

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JPMorgan Chase Bank, N.A.,
Petitioner,

v.

Idetitii Limited,
Patent Owner.

Case No. IPR2024-00593
U.S. Patent No. 10,984,413

DECLARATION OF JAMES OLIVIER, Ph.D.

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I, Dr. James L. Olivier, declare under penalty of perjury as follows:

I. INTRODUCTION

1. My name is James L. Olivier, Ph.D. I have been retained on behalf of Patent Owner, Identitii Limited, as an independent expert and have been asked to provide my expert opinions regarding U.S. Patent No. 10,984,413. EX1001 (“the ’413 Patent”).

II. PROFESSIONAL BACKGROUND

2. My qualifications for forming the opinions given in this declaration are summarized here and are addressed more fully in my curriculum vitae, which is submitted as Exhibit 2002. My curriculum vitae also includes a list of my publications.

3. I am a recent Fulbright award winner in the areas of computer science and blockchain technologies, and I currently serve as a research professor at Southern Methodist University.

4. I have a Ph.D. from The Ohio State University in Electrical Engineering with minors in Discrete Mathematics, Computer Science, and Microelectronics. I have published papers in the areas of coding theory and multiprocessor networked computer systems. I received my Bachelor of Science degree from The Ohio State University in 1983.

5. As a research professor at the Hunt Institute for Engineering and Humanity, which is part of the Lyle School of Engineering at Southern Methodist University in Dallas, Texas, I am responsible for the Hunt Institute's Blockchain Hub. This Blockchain Hub was created to foster the application of blockchain and other transformational technologies for a more sustainable and inclusive economy. My job is to promote an understanding of blockchain technology and its potential applications, related challenges, and opportunities, circulate the experiences of operating blockchain models and serve as a hub for developing and implementing blockchain for economically viable solutions.

6. In my roles at the Hunt Institute, I have spoken at Dallas Startup week, Blockchain conferences and given lectures at SMU on Blockchain technologies.

7. I am currently investigating Blockchain applications, including a Novel Blockchain Protocol for Crowd Sourcing of Proposal Evaluation and an Artisanal Blockchain. The Novel Blockchain Protocol for Crowd Sourcing of Proposal Evaluation is directed to addressing some of the difficulties associated with the widespread adoption of microlending. The Artisanal Blockchain developed out of my work at the Hunt Institute's Engineering and Humanity Academy and provides a mechanism to assert the provenance of native arts and crafts.

8. In addition to my work at SMU's Hunt Institute, I have been an adjunct professor in SMU's Network Engineering Graduate Program for over seven years.

Declaration of James Olivier, Ph.D.

Here I teach Service Provider Networks, Data Center Design and Network Protocols. My research interests include MPLS, SDNs, SD-WANs, Blockchain, IoT, and In-Networking Processing. I have also been the Chairman of the Dallas IEEE Blockchain group for the past six years.

9. Overall, I have over 20 years of experience in advanced network engineering and server product development. I have developed and designed server equipment for networks since I first joined AT&T Bell Laboratories in 1990. There I participated in the design and development of AT&T's Network Control Points, 'NCPs' which were massive network databases containing subscription information for customers.

10. I worked for Marconi Communications from 1999 to 2002, where I was responsible for the servers for the Network Management System for the North American Access product division, which provide service provisioning for DSL customers.

11. In 2002 I joined Navini Networks as a Senior Manager where I developed network-based servers and databases for network authentication, network services, service provisioning and subscriber management for the Navini's Worldwide Interoperability for Microwave Access 'WiMAX' Network. As part of my work at Navini, I developed a subscriber database for authenticating and verifying subscribers before allowing them to access the WiMAX network.

12. I have been the owner of Olivier Consulting since 2003 and have provided consulting services to various companies to develop networking systems and on intellectual property matters, including many such matters relating to networking technologies.

13. Because of my background, training, and experience, I am qualified as an expert to explain the background of the technology encompassed by the '413 Patent as well as to offer opinions related to the validity of the claims of the '413 Patent in view of the prior art references discussed herein.

14. If called upon to do so, I could and would testify truthfully regarding the points stated below in this declaration.

III. COMPENSATION

15. I am being compensated for my independent analysis as an expert with respect to this *inter partes* review proceeding. My work on this matter is being billed at my customary rate of \$675.00 per hour. Also, I am being reimbursed for reasonable expenses I incur in relation to my services. My compensation is not contingent in any way on the content of my analysis, the opinions that I offer, or the outcome of this proceeding. I have no financial interest in Petitioner (JPMorgan Chase Bank) or Patent Owner (Identitii), and I have no financial interest in the '413 Patent.

IV. OVERVIEW OF TASK & BASIS FOR OPINIONS

16. I have been asked to review the '413 Patent in light of the materials cited and discussed herein and my knowledge and experience in this field during the relevant time frame, which I understand to be the mid-2010s. I have been asked to provide opinions related to certain issues from the perspective of a person of ordinary skill, having knowledge of the relevant art, as of 2015 and—except where otherwise noted—the opinions stated in this declaration are from that perspective. I describe the qualifications and abilities of such a person in Section “Level of Ordinary Skill in the Art” below. I have also been asked to consider whether certain combinations of references have rendered obvious the inventions described in the claims of the '413 Patent.

17. My findings, as explained below, are based on my study, education, training, and experience as well as items that I reviewed to prepare my opinions, including the documents listed in the Exhibit List included with the Petition and any other items I reference in my below analysis.

18. I understand that other issues may arise that require further explanation, and I will provide that explanation if appropriate. As a result, I respectfully reserve the right to update and supplement this declaration and the information and opinions provided herein.

V. MATERIALS CONSIDERED

19. In preparing this declaration and forming my opinions, I have considered: the claims, specification, and prosecution history of the '413 Patent; the Petition and declaration by Dr. Shen (including all materials cited in each); and all materials cited and discussed in this declaration. As part of my analysis, I have also considered my own knowledge and experience, including my work and experience in the field.

VI. LEGAL CONSIDERATIONS

20. I am not an attorney. My understanding of the law is based on information provided by counsel for Patent Owner.

21. It is my understanding that assessing the validity / patentability of a U.S. patent claim based on a prior art analysis requires two essential steps. First, one must analyze the terms of the patent claims to understand what meaning one of ordinary skill in the art would give the terms. Second, one may then assess validity by comparing a patent claim to the “prior art.” I understand that the teaching of the prior art is viewed through the eyes of a person of ordinary skill in the art at the time the invention was made. My opinion as to what constitutes a relevant person of ordinary skill in the art is set forth below.

22. I understand that a claim is invalid as obvious under 35 U.S.C. § 103 if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter of the claim as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art. I have been informed that the following factors are used to determine whether or not the claimed subject matter would have been obvious: (i) the scope and content of the prior art; (ii) the differences between the prior art and the claimed invention; (iii) the level of ordinary skill in the field of the invention; and (iv) any relevant objective considerations of non-obviousness.

23. I also understand that a party asserting obviousness based on a combination of prior art references must demonstrate that one of ordinary skill in the art would have been motivated to combine the teachings of those references to achieve the claimed invention and that the skilled artisan would have had a reasonable expectation of success in doing so. It is my understanding that it is not enough to show that one skilled in the art could combine elements of multiple references, but instead there must be some reason that would have prompted a person of ordinary skill in the art to combine the elements in the way the claimed invention does. I understand that there must be some reasoned explanation as to why one of ordinary skill in the art would combine the references.

24. I understand that a combination of references would not have been obvious if the alleged modification(s) to be made to the reference(s) would have been inconsistent with the reference's stated goals or would have rendered the

combination inoperable for its intended purpose. I further understand that for something to have been obvious, the party asserting obviousness must explain why a POSITA would have selected components for combination in the manner claimed.

25. I have been informed that a prior art reference must be considered in its entirety, i.e. as a whole, including portions that would lead away from the claimed invention.

26. It is my further understanding that obviousness cannot be based on a hindsight combination of components selected from prior art references. I also understand that an invention would not have been obvious simply because all of the elements of the invention may have been known separately in the prior art.

27. My opinions address what would have been logical to, and within the skill level of, a person of ordinary skill in the art (“POSITA”) at the time of the invention, given the state of the relevant art, the knowledge and skill that a POSITA would have, the teachings of the references discussed below, and how a POSITA would have understood those teachings. My opinions also address whether a POSITA would have had a reasonable expectation of the modified systems discussed below successfully yielding the results discussed below. I understand that a POSITA is a hypothetical person. I understand that a POSITA thinks along the lines of conventional wisdom. I understand that a POSITA is also a person of ordinary

creativity, not an automaton (see Section “Level of Ordinary Skill in the Art,” below, for qualifications of a POSITA).

28. I understand that a claim term is given the meaning that the term would have to a POSITA at the time of the invention, which generally is the ordinary and customary meaning of the term. I further understand that the ordinary and customary meaning of a term may be evidenced by a variety of sources, including the words of the claims themselves, the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. I also understand that a patentee can act as a lexicographer by clearly expressing an intent to define a claim term.

VII. LEVEL OF ORDINARY SKILL IN THE ART

29. Counsel for Patent Owner has informed me that a person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention.

30. For the purpose of this Declaration, and based on my opinions herein, the time of invention for the '413 Patent is August 2015. However, I understand that the conception dates of the inventions may have been earlier than that date. I have also been informed that Petitioner alleges that the conception date is in 2016. Any earlier or later conception date in the mid-2010s would not alter my opinions herein.

31. Dr. Shen opined that a POSITA “would have at least a bachelor’s degree in computer science, computer engineering, applied mathematics, or equivalent and at least 2 years of experience researching, implementing, programming, or designing computer networks, distributed systems, blockchain technology, applied cryptography, or security. Additional education can supplement practical experience, and vice-versa.” EX1026, ¶ 47. For purposes of this declaration, I apply this definition. I note that my opinions expressed in this declaration would not be altered under any reasonable definition of a POSITA.

32. Based on my educational and employment background, I am qualified to provide opinions concerning what a POSITA would have known and understood in the mid-2010s. Indeed, as reflected in my qualifications above, I am more than qualified as a person of ordinary skill in the art as of the relevant date of the ’413 Patent.

VIII. THE ’413 PATENT

33. At the time the ’413 Patent was invented, the primary network for financial transactions, was the Society for Worldwide Interbank Financial Telecommunications (SWIFT) network. Some necessary characteristics of SWIFT or any communication network between financial institutions are security and standardized messaging.

34. The '413 Patent is titled "Computer implemented method for processing a financial transaction and a system therefor" and describes systems and methods for processing financial transactions. The '413 Patent derived from a PCT application filed on August 12, 2016. The patent has 20 claims of which three are independent (claims 1, 15, and 16). The '413 Patent relates to financial transactions using, in part, messaging of traditional payment rails, such as SWIFT messaging. *See* EX1001, 1:44-47 ("Many settlement systems are characterised by effective one - way transmission of the plurality of data in any given financial transaction (for example systems based on SWIFT messaging").

35. Some necessary characteristics of the SWIFT communication network or a traditional communication network between financial institutions is the use of conventional or standardized messages. *See* EX1001, 24:36-42 ("Conventional transmission includes transmission of conventional messages utilising the SWIFT protocol.") The '413 Patent teaches how financial intermediaries, such as banks, can communicate additional data beyond the standard messages. *Id.*, 24:47-52 ("The tokenised message may transmit data which includes some of the data normally included in the conventional message. In alternative forms it may include additional data. In yet alternative forms it may include data not transferred at all in the data normally included in the conventional message.").

36. The '413 Patent describes an enriched data record that can include data from one or more documents, including additional data beyond traditional messaging. This enriched data record can be recorded on a blockchain.

A. Prosecution of '413 Patent

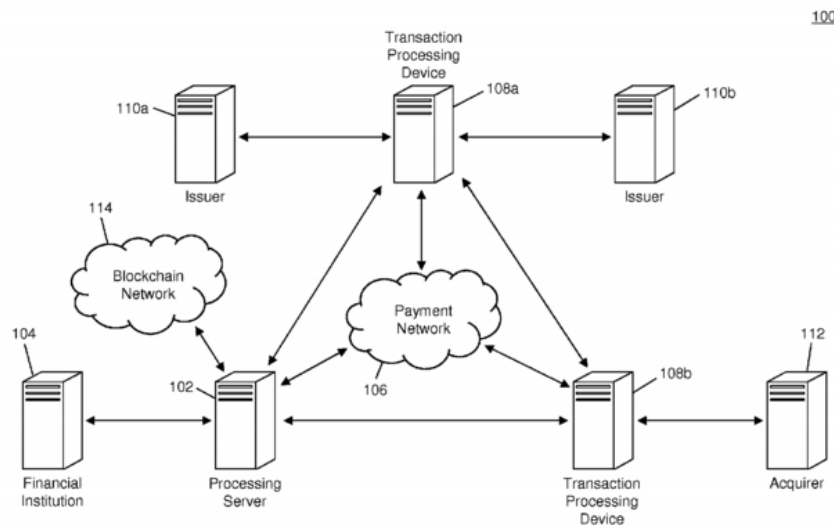
37. The '413 Patent was filed as a PCT Application on August 12, 2016. In a first office action dated October 21, 2019, claims 59, 60, 62-66, 69 and 73 – 78 were rejected for being purportedly obvious by Davis in view of Morgan. The Applicants overcame all objections, and the '413 Patent was issued on April 20, 2021. EX1002.

IX. OVERVIEW OF PRIOR ART REFERENCES

A. US Patent Application 2017/013262 (“Kennedy”)

38. Kennedy relates to the operation of transaction processing in a network that includes a blockchain. (“The present disclosure relates to the use of a **blockchain in conjunction with a transaction processing network**, specifically the posting of transaction message data in a blockchain verified using a transaction processing network and the verification and transmission of blockchain transaction data using a transaction processing network.”) EX1033, [0001]. Transaction processing networks are also known as payment networks. (“Transaction processing networks, also known as payment networks, involve significant hardware and infrastructure that are specifically configured to quickly process payment

transactions from anywhere in the world using a vast, interconnected network.”) EX1033, [002]. FIG 1 shows system 100 for the validation of electronic payment transactions as a block diagram illustrating a high-level system architecture for validating electronic payments.



39. According to Kennedy, a payment network is a (“... system or network used for the **transfer of** money via the use of **cash-substitutes**. Payment networks, also referred to herein as transaction processing networks, may use a variety of different protocols and procedures in order to process the transfer of money for various types of transactions. Transactions that may be performed via a payment network may include product or service purchases, credit purchases, debit transactions, fund transfers, account withdrawals, etc.”) EX1033, [0017]. The goal of Kennedy’s system is the efficient processing of such transactions with minimal error and interruption. *See id.* at [0089].

40. Kennedy discloses “traditional electronic payment transaction[s],” using traditional “payment messages.” *Id.* at [0024, 0048]. The messages are transmitted using traditional “payment rails,” such as ACH. *Id.* at [0025, 0048]. Kennedy proposes to forward the traditional message to a processing server, so that the processing server can add information from the traditional message onto a blockchain. *Id.* at [0025-0026, 0048-0049]. The processing server then passes the message along so that it can be processed using traditional payment methods. *Id.* at [0051].

B. US Patent 10,719,816 (“Kurani-816”)

41. Kurani-816 is entitled “Systems and methods for math-based currency escrow transactions” and relates (“to escrow systems and methods for transactions involving math-based currency.”) EX1034, 1:17-19. Kurani-816 states that although math-based currencies (“MBC”) can be used to pay for everyday goods and services, there is a desire to extend **math-based currencies, MBCs**, to certain transactions which require the physical exchange of items, for example, transactions involving the transfer of titled items. *See id.* at 1:45-52 (“For example, many individuals are utilizing MBC to pay for goods and services in everyday transactions. However, certain transactions still require the physical exchange of items. For example, in certain transactions involving the transfer of titled items, funds may be held in

escrow until a title is physically transferred between parties... Systems and methods that provide for improved MBC **escrow transactions are desired.**”).

42. By their nature, escrow transactions are different than everyday financial transactions. In an escrow transaction a third party, e.g. an escrow agent, holds the funds until title for the asset has passed from seller to buyer. *See id.* at 2:56-60 (“Often, when a seller and buyer enter into a purchase agreement for a titled asset, the seller and buyer complete the transaction via an escrow agent that **holds funds until title for the asset has passed from the seller to the buyer.**”).

43. To meet this requirement, the system taught in Kurani-816 uses two separate MBC transactions: the first transaction passes the digital title from the seller to the buyer by incorporating the digital title in the metadata, and the second transaction passes the funds to the seller from the buyer. *See id.* at 2:62-3:2 (“The below described systems and methods facilitate the sale of an asset having digital title through **two separate MBC transactions.** The **first MBC transaction passes digital title from the seller to the buyer** by incorporating the digital title or a pointer to the digital title in the metadata of the first MBC transaction. The **second MBC transaction passes funds to the seller from the buyer** (either directly or via an intermediary).”).

44. Before any asset (either physical or digital) can be sold in Kurani-816’s system, a “digital title” must be created for the asset. A “digital title company”

“maintains [a] title database.” *Id.*, 6:34-39. After verifying ownership of an asset (e.g., using “paper title documents, deeds, etc.”), the digital title company “create[es] a digital title for the asset.” *Id.*, 6:41-7:1. The digital title is merely an entry in a database that includes an identifier, description of the asset, and ownership of the asset. *Id.*, 7:1-4.

45. Kurani-816 describes passing the digital title using a “financial institution” as an escrow agent. *Id.*, 7:45-8:8. As with traditional escrow transactions, in Kurani-816, a “buyer 102 deposits the agreed upon amount” with the financial institution in MBC (e.g., Bitcoin) or fiat currency. *Id.*, 8:9-10; *see also* 7:61-64. After confirmation, the seller provides the financial institution information that can be used to verify asset ownership with the digital title company. *Id.*, 8:41-54. The digital title company verifies ownership of the asset, and then the seller “sends digital title to the buyer.” *Id.*, 8:54-9:25. To send the digital title, the seller sends a “nominal amount” of Bitcoin (or other MBC) to the buyer and attaches the digital title or a pointer to the digital title in the title database to the Bitcoin (or other MBC) transaction. *Id.*, 9:25-47. The title transfer is thus recorded in the Bitcoin (or other MBC) blockchain.

46. The financial institution checks the blockchain to confirm that title has been transferred, and upon such confirmation releases payment for the asset to the seller. *Id.*, 9:59-10:37. The financial institution then notifies the digital title company

of the digital title transfer, and the digital title company updates the information in the title database to reflect the new ownership. *Id.*, 10:38-60.

X. DR. SHEN FAILS TO DEMONSTRATE THAT ANY CLAIM OF THE '413 PATENT WOULD HAVE BEEN OBVIOUS.

47. In my opinion, Dr. Shen fails to demonstrate that any challenged claim would have been obvious. As I discuss below, it is my opinion that Dr. Shen's declaration includes numerous, distinct failures. It is therefore my opinion that Dr. Shen fails to demonstrate any reasonable likelihood of success that any challenged claim would have been obvious.

XI. A POSITA WOULD NOT COMBINE KENNEDY AND KURANI-816 AS DESCRIBED BY DR. SHEN.

48. Dr. Shen never directly discusses the combination of Kennedy and Kurani-816 but instead sprinkles his analysis when discussing certain claim limitations, for example in his analysis of Claim Element 3. EX1026, ¶¶ 98 – 103. For numerous reasons, a POSITA would not have been motivated to combine Kennedy and Kurani-816 in the manner Dr. Shen has opined.

49. First, Kennedy and Kurani-816 are directed to two different types of systems. As described above, the teachings of Kennedy are directed to a payment network which allows the purchase of products and services, fund transfers and account withdrawals. Kennedy, for example, describes that "Payment networks, also referred to herein as transaction processing networks, may use a variety of different

protocols and procedures in order to process the transfer of money for various types of transactions. Transactions that may be performed via a payment network may include product or service purchases, credit purchases, debit transactions, fund transfers, account withdrawals, etc.” EX1033, [0017].

50. Dr. Shen seems to agree stating “shown above, Kennedy teaches a financial system 100 centered around payment network 106 (blue). (Ex. 1033, [0020]). Kennedy explains that ‘payment networks,’ or ‘transaction processing networks,’ are ‘system[s] or network[s] used for the transfer of money via the use of cash-substitutes.’ (Ex. 1033, [0017]). ‘Transactions that may be performed via a payment network may include product or service purchases, credit purchases, debit transactions, fund transfers, account withdrawals, etc.’ (Ex. 1033, [0017]).” EX1026, ¶ 65.

51. Kurani-816 is a different type of system, one related to **escrow transactions**. See EX1034, 1:17-19 (“Embodiments of the present invention relate generally to escrow systems and methods for transactions involving math-based currency.”). Kurani-816 makes it clear that it is only applicable to certain transactions and not everyday transactions such as those of Kennedy. *Id.* at Background, 1:45-48 (“For example, **many individuals are utilizing MBC to pay for goods and services in everyday transactions**. However, certain transactions still require the physical exchange of items. For example, in **certain transactions**

involving the transfer of titled items, funds may be held in escrow until a title is physically transferred between parties.”).

52. Dr. Shen seems to agree, stating “Kurani-816 relates generally to ‘escrow systems and methods for transactions involving math-based currency [MBC].’ (Ex. 1034, 1:17-19) ... Kurani-816 notes that ‘more and more individuals are utilizing MBC in everyday transactions,’ and as such, **‘[s]ystems and methods that provide for improved MBC escrow transactions are desired.’** (Ex. 1034, 1:42-52).” EX1026, ¶ 71. Thus, Kurani-816 teaches that it is an improvement over everyday MBC transactions in that it adds the capability to perform escrow transactions.

53. But this added capability comes at a huge cost. Kurani-816 requires that to verify ownership, the “digital title,” which Dr. Shen identifies as the alleged “token”, **must be unique**: “For the piece of property, ownership is verified based on the chain of title and the names on the title. Each piece of property has a **unique identifier** (e.g., an address, a vehicle identification number, a serial number, a number assigned by the digital title company 106, etc.). **Based on the unique identifier**, any individual or entity with permission to access the title database 124 **can verify** up-to-date ownership information concerning the piece of property identified by the unique identifier.” EX1034, 6:24-33.

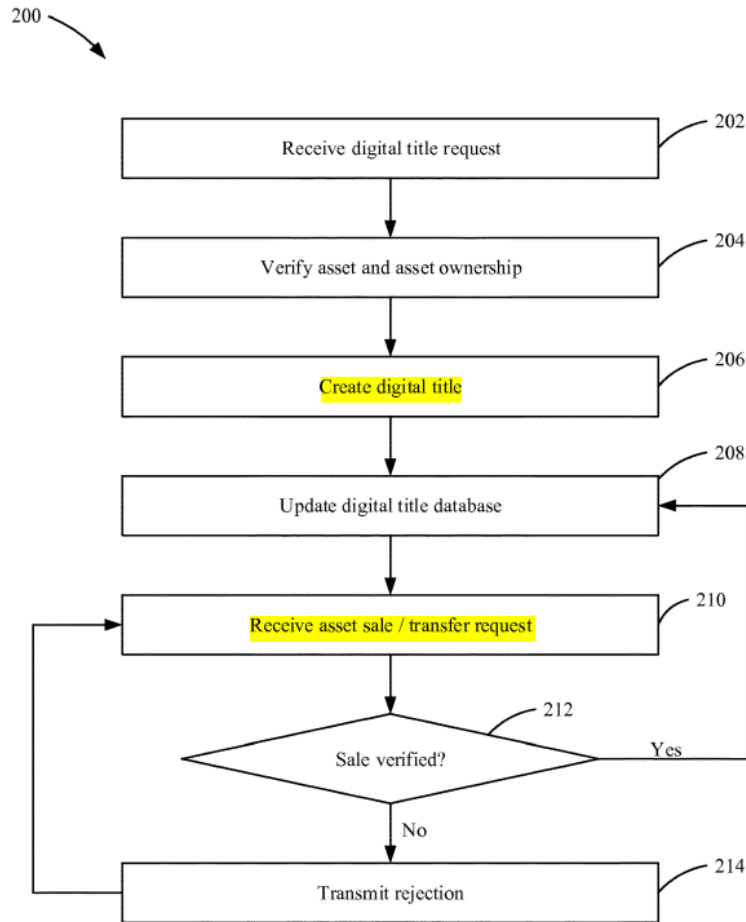
54. Dr. Shen seems to agree, stating “Kurani-816 similarly teaches that the ‘**unique token**’ associated with the digital title may be provided to the verified owner of the asset. In such arrangements, to pass ownership of the asset to another party, the owner can pass the token to the receiving party.’ (Ex. 1034, 7:8-11).” EX1026, ¶ 130. Dr. Shen also states: “The POSITA would have understood that Kurani-816’s ‘digital title,’ that can [be] ‘embodied as a token or a cryptographic string’ (Ex. 1034, 6:8-33), corresponds to the claimed ‘token,’ and identifies the transaction because it serves as a ‘**unique identifier**’ **associated with the asset being purchased** that can be used to record and track title transfers. (Ex. 1034,3:15-22,7:3-5).” EX1026, ¶ 95.

55. Therefore, to apply the teachings of Kurani-816, a unique token or digital title must be created for each product or service sold. But this is impossibly expensive. Though digital titles may be practical for some real estate assets such as homes, they are impractical for many items, for example fruit or vegetables. How a “digital title” would be created for objects such as an apple is something Dr. Shen does not address. Supermarkets and department stores are based on the fact that certain items are interchangeable and not unique. When you buy an apple at a supermarket, that particular apple is not unique in any significant way to the buyer or seller. All of the apples at the supermarket are interchangeable. The supermarket could not provide a unique identifier for each and every apple as it would be prohibitively expensive to do so.

56. But in order to make use of Dr. Shen's proposed combination, every apple needs to be made unique so that a digital title can be issued for it. In my opinion, a POSITA would not be motivated to combine Kurani-816 with Kennedy in the manner Dr. Shen has opined as it would dramatically reduce both the number and types of items which could be purchased through Kennedy's payment network and therefore make the payment network less valuable.

57. Kennedy is directed to a payment network to **quickly process** payments, not to the transfer of assets from seller to buyer. In its "Background" section, Kennedy states: "Transaction processing networks, also known as payment networks, involve significant hardware and infrastructure that are specifically configured to **quickly** process payment transactions from anywhere in the world using a vast, interconnected network." EX1033, [0002].

58. But as described above, Kurani-816 requires not one but two separate transactions, as it is used for escrow transactions. In Kurani-816 the creation of a unique or digital title takes place before a transaction can take place, as shown in Figure 2 in Kurani-816:



EX1034, FIG. 2.

59. But to incorporate the creation of all of these digital titles for all items for sale in Kennedy's payment network before a purchase could take place and requiring two separate transactions for each transaction would severely slow down payment processing. This is yet another reason a POSITA would not be motivated to make these changes proposed by Dr. Shen.

XII. THE KENNEDY KURANI-816 COMBINATION DOES NOT DISCLOSE EACH CLAIM FEATURE

A. Claim 1, Element 1: Dr. Shen fails to show that the Kennedy Kurani-816 combination teaches or suggests “transmitting one or more documents ... from a first intermediary server ... to a first document store.”

60. In my opinion, Dr. Shen fails to show how the Kennedy Kurani-816 combination discloses “transmitting one or more documents ... from a first intermediary server ... to a first document store,” as recited in what Dr. Shen identifies as Element 1 in Claim 1 of the ’413 Patent. For this particular claim element, Dr. Shen relies only on Kennedy as allegedly disclosing the element. Dr. Shen asserts that in Kennedy the processing server 102 constitutes an “intermediary server,” the memory 228 within the processing server constitutes a “document store,” and the transaction messages constitute the “one or more documents” that are transmitted from the first intermediary server to the first document store. EX1026, ¶¶ 79-86. But Dr. Shen’s analysis of Kennedy is flawed for several reasons.

61. As shown in Figure 2 of Kennedy, the “memory 228” that Dr. Shen identifies as the alleged “document store” is memory within the processing server 102:

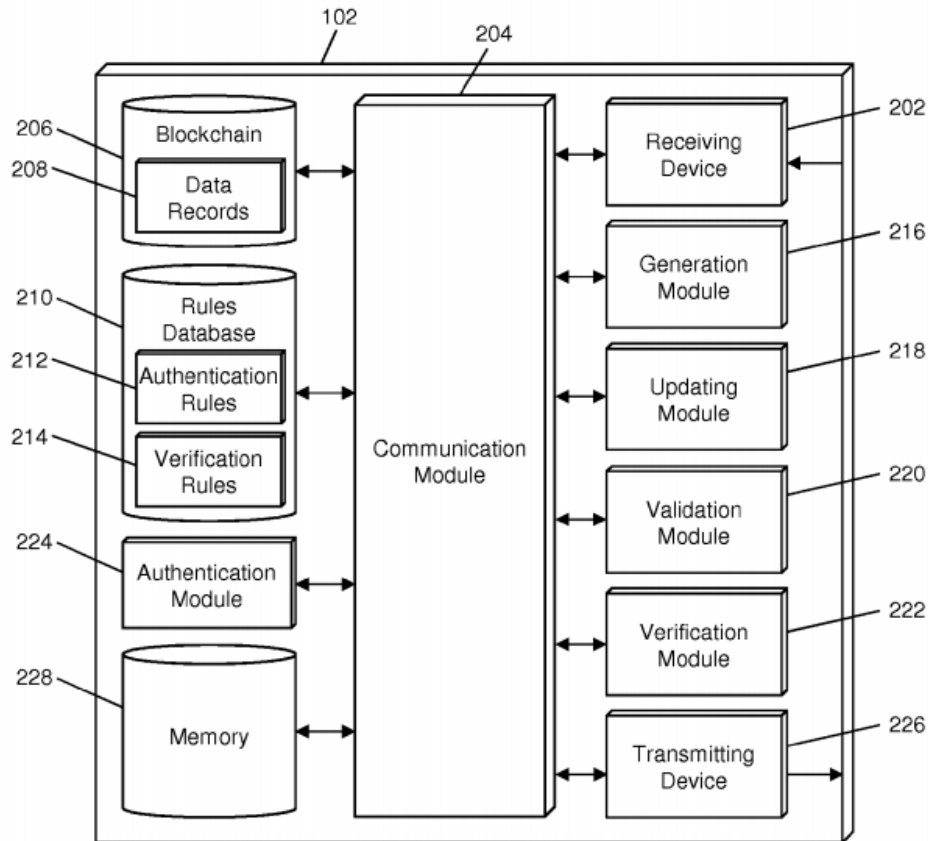


FIG. 2

EX1033, FIG. 2.

62. There is no disclosure in Kennedy of any “transaction messages” being stored in the memory of the processing server, or of the processing server transmitting the transaction messages into any type of storage. Rather, Kennedy simply describes the processing server as receiving the transaction messages, posting information from the messages into a blockchain, and then forwarding the messages on to the payment network for further processing. See EX1033, [0026] (“The processing server 102 may receive the transaction message The processing server 102 may be configured to generate a data record The data record may

then be posted to a blockchain by the processing server 102.”); [0051] (“In step 308, the transmitting device 226 of the processing server 102 may electronically transmit the transaction message to the payment network 106 for processing.”). This is reflected in Figure 3 of Kennedy:

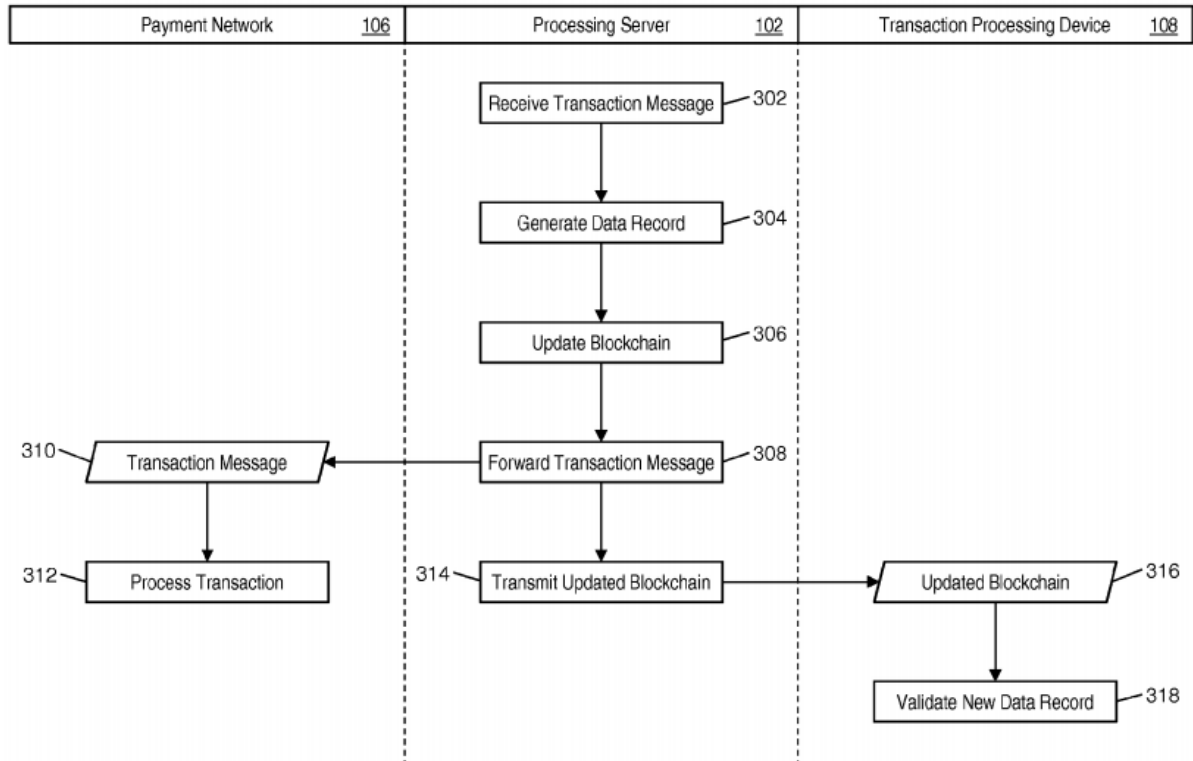


FIG. 3

63. As for the memory within the processing server, Kennedy simply describes that the processing server “memory 228 may be configured to store data for use by the processing server 102 in performing the functions discussed herein.” EX1033, [0046]. This generalized description of the memory being used to store data for performing “functions” does not indicate any storage of any transaction messages. Indeed, Kennedy goes on to describe some examples of information that

may be stored in the memory, stating: “The memory 228 may include, for example, encryption keys and algorithms, communication protocols and standards, data formatting standard and protocols, program code for modules and application programs of the processing device, and other data that may be suitable for use by the processing server 102 in the performance of the functions disclosed herein” *Id.* None of these examples are the transaction messages that Dr. Shen contends to be the “one or more documents.” Indeed, a POSITA would recognize that these are examples of various tools needed by the processing server in order to perform its functions, rather than records of financial transactions.

64. I also disagree with Dr. Shen’s statement that “The POSITA would have understood that storing documents and messages was well-known in the art and would have been beneficial at least for record-keeping and maintaining a local copy of the transactions for verification purposes.” EX1026, ¶ 84. In my opinion, a POSITA would not have found it beneficial to maintain a local copy of transactions in the memory 228 of the processing server because there is already a local copy of the transaction data stored elsewhere in the processing server 102. Specifically, the data records in the **blockchain database**, stored in the processing server, are data associated with the transaction. EX1033, [0026] (“The processing server 102 may be configured to generate a **data record**, which may correspond to a blockchain transaction to be posted to the private blockchain.”); [0061] (“the blockchain is a

distributed database that includes a plurality of data records (e.g., data records 208), each **data record being associated with a processed electronic transaction.**”).

Figure 2 in Kennedy shows that this blockchain database (206) is separate from the processing server memory (228):

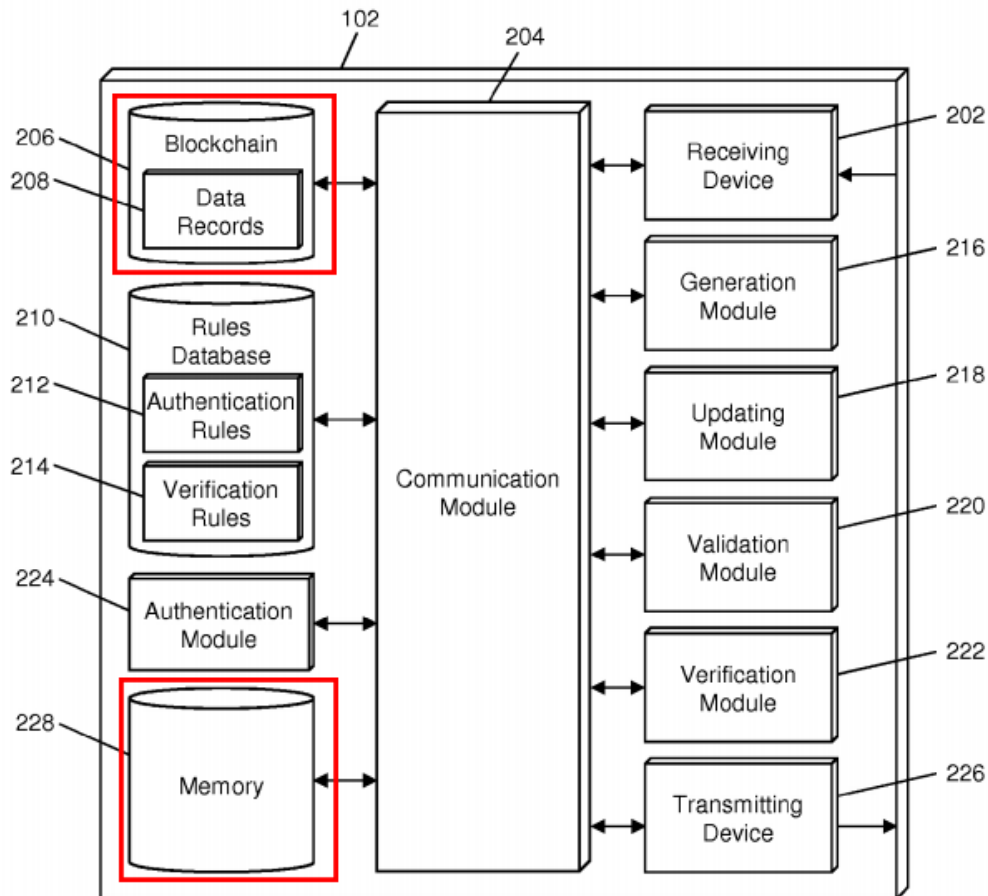


FIG. 2

65. Since the blockchain database already includes the records of the transactions, a POSITA would not be motivated to make yet another store of this information within the same processing server in another portion of memory.

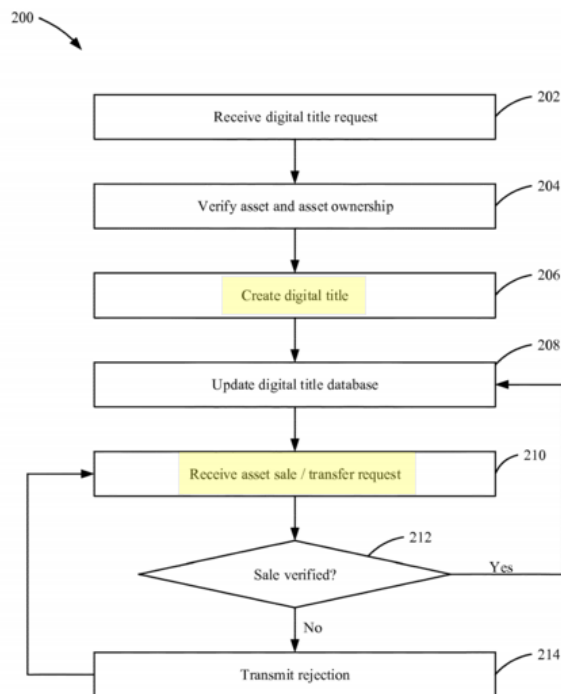
66. Dr. Shen then states: “For a storage configuration **utilizing an external database for storage**, the POSITA would have understood that the communication module 204 would have transmitted the received transaction message to the external database to be stored.” EX1026, ¶ 85. But Kennedy never discusses ‘storing’ the transaction message data, only storing data for use by the processing server, and Dr. Shen cannot point to any section in Kennedy which discusses storing of the transaction message in memory let alone a database. There is no teaching in Kennedy of storing the transaction messages in a database, external or local. And a POSITA would understand that such storage would be unnecessary, because as discussed above, the records of the transactions are already being stored in the blockchain database.

B. Claim 1, Element 3: Dr. Shen fails to show that the Kennedy Kurani-816 combination teaches or suggests “requesting generation of a token corresponding to the financial transaction to identify the one or more documents, to a token server, from the first intermediary server, via a messaging bus in the centralised financial system”

67. In my opinion, Dr. Shen fails to show how the Kennedy Kurani-816 combination discloses “requesting generation of a token corresponding to the financial transaction ... from the first intermediary server,” as recited in Element 3 in Claim 1 of the ’413 Patent. Dr. Shen first opines that in Kennedy the transaction identifier generated by the processing server is the claimed ‘token,’ but he presents no analysis as to how Kennedy discloses the rest of this element. See EX1026, ¶¶

92-93. Instead, Dr. Shen goes on to assert that Kurani-816 discloses the generation of the claimed token which was requested by the first intermediary server, which he identified as the processing server of Kennedy. *Id.* at ¶¶ 93-95.

68. Dr. Shen opines that the “digital title” in Kurani-816 qualifies as the claimed token of the ’413 Patent. This analysis fails for a number of reasons, the first of which is that the digital title in Kurani-816 is **generated before** the financial transaction takes place. Figure 2 of Kurani-816 makes this clear:



69. But the claim limitation requires that the token correspond to the financial transaction. The claimed token data corresponding to the financial transaction cannot be generated ahead of the actual financial transaction.

70. Also, I note that the '413 patent describes a “token” as “a pointer to an enriched data record of a plurality data required to process a financial transaction.” EX1001, 28:66-29:1. The “digital titles” in Kurani-816 are not a “token” in the sense described in the '413 patent as a “pointer” to some other data. Rather, Kurani-816 defines a “digital title” as “a digital file associated with an asset (physical or digital) that **proves ownership of the asset.**” EX1034, 3:13-15. And while Kurani-816 does discuss using “pointers” to help identify and track the “digital titles” (*see, e.g., id.* at 3:15-22), Dr. Shen does not appear to contend that these pointers constitute “tokens.” Instead, his opinion is limited to the assertion that the “digital titles” themselves are the claimed “tokens.” *See* EX1026, ¶ 95 (“The POSITA would have, therefore, understood that Kurani-816’s ‘**digital title**’ **qualifies as the claimed ‘token’** in the '413 Patent.”).

71. Second, the claim limitation requires that the intermediary server request the generation of the token. In Kurani-816 it is the seller or a potential seller which requests a token, not any intermediate servers. *See* EX1034, 7:21-24 (“The asset sale or transfer request is received by the digital title company 106. **The request is received from either the current asset owner or the potential asset owner.**”). Dr. Shen’s cites to Kurani-816 show that it is the seller who is requesting the digital title or token from the title company. EX1026, ¶ 101 (“As Kurani-816 explains: ‘The digital title **request** is received by the digital title company computing

system from a title requestor (e.g., the **owner of an asset**),’ represented in yellow. (Ex. 1034, 6:43-45, Figs. 1-2).”); *id.* at ¶ 102 (“As shown above in Kurani-816’s Figure 1, the **request** for a digital title generation is transmitted from the **seller server** 104 (yellow) to the digital title company server 106 (purple). (Ex. 1034, 6:43-45, Figs. 1-2).”).

72. I note that there is no disclosure of any seller **server** in Kurani-816, as Dr. Shen contends. Quite the opposite, the **seller is described as a client** as opposed to a server. In fact, Kurani-816 never uses the term server. Instead, in Kurani-816 a seller is associated with a computing device associated with the seller. In the “Summary” section of Kurani-816, for example, the reference states: “The method further includes receiving, by the financial institution computing system, an identifier of the math-based currency transaction from a seller **computing device associated with the seller.**” EX.1034, 1:61-65. A POSITA would understand that the seller’s computing device in Kurani-816 is not a server as it is associated with one particular customer, and under its plain and ordinary meaning, a server serves multiple customers. *See, e.g.,* EX1005 (Seeger), 1:51-53 (“**The server(s) may be configured to communicate with one or more client** computing platforms according to a client/ server architecture.”). As such, there is no support in Kurani-816 for “requesting generation of a token ... to a token server, **from an intermediary server.**”

73. Dr. Shen's proposed combination of Kennedy and Kurani-816 is also critically flawed because it ignores the language in Element 3 that the token to be generated is "to identify the one or more documents." Here, "the one or more documents" refers back to the language in Element 1 of "one or more documents pertaining to the financial transaction [transmitted] from a first intermediary server in a centralised financial system to a first document store." Claim 1 therefore requires that the claimed "token" must identify the "one or more documents pertaining to the financial transaction" that are transmitted from the first intermediary server to the first document store.

74. Dr. Shen argues that in his Kennedy Kurani-816 combination, the "token" is Kurani-816's "digital title," while the "one or more documents" are Kennedy's "transaction messages" for processing financial transactions. EX1026, ¶¶ 82, 95. But as I discussed above, the **"digital title" in Kurani-816 is an identifier of an asset, not any particular financial transaction.** Indeed, Kurani-816 defines a "digital title" as "a digital file associated with an asset (physical or digital) that proves ownership of the asset." EX1034, 3:13-15. The "digital title" in Kurani-816 therefore cannot be a "token corresponding to the financial transaction to identify the one or more documents" under Dr. Shen's theory that the "one or more documents" are "transaction messages."

75. Dr. Shen opines that a POSITA would be motivated to use Kurani-816's "digital title" as an improvement on Kennedy to introduce the concept of a unique identifier of an asset and a way to transfer title to that asset. *See* EX1026, ¶ 99. But Kennedy is directed to a payment network to quickly process payments, not escrow transactions. The reasons that a POSITA would not use a digital title as a unique identifier in Kennedy are discussed above in Section XI.

76. For all the reasons above, I disagree with Dr. Shen when he states that ("the combination of Kennedy and Kurani-816 renders obvious requesting generation of a token corresponding to the financial transaction to identify the one or more documents (i.e., "digital title"/ "token" generation request), to a token server (i.e., "digital title company 106"), from the first intermediary server (i.e., "processing server 102"), via a messaging bus (i.e., communication network) in the centralised financial system.") EX1026, ¶ 112.

C. Claim 1, Element 4: Dr. Shen fails to show that the Kennedy Kurani-816 combination teaches or suggests "generating the token at the token server and adding the token into the blockchain from the token server in association with the enriched data record"

77. In my opinion, Dr. Shen fails to show how the Kennedy Kurani-816 combination discloses Element 4 in Claim 1 of the '413 Patent, which recites "generating the token at the token server and adding the token into the blockchain from the token server in association with the enriched data record," for a number of reasons.

78. First Dr. Shen fails to show how the Kennedy Kurani-816 combination discloses “**adding the token into the blockchain from the token server.**” As described above, Dr. Shen relies on Kurani-816’s “digital title company” as the token server.

79. Dr. Shen’s analysis is incorrect because in Kurani-816 it is the seller which adds the metadata containing the digital title to the blockchain and **not the token server**. As discussed above, Kurani-816 makes use of two separate transactions. See EX1034, 2:62-64 (“The below described systems and methods facilitate the sale of an asset having digital title through **two separate MBC transactions**”). In Kurani-816, the first transaction passes the digital title for the asset from the seller to the buyer, then a second transaction takes place where the seller is paid for the asset. See *id.* at 8:3-8 (“A **first MBC transaction** is initiated that passes digital title from the seller 104 to the buyer 102. A **second MBC transaction** is then initiated in which the seller 104 is paid for the asset. For example, the financial institution 108 initiates a second MBC transaction to the seller 104 for the purchase price (less any escrow fees)”).

80. In Kurani-816, it is the first MBC transaction initiated by the seller which embeds the digital title into the blockchain though use of a dummy or nominal transaction to add metadata to the blockchain. See EX1034, 3:13-22 (“A digital title is a digital file associated with an asset (physical or digital) that proves ownership

of the asset. To effect the transfer of the digital title from the seller 104 to the buyer 102, the digital title or a pointer to the **digital title is embedded into a MBC transfer from the seller** 104 to the buyer 102. For example, the seller 104 may initiate a MBC transfer to the buyer 104 for a **nominal amount** of Bitcoin, Litecoin, Ripple, or the like and embed the digital title or a pointer to the digital title in a metadata field of the MBC transfer.”).

81. This operation is spelled out in more detail later in Kurani-816. *See* EX1034, 9:27-47 (“The **first MBC transfer is for a nominal amount of MBC (e.g., 0.001 Bitcoin)**. A nominal amount of MBC refers to an amount of MBC that is large enough to be verified by the MBC verification nodes 120 such that it is written in the MBC blockchain 122. For example, if the MBC is Bitcoin, a nominal amount of Bitcoin may correspond to between 0.0001 BTC and 0.01 BTC. **When the seller 104 initiates** the first MBC transfer, **the seller 104** either attaches the digital title to the first MBC transfer or attaches a pointer to the digital title to the first MBC transfer. For example, **the seller 104 attaches the digital title to a metadata field of the first MBC transfer**. In some arrangements, the seller 104 inserts the token associated with the digital title stored in the title database 124 into the op_return field, the nSequence field, or another metadata field of the first MBC transfer. Accordingly, when the first MBC transfer is verified by the verification nodes 120 and written in the MBC blockchain 122, the transfer of **the digital title**

from the seller 104 to the buyer 102 is also written in the MBC blockchain 122.”). Kurani-816 therefore does not disclose the digital title company adding the digital title or token to the blockchain. Instead, it discloses the seller performing the operation of adding the digital title to the MBC blockchain in a first MBC transaction.

82. I also disagree with Dr. Shen’s contention that a POSITA would have found it obvious for the digital title company to add the digital title to a blockchain. See EX1026, ¶¶ 116-118. This contradicts Dr. Shen’s other opinion that using the digital title company as a token server is “advantageous so as to provide a neutral and location-independent solution for generating tokens that is not affiliated with any participating buyer, seller, bank, etc.” *Id.* at ¶ 102. In my opinion, if the digital title company were used to add the digital titles into a blockchain, then the digital title company would not be “a neutral and location-independent solution.” Instead, the digital title company **would be a participating actor** in the transaction process.

83. Dr. Shen then states: “Additionally it would have been obvious to a POSITA that the token in the Kennedy/Kurani-816 combination be ‘added into the blockchain from the token server’ as claimed. Figure 1 of Kurani-816 depicts two-way communication between ‘digital title company 106’ (purple) and the MBC blockchain 122 (green) via network 117 (blue).” EX1026, ¶116. I disagree. This is clearly using hindsight. That a network exists through which the digital title

company and MBC blockchain can communicate is not evidence that certain messages are passed, only that some communications between the two may be possible. There are millions of computers on the Internet that I have never communicated with.

84. Dr. Shen goes on to opine that a POSITA would be motivated to use the digital title token of Kurani-816 as tokens can improve the integrity of information and cites to EX1046, which is a U.S. patent application filed in 2014 relating to a network token system. See EX1026, ¶ 117 (“The POSITA would have recognized that having the system that generated the token add the token into the blockchain would ensure integrity of the information.”). But Dr. Shen is incorrectly interchanging the types of tokens he is analyzing. The tokens described in EX1046 are network tokens, not asset tokens such as the digital titles of Kurani-816. See EX1046, [0011]. That tokens in general are valuable is no motivation to use the particular teachings of Kurani-816 in Kennedy. To the contrary, as I have discussed above in Section XI there are a number of drawbacks with using the types of asset tokens in Kurani-816 in a general payment network. For all the reasons above, I disagree with Dr. Shen when he states that “the combination of Kennedy and Kurani-816 renders obvious generating the token (i.e., “digital title”/“token”) at the token server (i.e., “digital title company 106”) and adding the token into the blockchain

(i.e., “blockchain” in “blockchain network 114”) from the token server in association with the enriched data record (i.e., “generated data record”).” EX1026, ¶ 118.

D. Claim 1, Element 5: Dr. Shen fails to show that the Kennedy Kurani-816 combination teaches or suggests “transmitting the token to the first intermediary server from the token server, via the messaging bus”

85. In my opinion, Dr. Shen fails to show how the Kennedy Kurani-816 combination discloses Element 5 in Claim 1 of the ’413 Patent, which recites “transmitting the token to the first intermediary server from the token server, via the messaging bus,” for a number of reasons.

86. Dr. Shen concedes that Kennedy does not disclose this limitation and I agree. EX1026, ¶ 119. But, Dr. Shen opines that Kurani-816 teaches this limitation and I disagree.

87. As described above, Kurani-816 teaches the alleged token server, the “digital title company,” only sends a digital title to the seller, not to any server. As in his analysis of Element 3, to get around this problem Dr. Shen conflates the seller of Kurani-816 with the processing server of Kennedy. See EX1026, ¶ 120 (“As Kurani-816’s Figure 1 shows, the “digital title company” (purple) transmits the “digital title” token to the owner of the asset, represented by “**seller 104**” server (yellow) below.”). But as I previously discussed in Section XII.B. above, there is no disclosure of a seller server in Kurani-816. Quite the opposite, the seller is described as a client as opposed to a server.

88. I disagree with Dr. Shen's argument that a POSITA "would have been motivated to transmit the token from Kurani-816's 'digital title company computing system' (i.e., 'token server') to Kennedy's 'processing server 102' (i.e., 'first intermediary server'), to ensure that the digital title/token is associated and stored locally with the transaction record and documents." EX1026, ¶ 121. First, this argument does not make sense because Kennedy does not disclose storing any transaction records or documents in the "processing server." Second, Kurani-816 actually teaches away from storing the "digital title" in the same location as the transaction records. Specifically, Kurani-816 teaches that the digital titles are maintained in a database at the digital title company, and that this separate database is updated as assets are transferred between buyers and sellers. EX1034 at 6:8-12 ("Digital title for a given asset is maintained by the digital title company 106. . . . The **digital title database 124** is maintained by a computing system associated with the **digital title company 106.**"); 7:21-30 ("If the sale or transfer is verified, the method 200 returns to 208, where the digital title database is updated."); Fig. 1. A POSITA would therefore have no motivation to modify the Kurani-816 system to have the digital title company transmit a digital title to any intermediary server.

89. For all the reasons above, I disagree with Dr. Shen when he states that "the combination of Kennedy and Kurani-816 renders obvious transmitting the token (i.e., "digital title"/"token") to the first intermediary server (i.e., "processing server

102”) from the token server (i.e., “digital title company 106”), via the messaging bus (i.e., communication network).” EX1026, ¶ 122.

E. Element 6: Dr. Shen fails to show that the Kennedy Kurani-816 combination teaches or suggests “transmitting the token from the first intermediary server to the first document store in association with the one or more documents”

90. In my opinion, Dr. Shen fails to show how the Kennedy Kurani-816 combination discloses Element 6 in Claim 1 of the ’413 Patent, which recites “transmitting the token from the first intermediary server to the first document store in association with the one or more documents,” for a number of reasons. First, as I explained above, Kurani-816 never teaches any “intermediary server” receiving a token or digital title, only that a seller computing device may receive the digital title. Since Kurani-816 does not disclose any intermediary server that ever possesses the claimed “token,” it likewise does not disclose “transmitting the token from the first intermediary server to the first document store.”

91. In addition, I disagree with Dr. Shen’s opinion that a POSITA would have found it obvious to use Kurani-816’s digital titles as “tokens” in Kennedy’s system and store them in the local memory of Kennedy’s processing server. As I discussed above, Kurani-816 teaches that the digital titles are stored in a separate database maintained at the digital title company. Thus, a POSITA would have no reason to consider also storing the alleged digital title “tokens” locally on any processing server.

92. For all the reasons above, I disagree with Dr. Shen when he states that the Kennedy Kurani-816 combination renders obvious “transmitting the token (i.e., “digital title”/“token”) from the first intermediary server (i.e., “processing server 102”) to the first document store (i.e., “memory”) in association with the one or more documents (i.e., “transaction messages”).

F. Claims 2 and 4-20

93. Claims 2 and 4-14 of the '413 Patent are dependent claims that all depend on claim 1. Thus, it is my opinion that all of these dependent claims are not obvious for all of the reasons I have already discussed above for why claim 1 is not obvious in light of the Kennedy Kurani-816 combination.

94. Claim 15 includes the following elements that correspond to elements in claim 1 that I have already discussed above:

Claim 1	Claim 15
[Element 1] transmitting one or more documents pertaining to the financial transaction, from a first intermediary server in a centralised financial system to a first document store	[Element 4] wherein the first intermediary server is configured to: transmit one or more documents pertaining to the financial transaction, to the first document store
[Element 3] requesting generation of a token corresponding to the financial transaction to identify the one or more documents, to a token server, from the first intermediary server, via a messaging bus in the centralised financial system	[Element 6] [wherein the first intermediary server is configured to] request generation of a token corresponding to the financial transaction to identify the one or more documents, to the token server, via the messaging bus

Claim 1	Claim 15
[Element 4] generating the token at the token server and adding the token into the blockchain from the token server in association with the enriched data record	[Element 8] wherein the token server is configured to: generate the token and add the token into the blockchain in association with the enriched data record
[Element 5] transmitting the token to the first intermediary server from the token server, via the messaging bus	[Element 9] [wherein the token server is configured to] transmit the token to the first intermediary server, via the messaging bus
[Element 6] transmitting the token from the first intermediary server to the first document store in association with the one or more documents	[Element 7] [wherein the first intermediary server is configured to] transmit the token to the first document store

95. Thus, for the same reasons I have discussed above for why these elements in claim 1 are not disclosed or rendered obvious by the Kennedy Kurani-816 combination, it is also my opinion that claim 15 is not obvious in light of this combination.

96. Claim 16 includes the following elements that correspond to elements in claim 1 that I have discussed above:

Claim 1	Claim 16
[Element 1] transmitting one or more documents pertaining to the financial transaction, from a first intermediary server in a centralised financial system to a first document store	[Element 1] [A first intermediary server . . . configured to:] transmit one or more documents pertaining to the financial transaction, to the first document store
[Element 3] requesting generation of a token corresponding to the financial	[Element 3] [A first intermediary server . . . configured to:] request

Claim 1	Claim 16
transaction to identify the one or more documents, to a token server, from the first intermediary server, via a messaging bus in the centralised financial system	generation of a token corresponding to the financial transaction to identify the one or more documents, to a token server, via a messaging bus in the centralised financial system
[Element 6] transmitting the token from the first intermediary server to the first document store in association with the one or more documents	[Element 4] [A first intermediary server . . . configured to:] transmit the token to the first document store

97. Thus, for the same reasons I have discussed above for why these elements in claim 1 are not disclosed or rendered obvious by the Kennedy Kurani-816 combination, it is also my opinion that claim 16 is not obvious in light of this combination.

98. Finally, claims 17-20 of the '413 Patent all depend on claim 16, and thus in my opinion are not obvious for the same reasons that claim 16 is not obvious based on the Kennedy Kurani-816 combination.

G. Claim 3

99. Claim 3 of the '413 Patent also depends on claim 1. For this claim, Dr. Shen asserts that the claim is obvious in light of the combination of Kennedy and Kurani-816 as well as a third reference, U.S. Patent Pub. No. 2015/0206106 ("Yago"). I note, however, that Dr. Shen does not argue that Yago teaches any of the elements of claim 1. Rather, Dr. Shen argues only that Yago teaches the

additional limitation in claim 3 of “implementing a smart contract at the token server; and adding the smart contract into the blockchain, from the token server.” EX1026, ¶¶ 209-214. Yago therefore has no impact on any of my opinions for why claim 1 is not obvious based on the combination of Kennedy and Kurani-816. Thus, it is my opinion that the combination of Kennedy, Kurani-816, and Yago does not render claim 3 obvious for the same reasons I have discussed above for why claim 1 is not obvious in light of the Kennedy Kurani-816 combination.

XIII. CONCLUSION

100. This declaration reflects my opinions as currently held. However, my analysis may continue such that I may consider additional information that may result in additional observations.

101. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

5/28/2024

Date

James Olivier Ph.D.
James Olivier, Ph.D.