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Rimon, P.C.
One Embarcadero Center
Suite 400
San Francisco, CA 94111

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PLECHA, THADDEUS J	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte WILHELMUS P. A. J. MICHIELS and
PAULUS M. H. M. A. GORISSEN

Appeal 2017-003044
Application 14/176,938[1]
Technology Center 2400

Before JEFFREY S. SMITH, BRUCE R. WINSOR, and
SHARON FENICK, *Administrative Patent Judges*.

Opinion for the Board file by *Administrative Patent Judge* SMITH

Opinion dissenting filed by *Administrative Patent Judges* WINSOR

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

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[1] The Applicant is Irdeto B.V., which, according to the Appeal Brief, is the real party in interest. App. Br. 1.

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the rejection of claims 37–42. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Representative Claim

37. A method of enabling a device to perform a cryptographic operation involving an exponentiation C^x having a base C and an exponent x by means of a white-box implementation of the exponentiation, the method comprising:

receiving information indicative of at least a part of a plurality of values ω_i and at least a part of information indicative of a plurality of values φ_i, the plurality of values ω_i satisfying $\omega_i = C^{\lambda_i}$, for a plurality of values λ_i, the plurality of values φ_i satisfying $x = \sum_{i=0}^{r} \lambda_i \varphi_i$, $i = 1, 2, \ldots, r$, wherein i is an integer, wherein r is an integer, and wherein $r \geq 2$; and

generating a function P configured to enable the device to compute C^x without either of the precise value of the base C or the exponent x being available to the device, wherein $P = \prod_{i=1}^{r} \omega_i^{\varphi_i}$;

encrypting a message m to obtain a ciphertext by using P to compute C^x such that at least one of the precise value of the base C and the exponent x are not available to the device during encryption;

wherein encrypting the message m comprises:

selecting a random integer k_1 with $1 \leq k_1 \leq n-1$, wherein n is an integer,

computing $\gamma = \alpha^{k_1}$, wherein α is associated with a public key of the device,

defining $k_2 = g(\gamma)$, wherein g is a function,

computing α^{k_2} by using P, wherein k_2 corresponds to x,

computing $\delta = m \cdot (\alpha^a)^{k_1} \cdot \alpha^{k_2}$, wherein a is a private key of the device, and

generating the ciphertext given by (γ, δ).

Examiner's Rejection

Claims 37–42 stand rejected under 35 U.S.C. § 101 as directed to ineligible subject matter.

ANALYSIS

The Supreme Court has set forth an analytical "framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014) (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71−73 (2012)). In the first step of the analysis, we determine whether the claims at issue are "directed to" a judicial exception, such as an abstract idea. *Alice*, 134 S. Ct. at 2355. If not, the inquiry ends. *Thales Visionix Inc. v. U.S.*, 850 F.3d 1343, 1346 (Fed. Cir. 2017); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1339 (Fed. Cir. 2016). If the claims are directed to a judicial exception, then we consider under step two whether the claim recites additional elements that amount to significantly more than the judicial exception. *Alice*, 134 S. Ct. at 2355 (citing *Mayo*, 566 U.S. at 72–73). The Supreme Court has described the second part of the test as the "search for an 'inventive concept.'" *Alice*, 134 S. Ct. at 2355 (citing *Mayo*, 566 U.S. at 72–73).

Noting that the two steps involve "overlapping scrutiny of the content of the claims," the Federal Circuit has described "the first-stage inquiry" as "looking at the 'focus' of the claims, their 'character as a whole,'" and "the second-stage inquiry (where reached)" as "looking more precisely at what the claim elements add—specifically, whether, in the Supreme Court's

terms, they identify an 'inventive concept' in the application of the ineligible matter to which (by assumption at stage two) the claim is directed." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016) (citations omitted).

Step One: Whether the Claims Are Directed to a Patent-Ineligible Concept (Abstract Idea)

The Examiner finds the claims are directed to the abstract idea of mathematical operations. Final Act. 5; Ans. 3. Appellants contend that the claims are not directed to an abstract idea, but to an improvement in computer related technology. App. Br. 7–11. According to Appellants, the steps of receiving information and generating a function as recited in claims 37 and 38 are not directed to the abstract idea of exponentiation for a cryptographic operation, but rather, are directed to a "method of enabling a device to perform a cryptographic operation involving an exponentiation C^x having a base C and an exponent x by means of a white-box implementation of the exponentiation" as recited in the preamble of each of claims 37–41. App. Br. 8–9. Appellants identify similar receiving and generating steps in claims 39–41. App. Br. 9–11.

Appellants' contention that the claims are not directed to the abstract idea of exponentiation for a cryptographic operation does not persuasively rebut the Examiner's finding that the claims are directed to the abstract idea of mathematical operations. *See* Final Act. 5; Ans. 3. Similarly, Appellants' contention that the claims are directed to a "method of enabling a device to perform a cryptographic operation involving an exponentiation C^x having a base C and an exponent x by means of a white-box implementation of the exponentiation" does not show error in the Examiner's finding that the steps

of the claimed method "to perform a cryptographic operation" recite mathematical operations.

Claim 37 recites the mathematical algorithm of "receiving [data]; generating [a mathematical function]; encrypting a message *m* . . . by using [the mathematical function] to compute [data]; wherein encrypting the message *m* comprises: selecting [data], computing [data], defining [data], computing [data] by using [the mathematical function], computing [data], and generating [data]." Each of claims 38–42 recites similar mathematical algorithms for encrypting or decrypting data. We agree with the Examiner that the claims are directed to the abstract idea of mathematical algorithms for encrypting or decrypting data.

Claim 37 is similar to patent-ineligible mathematical algorithms identified by the Supreme Court as abstract ideas, such as a mathematical algorithm for converting binary-coded decimal numerals into pure binary form (*Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1972)); a mathematical algorithm for computing an alarm limit (*Parker v. Flook*, 437 U.S. 584, 594–595 (1978)); and a mathematical algorithm for hedging against the financial risk of price fluctuations (*Bilski v. Kappos*, 561 U.S. 593 (2010)).

Claim 37 is also similar to unpatentable mathematical algorithms identified by the Federal Circuit as abstract ideas. For example, the claim in *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1328 (Fed. Cir. 2017), was directed to the abstract idea of encoding and decoding image data using a mathematical formula. In *SAP America, Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1164 (Fed. Cir. 2018), the claim was directed to a method for calculating, analyzing, and displaying investment data comprising the steps of selecting data, generating a distribution function, and generating a plot of

the distribution function. In *Digitech Image Technologies, LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014), the claims of the challenged patent were directed to the abstract idea of organizing information through mathematical correlations. *Id.* at 1350–51. In *Digitech*, the Federal Circuit held that a process that started with data, added an algorithm, and ended with a new form of data was directed to an abstract idea. *Id.* In this case, the method of claim 37 starts with data, adds a mathematical encryption algorithm, and ends with a new form of data. We discern no material difference between the *Alice* step one analysis in *RecogniCorp*, *SAP America*, and *Digitech*, and the analysis here.

Appellants argue that the Examiner has not presented a prima facie case nor provided any support for the assertion that the claims recite the abstract idea of exponentiation for a cryptographic operation. App. Br. 11–12. However, the Examiner has identified the abstract idea as mathematical operations. Final Act. 5; Ans. 3. The Federal Circuit has held that the Office carries its procedural burden of establishing a prima facie case when its rejection satisfies the requirements of 35 U.S.C. § 132 by notifying the applicant of the reasons for rejection, "together with such information and references as may be useful in judging of the propriety of continuing the prosecution of [the] application." *In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011) (alteration in original) (citation omitted). Here, the Examiner has met this burden by identifying the claimed abstract idea as mathematical operations. Appellants have not persuasively rebutted the Examiner's prima facie case that the claims recite mathematical operations.

Appellants contend that the Examiner mischaracterized the invention using an improperly high level of abstraction, untethered from the language

of the claims. App. Br. 15–16. According to Appellants, the claims focus on enabling a device to perform cryptographic operations without exposing sensitive values to an attacker in a white-box environment. *See* App. Br. 12–15. Appellants contend that the claims here, as in *Enfish*, "focus on a specific asserted improvement in computer capabilities." App. Br. 15.

In *Enfish*, the Federal Circuit determined that claims related to a database structure were not abstract because their focus included a new "self-referential table [that] functions differently than conventional database structures." 822 F.3d at 1337. Similarly, in *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253 (Fed. Cir. 2017), the Federal Circuit determined that the claims at issue were directed to an "improved memory system" that configured operational characteristics of a computer's cache memory based on the type of processor connected to the memory system. *Id.* at 1261. In *Finjan, Inc. v. Blue Coat Systems, Inc.*, 879 F.3d 1299, 1305 (Fed. Cir. 2018), the Federal Circuit determined that the claims were directed to a non-abstract improvement in computer functionality of enabling a computer security system to tailor access for different users and ensure that threats are identified before a file reaches a user's computer, rather than the abstract idea of computer security writ large. Both *Enfish* and *Visual Memory* concerned claims that focused on improved ways in which computers store and access data. *Finjan* focused on improved ways of tailoring access to different computers.

However, the claims here do not focus on ways that improve the functioning of computer databases to store or organize information analogous to the self-referential table in *Enfish* or the adaptable memory caches in *Visual Memory*, nor do the claims focus on tailoring access to

different computers as in *Finjan*. Rather, the focus of the claims here is the improved mathematical algorithm. The claims here start with data, encrypt or decrypt the data using mathematical algorithms, and end with a new form of data. The Specification makes clear that off-the-shelf computer technology is usable to carry out the analysis. *See* Spec. 7:5–11, 10:29–32, 11:7. The claims fit into the familiar class of claims that do not "focus . . . on . . . an improvement in computers as tools, but on certain independently abstract ideas that use computers as tools." *Electric Power*, 830 F.3d at 1354.

We agree with the Examiner, at step one of the *Alice* analysis, that the claims are directed to the abstract idea of mathematical algorithms. Accordingly, we turn to the second step of the *Alice* analysis, in which we determine whether the additional elements of the claims transform them into patent-eligible subject matter.

Step Two: Whether Additional Elements Transform the Idea into Patent-Eligible Subject Matter

In step two of the *Alice* inquiry, we search for an "inventive concept" sufficient to "'transform the nature of the claim' into a patent-eligible application." *Alice*, 134 S. Ct. at 2355 (citation omitted). To save the claims at step two, an inventive concept must be evident in the claims. *See id.* at 2357.

Appellants contend that claims 37–42 include elements and combinations of elements such that the claims are directed to significantly more than the abstract idea. App. Br. 17. In particular, Appellants contend the claimed limitations are not "well-understood, routine, and conventional in the field" of cryptographic technologies. App. Br. 18–21. According to

Appellants, claims that recite a combined order of steps or rules that are not conventional are patent eligible. Reply Br. 2 (citing *Bascom Global Internet Servs., Inc. v. AT&T mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016); *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016)).

However, in *Bascom*, the claim recited a non-conventional and non-generic arrangement of various computer components for filtering Internet content, such as a "local client computer," a "remote ISP server," and "controlled access network accounts." 827 F.3d at 1349–51. Appellants have not identified a claimed non-conventional arrangement of various computer components similar to the arrangement as claimed in *Bascom*.

In *McRO*, the Federal Circuit noted that the claims described a physical display of realistic lip synchronization and facial expressions in animated characters, rather than claiming the idea of a solution or outcome. *See SAP Am.*, 898 F.3d at 1167 (citing *McRO*, 837 F.3d at 1313–14). In contrast to *McRO*'s physical display, Appellants' "claimed improvement [is] a mathematical technique with no improved display mechanism." *See id.*

The Federal Circuit has explained that a "claim for a *new* abstract idea is still an abstract idea." *SAP Am.*, 898 F.3d at 1163 (citation omitted). Even assuming the claimed algorithm is "innovative, or even brilliant," that would not be enough for the claimed abstract idea to be patent eligible. *See id.* "The claims here are ineligible because their innovation is an innovation in ineligible subject matter." *Id.* Their subject is nothing but a series of steps that input data to mathematical functions to generate output data. *See id.*

Appellants contend that the claims are similar to Example #4 of the Subject Matter Eligibility Guidance issued January 27, 2015, available at

https://www.uspto.gov/sites/default/files/documents/abstract_idea_examples.pdf. App. Br. 21–23. The claims in Example #4, unlike the claims here, were limited to a mobile device comprising a GPS receiver, microprocessor, wireless communication transceiver, and display that receives satellite data, calculates pseudo-ranges, wirelessly transmits the pseudo-ranges to a server, receives location data from the server, and displays a representation of the location data. In contrast, the claims here do not recite any structural limitations other than a generic "device," which, according to Appellants' Specification, can be a generic computing device. *See* Spec. 7:5–11, 10:29–32, 11:7.

Appellants contend that the mathematical algorithm is limited to a computer device, which allows computer performance of a function not previously performed by a computer. Reply Br. 4–5. As we stated above, novelty is not enough for the claimed abstract idea to be patent eligible. *See SAP Am.*, 898 F.3d at 1163. In *Benson*, the Supreme Court considered a patent that claimed an algorithm implemented on a general purpose digital computer. 409 U.S. at 64. Because the algorithm was an abstract idea, the computer implementation did not supply the inventive concept. *Id.* at 71–72 ("The mathematical formula involved here has no substantial practical application except in connection with a digital computer . . . ."). The mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention. *Alice*, 134 S. Ct. at 2358.

Appellants contend that claim 37 recites transforming a particular article to a different state or thing. App. Br. 23. According to Appellants, the claimed "message" is an article because the message conveys data that can be discerned, and the claimed "ciphertext" is a different state or thing

because it cannot be discerned without being decrypted. App. Br. 23–24. However, the scope of the claimed "message" encompasses data, and the scope of the claimed "ciphertext" encompasses new data output as the result of applying a mathematical encryption algorithm to the data. As in *Benson*, *SAP America*, and *Digitech*, a process that starts with data, adds an algorithm, and ends with a new form of data is directed to an abstract idea. *See* 409 U.S. at 71; 898 F.3d at 1167; 758 F.3d at 1350–51.

Appellants contend that the claims recite limitations "necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks" and are therefore "significantly more" than the abstract idea. App. Br. 24–25 (emphasis omitted) (citing *DDR Holdings LLC v. Hotels.com LP*, 773 F.3d 1245 (Fed. Cir. 2014)). In *DDR Holdings*, the Federal Circuit stated that the claims at issue "recite a specific way to automate the creation of a composite web page . . . ." 773 F.3d at 1259. The Court found that the patent claims satisfied *Alice* step two because "the claimed solution amounts to an inventive concept for resolving [a] particular Internet-centric problem." *Id.* The claims of the instant application contain no similar inventive concept. Nothing "transforms" the abstract idea of encrypting and decrypting data into patent-eligible subject matter. *See Alice*, 134 S. Ct. at 2357.

Appellants contend that the Examiner is incorrect in relying on *Flook* for the proposition that mathematical algorithms cannot be patent eligible. Reply Br. 4. We disagree with Appellants. In *Alice*, the Supreme Court explained that the formula in *Flook* was an abstract idea, and the computer implementation was purely conventional. *Alice*, 134 S. Ct. at 2358. The Court stated that "*Flook* stands for the proposition that the prohibition

against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment." *Id.* (alteration in original) (citation omitted).

We agree with the Examiner's findings that the claims do not amount to significantly more than the abstract idea itself. Accordingly, we sustain the Examiner's 35 U.S.C. § 101 rejection of claims 37–42.

DECISION

The rejection of claims 37–42 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 41.50(f).

AFFIRMED

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte WILHELMUS P. A. J. MICHIELS and
PAULUS M. H. M. A. GORISSEN

Appeal 2017-003044
Application 14/176,938
Technology Center 2400

Before JEFFREY S. SMITH, BRUCE R. WINSOR, and
SHARON FENICK, *Administrative Patent Judges*.

WINSOR, *Administrative Patent Judge*, dissenting.

OPINION DISSENTING

Because I would hold claims 37–42 to be patent-eligible, I respectfully dissent. More particularly, it is my view that representative claim 37 is not directed to a judicial exception to patent eligibility, i.e., an abstract idea, under 35 U.S.C. § 101. Accordingly, I would reverse the Examiner's rejection of claims 37–42.

The Invention

Appellants' disclosed invention relates to "perform[ing] a cryptographic operation involving an exponentiation $C^{\mathcal{E}}$ having a base C and

an exponent *x* by means of a white-box implementation of the exponentiation . . . such that at least one of the precise value of the base *C* and the exponent *x* are not available to the device during encryption." Claim 37. Representative claim 37 reads as follows:

> 37. A method of enabling a device to perform a cryptographic operation involving an exponentiation C^x having a base *C* and an exponent *x* by means of a white-box implementation of the exponentiation, the method comprising:
>
> receiving information indicative of at least a part of a plurality of values ω_i and at least a part of information indicative of a plurality of values φ_i, the plurality of values ω_i satisfying $\omega_i = C^{\lambda_i}$, for a plurality of values λ_i, the plurality of values φ_i satisfying $x = \sum_{i=0}^{r} \lambda_i \varphi_i$, $i = 1, 2, \ldots, r$, wherein *i* is an integer, wherein *r* is an integer, and wherein $r \geq 2$; and
>
> generating a function *P* configured to enable the device to compute C^x without either of the precise value of the base *C* or the exponent *x* being available to the device, wherein $P = \prod_{i=1}^{r} \omega_i^{\varphi_i}$;
>
> encrypting a message *m* to obtain a ciphertext by using *P* to compute C^x such that at least one of the precise value of the base *C* and the exponent *x* are not available to the device during encryption;
>
> wherein encrypting the message *m* comprises:
>
> selecting a random integer k_1 with $1 \leq k_1 \leq n-1$, wherein *n* is an integer,
>
> computing $\gamma = \alpha^{k_1}$, wherein α is associated with a public key of the device,
>
> defining $k_2 = g(\gamma)$, wherein *g* is a function,
>
> computing α^{k_2} by using *P*, wherein k_2 corresponds to *x*,
>
> computing $\delta = m \cdot (\alpha^a)^{k_1} \cdot \alpha^{k_2}$ wherein *a* is a private key of the device, and
>
> generating the ciphertext given by (γ, δ).

Appellants' Specification tells us that the purpose of the invention is to address problems faced by digital "content providers [who] must deliver

content to legitimate users across a hostile network to a community where not all users or devices can be trusted." Spec. 1:28–2:2. Appellants' Specification explains as follows:

> A white-box cipher is a block cipher which is well suited for a white-box implementation of a cryptographic algorithm, i.e., a software implementation for which it is difficult for an attacker to extract the cryptographic key that is used. Such white-box implementations are known to exist for symmetric block ciphers, such as AES and 3DES. However, it would also be interesting to white-box asymmetric ciphers, such as RSA and ElGamal. A typical operation in asymmetric ciphers is an exponentiation y^x, where y and x can both be variable and constant. In some block ciphers, the base y is more or less constant whereas the exponent x varies more often. When white-boxing such block ciphers (or, more generally, algorithms), it is advantageous if it the exponent x can be efficiently changed. Also, it would be advantageous if an implementation of y^x were provided in which the value of x may be hidden. In this text an approach to white-boxing block ciphers (or, more generally algorithms) is presented that has these advantages.

Spec. 5:30–6:8.

The Test for Patent Eligibility

To be statutorily eligible, the subject matter of an invention must be a "new and useful process, machine, manufacture, or composition of matter, or [a] new and useful improvement thereof." 35 U.S.C. § 101. Claim 37 is directed to a "[a] method," i.e., a process. Thus, the claim is directed to one of the four statutory categories of patentable subject matter. However, the eligibility analysis does not end here, because the Supreme Court has held there are implicit exceptions to the categories of eligible subject matter identified in § 101, including laws of nature, natural phenomena, and

abstract ideas. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). Further, the Court has "set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Id.* (citing *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012)). The evaluation follows the two-part analysis set forth in *Mayo* and reiterated in *Alice*: (1) determine whether the claim is directed to an abstract idea ("*Alice* Step 1"); and (2) if the claim is directed to an abstract idea, determine whether the recited elements, considered individually and as an ordered combination, contain an "inventive concept" sufficient to transform the claimed abstract idea into a patent-eligible application such that the claim amounts to significantly more than the abstract idea itself ("*Alice* Step 2"). *See Alice*, 134 S. Ct. at 2355, 2357.

Alice Step 1

The majority holds that claim 37 is directed to an abstract idea, i.e., a mathematical algorithm. I respectfully disagree. Instead, I agree with Appellants that claim 37 is directed to an improvement in computer related technology. *See* App. Br. 7–11.

The "directed to" inquiry of *Alice* Step 1 cannot simply ask whether the claims involve a patent-ineligible concept, because "all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas." *Mayo*, 566 U.S. at 71. Rather, "the 'directed to' inquiry applies a stage-one filter to claims, considered in light of the specification, based on whether 'their character as a whole is directed to

excluded subject matter.'" *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016) (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)).

To be sure, claim 37 is replete with mathematical expressions, but the mere presence of mathematical expressions in a claim is not dispositive of whether the claim is "directed to" an algorithm. *See, e.g.*, *Diamond v. Diehr*, 450 U.S. 175 (1981). I note in passing that *every* function that a computer or system of computers performs is, at some level, defined by or governed by an algorithm, however expressed. Our reviewing court, however, has not held that only physical, as distinct from functional, improvements to computers and systems of computers are patent-eligible. *See, e.g.*, *DDR Holdings LLC v. Hotels.com L.P.*, 773 F.3d 1245 (Fed. Cir. 2014); *Enfish*, 822 F.3d 1327; *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1305 (Fed. Cir. 2018).

One of the functions of the system of computers known as the "Internet" is to "provide[] users with convenient access to digital content" (Spec. 1:6), while protecting the interests of the content providers (Spec. 1:16–19). In order to provide this access for the user and concomitant protection for the providers, the digital content is encrypted, often using so-called "white-box" ciphers to make it more difficult for an unauthorized user to access content. Spec. 2:3–15. Appellants' invention purports to improve the encryption of digital content, and thus the security of delivery of that content, by permitting the use of a wider variety of encryption techniques and more efficient changing of encryption parameters. *See* Spec. 5:30–6:8 (reproduced above).

The *Enfish* court explained that "[t]he Supreme Court has suggested that claims 'purport[ing] to improve the functioning of the computer itself,' or 'improv[ing] an existing technological process' might not succumb to the abstract idea exception." *Enfish*, 822 F.3d at 1335 (second and third alteration in original) (citing *Alice*, 134 S. Ct. at 2358–59). Claim 37 is directed to an improved method of allowing a device to prepare digital content for delivery from a provider to a user that achieves benefits (increased protection against unauthorized access) particularly related to computer technology. Like the claims for a self-referential database table at issue in *Enfish*, claim 37 is directed to "an improvement [in] computer functionality itself, not [to an] economic or other [process] for which [the] computer is used in its ordinary capacity" as a tool. *Enfish*, 822 F.3d at 1336.

This is in contrast to the claims at issue in *Intellectual Ventures I LLC v. Capital One Bank*, 792 F.3d 1363, 1367 (Fed. Cir. 2015), where the computer was used as a mere tool for tracking financial transactions. Furthermore, an improvement in digital content protection technology is more than the mere manipulation of data found to be abstract in *In re TLI Communications LLC Patent Litigation*, 823 F.3d 607, 613 (Fed. Cir. 2016) (determining claims directed to "classifying and storing digital images in an organized manner" were directed to an abstract idea); *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016) (holding claims focused on collecting and analyzing information, and presenting the results thereof to be an abstract idea); and *Content Extraction and Transmission LLC v. Wells Fargo Bank, National Association*, 776 F.3d 1343, 1347 (Fed. Cir. 2014) (holding that determining collecting, recognizing, and storing

data is an abstract idea). In short, I agree with Appellants that claim 37 is directed to a specific improvement in computer technology and is, therefore, not directed to an abstract idea. *See* App. Br. 7–11.

Because I would hold that claim 37 is not directed to a patent-ineligible concept under the first step of the *Alice* analysis, I would not reach the second step of the *Alice* analysis. *Enfish*, 822 F.3d at 1339 (citing *Alice*, 134 S. Ct. at 2355).