 are
 6 reflected in Figure 1, shown above with highlights added for admitted prior art. *See* ’167 patent,
 7 1:36-62, 3:19-26, Fig. 1.

8 During prosecution, the Applicant pointed to the correspondence table as the alleged point
 9 of novelty. In the ’167 patent’s file history (Hurt Decl. Ex. A), after the claims were rejected (*id.* at
 10 116-118, 140-43), the Applicant amended the claims to include the correspondence table
 11 limitations (*id.* at 128-129, 209), leading to allowance of the ’167 patent (*id.* at 216).

12 **III. LEGAL STANDARD**

13 **A. Rule 12(b)(6) Motion to Dismiss**

14 Federal Rule of Civil Procedure 12(b)(6) requires dismissal of a claim for “failure to state a
 15 claim upon which relief can be granted.” “To survive a motion to dismiss, a complaint must
 16 contain sufficient factual matter, accepted as true, to state a claim to relief that is plausible on its
 17 face.” *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (quotation omitted). While factual allegations
 18 are taken as true, this assumption “is inapplicable to legal conclusions.” *Id.*; *see also Zillow*, 50
 19 F.4th at 1379-80 (rejecting plaintiff’s allegations of “inventiveness” divorced from the claims).

20 **B. 35 U.S.C. § 101 Alice Framework**

21 An invention is generally patent eligible if it qualifies as a “new and useful process,
 22 machine, manufacture, or composition of matter.” 35 U.S.C. § 101. However, “this provision
 23 contains an important exception: laws of nature, natural phenomena, and abstract ideas are not
 24 patentable.” *Mayo Collaborative Servs. v. Prometheus Labs.*, 566 U.S. 66, 70 (2012) (cleaned up).
 25 To assess whether a patent claim violates this exception, the Supreme Court has established a two-
 26 step framework, known as “the *Alice* test,” in which a court determines: (1) whether the claim is
 27 directed to one of those patent-ineligible concepts and, if so, (2) whether there is an element or
 28 combination of elements that is sufficient to ensure that the patent in practice amounts to

1 significantly more than a patent upon the ineligible concept itself. *Alice Corp.*, 573 U.S. at 217-18.
 2 The Supreme Court has described step two of this analysis as a search for an “inventive concept.”
 3 *Id.* If the claim lacks an inventive concept, it is not patent-eligible.

4 Courts may resolve patent eligibility under § 101 on a Rule 12(b)(6) motion to dismiss
 5 “when there are no factual allegations” at issue. *Voter Verified, Inc. v. Election Sys. & Software*
 6 *LLC*, 887 F.3d 1376, 1384 (Fed. Cir. 2018) (finding patent ineligible at the 12(b)(6) stage that
 7 claimed an abstract idea for voter verification, which was historically performed by humans, and
 8 performed on a generic computer) (quoting *Aatrix Software, Inc. v. Green Shades Software,*
 9 *Inc.* 882 F.3d 1121, 1125 (Fed. Cir. 2018)). Motions to dismiss under § 101 are often decided on
 10 the pleadings because a court can determine on the face of the patent if an invention qualifies as
 11 “patentable.” *See Mayo*, 566 U.S. at 70; *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 890
 12 F.3d 1354, 1358 (Fed. Cir. 2018) (“[W]e have continued to uphold decisions concluding that
 13 claims were not patent eligible at [the motion to dismiss and summary judgment] stages.”).

14 **IV. ARGUMENT**

15 **A. Claims 1-13 of the ’636 Patent Are Patent-Ineligible Under § 101**

16 The ’636 patent’s claims are directed to an abstract idea that was performed as a mental
 17 process, and they lack an inventive concept sufficient to transform the abstract idea into patent-
 18 eligible subject matter. *See Alice*, 573 U.S. at 217-18.

19 **1. Alice Step One: Claim 8 Is Directed to an Abstract Idea**

20 Claim 8 recites an “assertion generating step” that “automatically converts” properties of a
 21 specification into an assertion description. The ’636 patent emphasizes this automatic generation
 22 in limitation [8c] as the alleged point of novelty while admitting the other limitations of claim 8
 23 were known in the art. *See supra* § II.A; *see also* ’636 patent, 7:57-60 ([8a]), 2:24-3:42 ([8b]),
 24 2:31-47, 3:23-42 ([8d]). Therefore, claim 8 is directed to the abstract idea of translating one
 25 computer representation (a design specification for a circuit) into another representation
 26 (assertions about how the circuit is expected to operate).

27 This is nothing more than using a computer to perform a translation that the patent
 28 specification admits was performed manually in the prior art. The ’636 patent and Amended

1 Complaint admit that engineers wrote a design specification and then, based on that specification,
 2 used prior art property specification languages to state their assumptions about how a circuit was
 3 expected to operate. '636 patent, 1:46-62, 2:24-33; Am. Compl. ¶ 27 (“[M]annual input of
 4 assertions is performed by the design engineers by interpreting the specification.”). The '636
 5 patent purports to remove human error and improve efficiency (*id.*, 3:43-50) by automatically
 6 translating properties of a design specification of an IC into assertions about how the IC is
 7 expected to operate. *Id.*, 4:35-44, 5:30-56. The Complaint emphasizes these alleged advantages
 8 over “[m]annual input of assertions” (Am. Compl. ¶¶ 19, 21) and touts the avoidance of human
 9 error by “**enabl[ing] computers** to intelligently perform the bulk of the work in generating
 10 assertions[.]” *Id.* ¶ 28.

11 Using a computer to automate a manual process is abstract. As the Federal Circuit has
 12 held, “a patent that automate[s] ‘pen and paper methodologies’ to conserve human resources and
 13 minimize errors is a quintessential ‘**do it on a computer**’ patent directed to an abstract idea.”
 14 *Zillow*, 50 F.4th at 1381-82 (citing *Univ. of Fla.*, 916 F.3d 1363, 1367; internal quotations
 15 omitted); *see also Voter Verified*, 887 F.3d at 1379, 1386 (finding claims directed to “auto-
 16 verification” of voter ballots patent-ineligible); *Voip-Pal.Com, Inc. v. Apple Inc.*, 411 F. Supp. 3d
 17 926, 956-59 (N.D. Cal. 2019) (finding claim abstract and invalid for automating manual call
 18 routing). It is well-settled law that a process that “can be performed mentally or with pencil and
 19 paper” is unpatentable under § 101. *Synopsys*, 839 F.3d at 1147. Here, the '636 patent admits that
 20 its alleged invention automates a verification methodology that had been performed manually by
 21 engineers using pen and paper (or finger and keyboard). Specifically, engineers wrote assertions
 22 manually by translating a design specification of an IC into assumptions about how the IC was
 23 expected to operate; claim 8 seeks to automate this mental process. '636 patent, 1:45-62, 2:24-33,
 24 4:25-28.

25 Moreover, the Federal Circuit has found claims directed to logic synthesis to be
 26 unpatentable under § 101. In *Synopsys*, the Federal Circuit invalidated claims that converted
 27 hardware description language (e.g., RTL) into a corresponding logic circuit. 839 F.3d at 1140.
 28 The claim in *Synopsys* was far more technical than the claims of the '636 patent:

1 A method of converting a hardware independent user description of a logic circuit,
2 that includes flow control statements including an IF statement and a GOTO
3 statement, and directive statements that define levels of logic signals, into logic
4 circuit hardware components comprising:

5 converting the flow control statements and directive statements in the user
6 description for a logic signal Q into an assignment condition AL(Q) for an
7 asynchronous load function AL() and an assignment condition AD(Q) for an
8 asynchronous data function AD(); and

9 generating a level sensitive latch when both said assignment condition AL(Q) and
10 said assignment condition AD(Q) are non-constant;

11 wherein said assignment condition AD(Q) is a signal on a data input line of said
12 flow through latch;

13 said assignment condition AL(Q) is a signal on a latch gate line of said flow
14 through latch; and

15 an output signal of said flow through latch is said logic signal Q.

16 839 F.3d at 1142. The Federal Circuit held that this claim was directed to the abstract idea of
17 “**translating** a functional description of a logic circuit into a hardware component description of
18 the logic circuit.” *Id.* at 1139. Similarly, claim 8 of the ’636 patent is directed to the idea of
19 **translating** one computer representation (a design specification for a circuit) into another
20 representation (assertions about how the circuit is expected to operate).

21 These types of claims are unpatentable because, as the Federal Circuit explained, “[t]he
22 idea of **reviewing the description of certain functions and turning it into a representation of the**
23 **logic component** that performs those functions can be—and, indeed was—performed mentally or
24 by pencil and paper by one of ordinary skill in the art.” *Synopsys*, 839 F.3d at 1139, 1148
25 (emphasis added; footnote omitted). The same is true for claim 8 of the ’636 patent, which
26 likewise reads a design specification of a circuit’s expected function and turns its properties into
27 another representation—a process that the ’636 patent admits was performed mentally by
28 engineers. *See* ’636 patent, 1:46-54. Like the abstract idea in *Synopsys*, claim 8 recites “an
assertion generating step that **reads the property** generated at the property generating step from the
storage and **automatically converts the property into an assertion description**” (emphasis added).
As in *Synopsys*, this is directed to an unpatentable abstract idea. 839 F.3d at 1147-48.

Using computer automation to minimize human error has been held to be unpatentable

1 under § 101. In *Univ. of Fla.*, the Federal Circuit invalidated claims for converting hospital
 2 treatment data using “data synthesis technology”—which was faster and more efficient than
 3 manual data entry—because it merely sought to “automate ‘pen and paper methodologies’ to
 4 conserve human resources and minimize errors.” 916 F.3d at 1368. Likewise, the ’636 patent
 5 seeks to automate a manual methodology—writing assertions by hand—to reduce human error.
 6 ’636 patent, 3:43-54, 5:30-56. Consistent with the holding in *Univ. of Fla.*, the ’636 patent is
 7 directed to an unpatentable abstract idea.

8 SDT attempts to resuscitate the ’636 patent by attaching an expert declaration to its
 9 Amended Complaint. The declaration is improper in the Ninth Circuit.⁶ “Generally, a district court
 10 may not consider any material beyond the pleadings in ruling on a Rule 12(b)(6) motion.” *Branch*,
 11 14 F.3d at 453 (citing *Hal Roach Studios, Inc. v. Richard Feiner & Co.*, 896 F.2d 1542, 1555 (9th
 12 Cir. 1990)). “Affidavits and declarations ... are not allowed as pleading exhibits unless they form
 13 the basis of the complaint[,]” e.g., a contract in a contract dispute. See *United States v. Ritchie*, 342
 14 F.3d 903, 908 (9th Cir. 2003). Courts in this district have, accordingly, declined to consider expert
 15 declarations when ruling on Rule 12(b)(6) motions. See, e.g., *Linquet Techs., Inc. v. Tile, Inc.*,
 16 2022 U.S.P.Q.2D (BNA) 66434 (N.D. Cal. July 18, 2022); *Voip-Pal.Com, Inc. v. Apple Inc.*, 375
 17 F. Supp. 3d 1110, 1123 n.4 (N.D. Cal. 2019) (stating that “[t]he Court will not consider the
 18 Mangione-Smith Declaration as part of its analysis because the Declaration is extrinsic to the
 19 complaints and Patents.”); *Marble Voip Partners LLC v. Zoom Video Commc'ns, Inc.*, 2023
 20 U.S.P.Q.2D (BNA) 505 (D. Kan. Apr. 24, 2023) (ruling, in details, that expert declarations
 21 attached to the complaint should not be considered for not being a written document after
 22 surveying of Circuit Courts’ ruling); cf. *Fan Yuan v. Facebook, Inc.*, No. 5:15-cv-01725, 2021 WL
 23 4503105, at *2-3 (N.D. Cal. Sep. 30, 2021) (striking an expert declaration because including it in
 24 the complaint or treating it as a separate written document under Rule 10(c) would be improper).
 25 Therefore, the Court should strike SDT’s Declaration of John Berg (Dkt. 41, Ex. C) and not

26
 27 ⁶ The law of the regional circuit applies unless the issue pertains to or is unique to patent law.
 28 *Flex-Foot, Inc. v. CRP, Inc.*, 238 F.3d 1362, 1365 (Fed. Cir. 2001). The inclusion of declarations
 with complaints is a general procedural matter that the Ninth Circuit has addressed for a variety
 of non-patent cases. See, e.g., *Hal Roach*, 896 F.2d at 1546.

1 consider it.

2 The Amended Complaint also argues that embodiments of the '636 patent include specific
3 technological improvements that automatically generate properties “using a syntax analyzer and a
4 property extractor.” Am. Compl. ¶ 24. However, “[t]he § 101 inquiry **must focus on the language**
5 **of the Asserted Claims** themselves.” *Synopsys*, 839 F.3d. at 1149. Here, the claims do not mention
6 anything about a syntax analyzer or property extractor; therefore, SDT’s arguments are irrelevant
7 to § 101, and the absence of those details in the claims only serves to reinforce their abstract
8 nature. The claims of the '636 patent are not limited to any particular methodology and instead
9 recite the end goal—automatically generating properties/assertions from a design specification—
10 while attempting to cover all ways of accomplishing that goal. This further confirms that the
11 **claims** of the '636 patent attempt to claim the principle in the abstract, rather than any particular
12 methodology described for the embodiments.

13 Functional claiming that attempts to cover an end goal has long been held invalid under
14 § 101 because it “preempt[s] the entire industry’s ability to use” the abstract idea, no matter how it
15 is implemented. *See, e.g., ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 769-70 (Fed.
16 Cir. 2019) (explaining that a broad claim drafted in “a result-oriented way” that amounts to
17 preempting the entire industry’s ability to use the abstract idea is patent ineligible); *Bancorp*
18 *Servs., L.L.C. v. Sun Life Assur. Co. of Canada (U.S.)*, 687 F.3d 1266, 1280 (Fed. Cir. 2012).

19 In other words, claim 8 attempts to cover the use of an abstract idea in the field of
20 semiconductor design and verification. However, “[a]n abstract idea does not become non-abstract
21 by limiting the invention to a particular field of use or technological environment[.]” *See Intell.*
22 *Ventures I LLC v. Capital One Bank (USA), N.A.*, 792 F.3d 1363, 1366 (Fed. Cir. 2015).

23 Reciting the generic use of computers does not save it either. While claim 8 recites a
24 “computer readable medium encoded with a program” to perform the abstract idea, the '636 patent
25 admits this process can and was performed mentally. Claim 8 also recites “graphically editing a
26 specification of the semiconductor integrated circuit,” but graphical interfaces have been
27 conventional in computers since the 1990s, and the '636 patent admits this was prior art. '636
28 patent, 7:57-60. In any case, graphical editing does not save the claim from patent-ineligibility.

1 *See, e.g., Intell. Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017)
 2 (“[A]n invention directed to collection, manipulation, and display of data was an abstract
 3 process.”); *Univ. of Fla.*, 916 F.3d at 1367-68.

4 **2. Alice Step Two: Claim 8 Does Not Contain an Inventive Concept**
 5 **Sufficient to Transform the Abstract Idea**

6 Because claim 8 is directed to an abstract idea, the next step in the *Alice* framework is to
 7 determine whether it contains an “inventive concept . . . sufficient to ensure that the patent in
 8 practice amounts to significantly more than a patent upon the ineligible concept itself.” *Alice*, 573
 9 U.S. at 217-18 (citations and quotations omitted). Claim 8 does not include an inventive concept
 10 because, beyond the abstract idea, its other limitations were routine, conventional, and admitted by
 11 the patent specification as being known in the art.

12 The abstract idea is recited in limitation [8c]. It is black-letter law that “a claimed
 13 invention’s use of the ineligible concept to which it is directed cannot supply the inventive concept
 14 that renders the invention ‘significantly more’ than that ineligible concept.” *BSG Tech LLC v.*
 15 *Buyseasons, Inc.*, 899 F.3d 1281, 1290 (Fed. Cir. 2018).

16 The rest of claim 8 recites prior art features, and it is well-established that prior art features
 17 cannot provide an inventive concept. *E.g., ChargePoint*, 920 F.3d at 774. The ’636 patent admits
 18 the other limitations were known, conventional steps in IC design. *Supra* § II.A (explaining how
 19 limitations [8a], [8b], and [8d] were admitted to be known in the art). Therefore, the other
 20 limitations of claim 8 do not provide an inventive concept.

21 SDT’s Amended Complaint generically alleges that the ’636 patent claims are “directed to
 22 specific technological improvements to semiconductor design and verification technology” with
 23 “specific approaches of generating assertions based on property read from design data generated
 24 from a specification of a semiconductor integrated circuit.” Am. Compl. ¶¶26, 32. However, SDT
 25 does not identify the supposed technological improvements or allegedly specific approaches that
 26 are recited in claim 8. These conclusory allegations are entitled to no weight. *See Iqbal*, 556 U.S.
 27 at 678-81. Moreover, linking the abstract idea to a particular technological environment or field of
 28 use does not provide an inventive concept. *See Bilski v. Kappos*, 561 U.S. 593, 595 (2010)

1 (finding claim describing how the abstract idea of hedging could be used in the commodities and
2 energy markets to be patent ineligible). SDT’s allegations fail to show that claim 8 contains an
3 inventive concept sufficient to transform the abstract idea into patent eligible subject matter.

4 The steps of claim 8 do not contain an inventive concept. The ordering of those steps also
5 fails to provide any inventive concept because they are in the natural and logical order for carrying
6 out the abstract idea of translating one computer representation (a design specification for a
7 circuit) into another (assertions about how the circuit is expected to operate): first, inputting a
8 semiconductor IC design specification; next, reading the specification; and finally, generating a
9 property, and in turn an assertion, using the specification. These were conventional steps in
10 semiconductor design that, even in combination, amount to no more than the routine and
11 conventional process used in the industry. The ’636 patent does not suggest this sequence is
12 somehow novel. *Bozeman Fin. LLC v. Fed. Reserve Bank of Atlanta*, 955 F.3d 971, 980 (Fed. Cir.
13 2020) (affirming finding of no inventive concept when the “claims only recite a logical sequence
14 of steps” for performing the abstract idea).

15 Furthermore, claim 8 is not directed to any novel component or improvement in the way
16 computers operate. It is directed to the process engineers use to design a computer chip—it does
17 not purport to improve the manufacture of those chips or the way in which they operate. Claim 8
18 recites a generic “computer” to carry out its steps but lacks any novel component or any particular
19 functionality for that computer. The Federal Circuit has repeatedly held that patents invoking
20 “computers and networks that are not even arguably inventive are ‘insufficient to pass the test of
21 an inventive concept in the application’ of an abstract idea.” *Elec. Power Grp. LLC v. Alstom SA*,
22 830 F.3d 1350, 1355 (Fed. Cir. 2016) (citation omitted).

23 Here, the ’636 claims neither seek to solve any technological problems arising in the realm
24 of computers or computer networks nor offer any unconventional technological solutions. Rather,
25 the computer simply provides a platform for performing the abstract mental steps of translating
26 one computer representation (a design specification for a circuit) into another representation
27 (assertions about how the circuit is expected to operate). Claim 8 recites a generic computer for
28 performing its steps, and the ’636 patent does not purport to operate the computer in an

1 unconventional manner.

2 The '636 patent's alleged advantages are not found in the claim language, and in any case,
3 merely relate to the abstract idea. The '636 patent seeks to “enable high reliability and high
4 efficiency in assertion verification.” '636 patent, 4:35-39. “Reliability” and “efficiency” due to
5 performing a process on a computer do not elevate an abstract idea to an inventive concept (*Univ.*
6 *of Fla.*, 916 F.3d at 1368), and it is well settled that mental processes that “can be performed in the
7 human mind, or by a human using a pen and paper” are not patentable under § 101. *Ericsson Inc.*
8 *v. TCL Commc'n Tech. Holdings Ltd.*, 955 F.3d 1317, 1327 (Fed. Cir. 2020). Claim 8 lacks a
9 patent-saving inventive concept and is invalid for claiming an abstract idea.

10 **3. Claim 8 of the '636 Patent Is Representative of the Challenged Claims**

11 Claim 8 is representative of the challenged claims (1-13) because they are all substantially
12 similar and linked to the same abstract idea explained above. *See Content Extraction & Trans. V.*
13 *Wells Fargo Bank*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (agreeing that a single identified claim is
14 representative because “the claims of the asserted patents are substantially similar in that they
15 recite little more than the same abstract idea”). Its dependent claims (9-13) add conventional and
16 routine limitations. Claim 9 simply verifies a state machine (already covered by claim 8) by
17 generating one or more properties and editing the specification with a table or figure. Claims 10-
18 11 edit the specification “based on user operations.” Claim 12 requires naming the assertion
19 description, and claim 13 simply expands the design data into a graphic structure and stores it,
20 which the '636 patent already admits was known in the prior art. '636 patent, 4:12-16, 4:22-23.
21 Therefore, the dependent claims are all linked to the abstract idea of claim 8: translating one
22 computer representation (a design specification for a circuit) into another representation
23 (assertions about how the circuit is expected to operate).

24 Additionally, dependent claims 9-13 do not add any inventive concept because they recite
25 insignificant post-solution activity. *See Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1242 (Fed.
26 Cir. 2016) (affirming invalidity under § 101 and that dependent claim limitations were
27 “insignificant post solution activity”). As explained above, these claims add conventional
28 limitations for editing specifications, such as charts and figures, and naming assertions—none of

1 which is new or inventive.

2 Claims 1-6 are directed at a system that executes the steps described in claim 8 and are
3 therefore subject to the same analysis as claim 8 and its dependents. While claim 1 recites generic
4 “units” that perform the abstract idea, this merely provides a platform for performing abstract
5 mental steps and therefore does not add any inventive step. *See Capital One Bank*, 792 F.3d at
6 1367 (“A simple instruction to apply an abstract idea on a computer is not enough.”).

7 Claim 7, although independent, is identical to claim 1 with an additional limitation of
8 “using the assertion description generated by the assertion generating system.” This is nothing
9 more than the basic use of assertions, which the ’636 patent admits was prior art. ’636 patent,
10 1:46-54. In short, claims 1-7 and 9-13 are linked to the same abstract idea as claim 8. Therefore,
11 claims 1-13 of the ’636 patent are all directed to the same abstract idea without amounting to
12 anything more, and the Court should find the claims patent-ineligible under § 101.

13 **B. Claims 1-2 of the ’167 Patent Are Patent-Ineligible Under 35 U.S.C. § 101**

14 Claims 1 and 2 of the ’167 patent are directed to an abstract idea that lack an inventive
15 concept sufficient to transform the abstract idea into patent-eligible subject matter. *See Alice*, 573
16 U.S. at 217-18.

17 **1. Alice Step One: Claim 1 Is Directed to an Abstract Idea**

18 The ’167 patent admits that prior art EDA tools carried out “behavioral synthesis” to
19 convert a behavioral description into an RTL description and a correspondence table. ’167 patent,
20 1:33-48, 3:19-26. Since the RTL output included state machines, the table cross-referenced where
21 those RTL states originated from in the behavioral description. *Id.*

FIG. 3

22 Figure 3 shows an exemplary correspondence table. The ’167
23 patent purports to improve efficiency by saving this table so it can
24 be referred to in later stages of a conventional design process,
25 including latency analysis. *Id.*, 1:60-62, 3:13-36, Figs. 1, 5.

5

BLOCK NAME	START STATE	FINISH STATE
file1_102_if	S10	S21
	S12	S30
file1_104_else	S10	S24
	S12	S29

26 Saving this table of cross-references, so it can be referenced later, is the alleged point of
27 novelty in the ’167 patent, which admits the other elements of claim 1 were prior art, including
28 behavioral descriptions, behavioral synthesizers, RTL descriptions, logic simulators, and latency

1 analysis. *See id.*, 1:33-62, 3:19-26; *supra* § II.B (explaining how limitations [1a]-[1c] were
 2 admitted to be prior art). The table of cross-references is described in the last two limitations of
 3 claim 1 ([1d] and [1e]), which were added to claim 1 during prosecution after the Examiner found
 4 all other limitations to be known in the art. *See supra* § II.B; Ex. A at 116-18, 141-43, 209.
 5 Therefore, claim 1 is directed to the abstract idea of saving a cross-reference table.

6 This is no different than an engineer writing a table in a notebook for later reference.
 7 Saving a cross-reference table is an age-old method of organizing data, which engineers have done
 8 in lab notebooks before the advent of computers. It is akin to the table of contents in this brief,
 9 where each section corresponds to a page number, or an index showing where terms appear in a
 10 book. This abstract idea—saving a cross-reference table such as the three-column table of
 11 Figure 3—can be performed using pen and paper and is precisely the type of abstraction the
 12 Federal Circuit has repeatedly found to be unpatentable. *See CyberSource Corp. v. Retail*
 13 *Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011) (invalidating a claim that could be
 14 performed by a person “by writing down” information because it was directed to a mental process
 15 that “can be performed in the human mind, or by a human using a pen and paper”); *Twilio, Inc. v.*
 16 *Telesign Corp.*, 249 F. Supp. 3d 1123, 1155 (N.D. Cal. 2017) (invalidating claims where “a human
 17 could keep a paper list[,]” “look up a particular communication destination in the paper list, [and]
 18 find what external communication provider(s) are associated with it”); *OpenTV, Inc. v. Apple,*
 19 *Inc.*, No. 14-CV-01622-HSG, 2015 WL 1535328, at *4 (N.D. Cal. Apr. 6, 2015) (invalidating
 20 claims where, “[u]sing a pen, paper, and her own brain, a person could write down a list” and then
 21 process and act on the organized information).

22 The ’167 patent applies this age-old abstract idea to pre-existing behavioral synthesis tools
 23 and workflows. But “limit[ing] the invention to a technological environment for which to apply
 24 the underlying abstract concept . . . do[es] not make an abstract concept any less abstract[.]”
 25 *Capital One Fin. Corp.*, 850 F.3d at 1340; *People.AI, Inc. V. SetSail Tech., Inc.*, 575 F. Supp. 3d,
 26 1193, 1200 (N.D. Cal. 2021) (“[L]imiting the claims to a particular technological environment...
 27 renders them no less abstract.”).

28 In *Synopsys*, the Federal Circuit found claims directed to logic (RTL) synthesis to be

unpatentable under § 101. 839 F.3d at 1150. Here, the '167 patent claims operate at a behavioral level that, as admitted by the '167 patent specification, describes circuit design at an even higher level of abstraction than RTL synthesis. '167 patent, 1:33-47 (using behavioral synthesis for “describing a design **at an increased abstract level**” and “synthesiz[ing] the behavioral description into the RTL description **to increase the abstract level of the design.**”) (emphasis added). Moreover, the '167 patent claims are far less technical than those in *Synopsys* and do not purport to invent behavioral synthesis itself—that is admitted prior art. *Id.*, 1:36-48, 3:19-23. Instead, claim 1 is directed to a mundane step of saving a cross-reference table created by known behavioral synthesis tools.

The Federal Circuit has invalidated similar claims for using indexes. In *Intell. Ventures I LLC v. Erie Indem. Co.*, the Federal Circuit invalidated claims that were “drawn to the abstract idea of ‘creating an index and using that index to search for and retrieve data.’” 850 F.3d 1315, 1327 (Fed. Cir. 2017). The Court held that “organizing and accessing records through the creation of an index-searchable database, includes longstanding conduct that existed well before the advent of computers and the Internet.” *Id.* The same principle applies to the '167 patent. Claim 1 is even more basic because it relies on prior art tools to organize its cross-reference table and is directed at the even more abstract concept of saving the table for later use.

The case law is replete with examples where the Federal Circuit found similar abstract ideas to be unpatentable. *See, e.g., Content Extraction*, 776 F.3d at 1347 (Fed. Cir. 2014) (holding abstract claims directed to “1) collecting data, 2) recognizing certain data within the collected data set, and 3) storing that recognized data in a memory”); *Elec. Power*, 830 F.3d at 1354-55 (finding invalid “a process of gathering and analyzing information of a specified content” because “merely selecting information, by content or source, for collection, analysis, and display does nothing significant to differentiate a process from ordinary mental processes”); *Cap. One Bank* 792 F.3d at 1367 (upholding § 101 invalidity of claims that tracked corresponding data in a database to compare with a threshold).

The recitation of computers, prior art tools, or alleged efficiency gains cannot save claim 1. SDT argues that efficiency is the '167 patent's improvement over the prior art. Am. Compl. ¶38.

1 The '167 patent purports to introduce a more effective process to “check the behavioral
 2 description[.]” '167 patent, 1:61-62, 5:57-64 (purporting to “easily calculate a latency in each
 3 block in the behavioral description” and thus “easily determine which part of the behavioral
 4 description 1 is effectively corrected to reduce the latency”) (emphasis added). But making
 5 something more efficient does not make it any less abstract. Saving a table and referring to it later
 6 may be easily done, but simply increasing the efficiency does not render a claim patent eligible,
 7 and using a computer to improve efficiency has been held to be patent-ineligible under § 101.
 8 *Zillow*, 50 F.4th at 1378, 1382 (“Any of the patent’s improved efficiency comes not from an
 9 improvement in the computer but from applying the claimed abstract idea to a computer
 10 display.”). *See also*, *Synopsys*, 839 F.3d at 1139-1140; *Univ. of Fla.*, 916 F.3d at 1369
 11 (invalidating claims that “simply [were] an instruction to implement or apply the abstract idea on a
 12 computer”).

13 **2. Alice Step Two: Claim 1 Does Not Contain an Inventive Concept**
 14 **Sufficient to Transform the Abstract Idea**

15 According to SDT, the correspondence table is the point of novelty for the '167 patent.
 16 Am. Compl. ¶ 38. However, claim 1 does not mention any particular way of generating the
 17 correspondence table; it simply recites having one. Nor does the '167 patent specification provide
 18 any details, other than by saving a table created using prior art algorithms. Other courts in the
 19 Northern District have invalidated claims under § 101 for this reason. *See, e.g., Rearden*, 2023 WL
 20 3579324 at *8 (quoting *Intell. Ventures I LLC v. Symantec*, 838 F.3d 1307, 1316 (Fed. Cir. 2016)
 21 which granted motion to dismiss because claim “contains no restriction on how the result is
 22 accomplished ... [and] [t]he mechanism ... is not described, although this is stated to be the
 23 essential innovation[.]”).

24 Claim 1 does not recite a specific, much less novel or technical, way for generating or
 25 saving the correspondence table. Therefore, claim 1 attempts to claim the “principle in the
 26 abstract” which the Federal Circuit has found unpatentable under § 101 because it “preempt[s] the
 27 entire industry’s ability to use” the abstract idea, no matter how it is implemented. *See, e.g.,*
 28 *ChargePoint*, 920 F.3d at 769-70; *Bancorp*, 687 F.3d at 1280; *Accenture Glob. Servs., GmbH v.*

1 *Guidewire Software, Inc.*, 728 F.3d 1336, 1345 (Fed. Cir. 2013) (invalidating claims because
 2 “attempts to limit the abstract concept to a computer implementation and to a specific industry . . .
 3 do not provide additional substantive limitations to avoid preempting the abstract idea”).

4 SDT attempts to save the ’167 patent by rewriting it. According to the Amended
 5 Complaint, “prior to the ’167 invention, there was no effective way to determine the portion(s) of
 6 the corresponding behavioral description responsible for high latency in the RTL description.”
 7 Am. Compl. ¶ 36. However, SDT is contradicted by the ’167 patent, which admits the
 8 correspondence table is generated “using a known algorithm for behavioral synthesization [sic]”
 9 (’167 patent, 3:19-22) and that the prior art included latency analyzers that calculated latency for
 10 the RTL description (*id.*, 1:53-55). Determining the portions of behavioral code that corresponded
 11 to particular (high latency) portions of the RTL description was a simple matter of referring to the
 12 correspondence table—a simple mental task of reading a table, which humans have done for
 13 centuries before computers. *See infra* §IV.B.3. “[P]leadings, as to [the inventiveness] of the claims
 14 are not entitled to the assumption of truth where the[y] are conclusory or contradict [] [the]
 15 intrinsic evidence....” *Search & Soc. Media Partners v. Facebook Inc.*, No. 17-1120, 2019
 16 WL581616, at *2-6 (D. Del. 2019) (invalidating asserted claims under § 101); *Secured Mail*, 873
 17 F.3d at 913 (“[A] court need not ‘accept true allegations that contradict matters properly subject to
 18 judicial notice or by exhibit,’ such as the claims and the patent specification.”).

19 Saving a table so that it can be referred to later is a conventional human activity that
 20 predates computers. For example, it has long been used for movie times or train schedules in
 21 newspapers. As in *TDE Petroleum Data Sols., Inc. v. AKM Enterprise, Inc.*, these “are the most
 22 ordinary of steps in data analysis and are recited in the ordinary order.” 657 F. App’x 991, 993
 23 (Fed. Cir. 2016). Employing computers to automate what can be done using pen and paper does
 24 not provide an inventive concept. *See Univ. of Fla.*, 916 F.3d at 1367 (invalidating claims
 25 “seek[ing] to automate ‘pen and paper methodologies’ to conserve human resources and minimize
 26 errors”). Furthermore, linking an abstract idea to a particular technological environment, such as
 27 semiconductor design or EDA tools, does not provide an inventive concept. *Bilski*, 561 U.S. at 595
 28 (finding no inventive concept in claims describing how the abstract idea of hedging could be used

1 in the commodities and energy markets). Nothing in claim 1 provides significantly more than a
 2 patent upon the abstract idea applied to pre-existing EDA tools.

3 Even in combination, the elements of claim 1 amount to no more than a routine and
 4 conventional use of a cross-reference table in a conventional IC design methodology that the '167
 5 patent admits already included latency analysis in the prior art. '167 patent, 1:37-62. It cannot be
 6 argued that saving a table and then reading it later (for latency analysis) is anything other than an
 7 unpatentable abstract idea. It is hardly the type of inventive step required by *Alice*.

8 Moreover, the Federal Circuit has repeatedly held that patents invoking “computers and
 9 networks that are not even arguably inventive are ‘insufficient to pass the test of an inventive
 10 concept in the application’ of an abstract idea.” *Elec. Power*, 830 F.3d at 1355. Claim 1 is not
 11 directed to any novel component or improvement in the way computers operate. There is no
 12 mention of improvements to computer components or EDA tools in the patent specification or
 13 claims. In fact, the patent specification admits that the limitations of the claims, including
 14 behavioral synthesis and latency analysis, were known in the art. '167 patent, 1:36-62, 3:21. *See*
 15 *supra* § II.B. The '167 patent does not purport to solve a technical computer problem or improve
 16 any particular computer feature; saving a cross-reference table is a conventional human activity.

17 For claims directed to storing data to contain an inventive concept, the plaintiff must show
 18 “a specific improvement to the way computers operate” that is “not simply directed to any form of
 19 storing tabular data” and “functions differently than conventional database structures[.]” *Enfish*,
 20 *LLC v. Microsoft Corp.*, 822 F.3d 1327, 1336-1337 (Fed. Cir. 2016). Neither applies here. Unlike
 21 the “self-referential table” of *Enfish*, here the “correspondence table” of the '167 patent lacks any
 22 novel implementation details that would even remotely support the notion that the focus of the
 23 claims is on specific asserted improvement in computer capabilities. *Id.*, 1336. All that is claimed,
 24 or even discussed, by the '167 patent is what data is recorded in the table, which is created using a
 25 prior art tool. '167 patent, 3:19-26, 4:1-20. In stark contrast to *Enfish*, the correspondence table of
 26 the '167 patent is a simple three column table that works the same way tables have worked since
 27 before the advent of computers.

28 In short, limitations [1d] and [1e] are directed to the abstract idea itself—saving a cross-

reference table—and therefore cannot provide the required inventive concept. *BSG Tech*, 899 F.3d at 1290. The other limitations ([1a]-[1c]) were admitted by the patent specification to be conventional aspects of IC design that were known in the art. *See supra* § II.B, § IV.B.1. It is well-established that prior art features cannot be inventive concepts. *See, e.g., ChargePoint*, 920 F.3d at 774. Taken together, the elements of claim 1 describe a routine and conventional use of a cross-reference table in a known design process. *See* '167 patent, 1:36-62. Therefore, claim 1 is directed to an abstract idea and lacks an inventive concept. It is patent-ineligible under § 101.

3. Claim 1 of the '167 Patent is Representative of the Challenged Claims

Claim 1 is representative because the only other challenged claim (dependent claim 2) is “substantially similar and linked to the same abstract idea” of saving a cross-reference table. *See Content Extraction*, 776 F.3d at 1348 (Fed. Cir. 2014). While claim 1 is directed to the abstract idea of saving a cross-reference table, claim 2 simply “refers” to that table. Claim 2 recites “wherein the latency analyzer *refers to* the result of the logic simulation and the correspondence table . . . to calculate the latency in each block in the behavioral description” (emphasis added).

This is a straightforward extension of the abstract idea—referring to a table is the conventional way that tables have been used. Long before computers, everyone from engineers to school children have referred to tables by finding the appropriate row and reading from the corresponding columns. Therefore, claims 1 and 2 are substantially similar and linked to the same abstract idea without amounting to anything more, and the Court should find the claims patent-ineligible under § 101.

Even if evaluated separately, claim 2 would still be invalid under *Alice* because it is directed to the abstract idea of referring to a cross-reference table. This is a mental process that can be performed purely in the mind, or with pen and paper, for example by looking up each block and reading the corresponding columns in Figure 3. The Federal Circuit has repeatedly held these types of claims to be abstract and unpatentable under § 101. *See, e.g., Ericsson Inc.*, 955 F.3d at 1327.

FIG. 3

BLOCK NAME	START STATE	FINISH STATE
file1_102_if	S10	S21
	S12	S30
file1_104_else	S10	S24
	S12	S29

Referring to a cross-reference table, e.g., by finding a row and reading its columns, is not

1 inventive. This is how humans have used tables for centuries and is a basic method of
 2 organization. *See CyberSource*, 654 F.3d at 1372 (Fed. Cir. 2011). *Accord Twilio*, 249 F. Supp. at
 3 1155; *OpenTV*, 2015 WL 1535328, at *4. *See supra* §§ IV.B.1-2.

4 There is nothing inventive in referring to a cross-reference table while calculating latency.
 5 The '167 patent admits the prior art used “known methods” “to determine which part of the
 6 behavioral description” corresponded to the high latency portions of RTL code. '167 patent, 1:56-
 7 62. It admits that the prior art included the correspondence table recited in the claims. *Id.*, 3:19-26.
 8 Furthermore, the patent specification’s description of prior art latency analysis matches the
 9 description of latency analysis in the embodiments. *Compare* '167 patent, 1:56-61 with 2:9-12;
 10 *supra* § II.B. In the prosecution history, the Examiner found that the latency analyzer was
 11 disclosed in the prior art. Ex. A at 116-18. The Applicant did not contest the Examiner’s finding.
 12 Ex. A at 211. Instead, the Applicant amended the claims to include the correspondence table and
 13 correspondence table generator. Ex. A at 209-211.

14 In short, claim 2 is substantially similar and linked to the same abstract idea as claim 1:
 15 saving a cross-reference table. Even if evaluated separately, claim 2 is still directed to an abstract
 16 idea of referring to a cross-reference table, and there is nothing inventive about using a table in the
 17 conventional manner described by the '167 patent. Therefore, claim 2 is invalid under § 101.

18 **V. CONCLUSION**

19 In response, SDT might raise generic arguments that the claims of the '636 and '167
 20 patents are—contrary to the patents themselves—directed at technical solutions. But SDT cannot
 21 run from the patents’ descriptions of their alleged inventions, which place them squarely in the
 22 type of patent claims that the Federal Circuit has repeatedly found invalid under § 101. And while
 23 SDT may try to confuse the Court with purported fact disputes over seemingly complex EDA
 24 concepts, at bottom the '636 and '167 patents apply simple, abstract ideas to pre-existing EDA
 25 tools and methodologies. SDT cannot rely on the innovation of others to bolster its abstract claims.

26 For the reasons explained above, claims 1-13 of the '636 patent and claims 1-2 of the '167
 27 patent are patent-ineligible under 35 U.S.C. § 101. Therefore, SDT’s Complaint, even as amended,
 28 fails to state a claim of patent infringement.

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