

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION

Petitioner,

v.

STERLING COMPUTERS CORPORATION

Patent Owner.

Case IPR2025-00270

U.S. Patent No. 8,073,911

DECLARATION OF DR. LATIFUR KHAN

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DECLARATION OF DR. LATIFUR KHAN

LATIFUR KHAN hereby Declares as follows:

1. I hold a Ph.D. in Computer Science from the University of Southern California. I hold an M.S. in Computer Science from the University of Southern California. I hold a B.S. in Computer Science and Engineering from the Bangladesh University of Engineering and Technology.

2. I have been retained by Sterling Computers Corporation (“Sterling”) and Sterling’s counsel in connection with Patent Trial and Appeal Board proceedings relating to certain patents owned by Sterling. I understand that these proceedings are *inter partes* reviews relating to Sterling’s U.S. Patent No. 8,073,911.

3. I am being compensated for my time at a rate of \$350 per hour. My compensation is not contingent on the opinions that I express or on the outcome of these proceedings.

4. The statements made in this Declaration are based on my own personal knowledge unless otherwise indicated.

I. Professional Background

5. I earned a B.S. in Computer Science and Engineering from Bangladesh University of Engineering and Technology in November 1993. I graduated First Class with Honors. I earned an M.S. in Computer Science from the University of Southern California in December 1996 and a Ph.D. in Computer Science, also from the University of Southern California in August 2000. I am presently a Professor in the Computer Science Department at the University of Texas at Dallas, a position I have held since September 2012. Before that, I served as an Assistant Professor and Associate Professor at the University of Texas at Dallas from September 2000 through August 2006 and from September 2006 through August 2012, respectively.

6. The quality and significance of my research has been recognized by many of my field's top awards including the IBM Faculty Award (Research) in 2016 (Fundamental Research on Data Analytics (Stream Mining)); IEEE (Institute of Electrical and Electronics Engineers) Technical Achievement Award in 2012 (IEEE Systems Man and Cybernetics Society and the IEEE Transportation Systems Society); and the Fellow of Institute of Electrical and Electronics Engineers (IEEE), Institution of Engineering and Technology (IET), and British Computer Society(BCS). My co-authors and I received a number of Best Paper

Awards from various IEEE and ACM (Association for Computing Machinery) conferences. I have been recognized as one of the ACM Distinguished Scientists since December 2012. Other awards I have received include the UTD Inventor Award (April 2010 & December 2011), the UTD Author Recognition Award (October 2009), and the Chancellor Award from the President of Bangladesh.

7. I also serve my communities in various leadership positions through my role as editor, including serving as Associate Editor of ACM Transaction on Knowledge Discovery and Data (TKDD), (2021 -); ACM Transaction on Internet Technology (TOIT), (2019 – 2023); IEEE Transactions on Artificial Intelligence (TAI), (2021-2023); IEEE Transactions on Knowledge & Data Engineering (TKDE)(2011-2015); Associate Editor of International Journal of Data Mining, Modeling and Management (IJDMMM), Inderscience Publishers, Switzerland (since 2008); Associate Editor of International Journal of Security Informatics, Springer ISSN: 2190-8532; and Associate Editor of Computer Standards and Interface Journal by Elsevier Publishing (2006 – 2009).

8. As part of my service to the community, at academic and industry conferences hosted by IEEE, ACM and SIAM (Society for Industrial and Applied Mathematics) over the past few decades, I have served numerous leadership roles,

including as the keynote speaker, chair/co-chair, program committee member, presenter of tutorials, session chair, and panelist. I have been invited to present at Universities around the world and have been invited to review many books and journals. I have given lectures at Boeing, AT&T, IBM, TI, Raytheon, and Verizon.

9. My research has been recognized through the award of research grants, and I have served as principal investigator on over three dozen research grants from federal funding agencies and major corporations on the subjects of Data Mining, Data Management, Information Extraction and Retrieval, Cyber-Security and Data Sciences.

10. My research has been published in over 50 technical journal articles in top peer-reviewed journals, including in ACM Transactions and IEEE Transactions journals. My work has been cited more than 16,000 times and my h-index is 69 (meaning I have at least 69 publications that have been cited 69 or more times) according to Google scholar (<https://scholar.google.com/citations?hl=en&user=8Qt10f4AAAAJ>). I have authored five books namely, (a) Design and Implementation of Data Mining Tools, (b) Big Data Analytics with Applications in Insider Threat Detection, (c) Data

Mining Tools for Malware Detection, (d) Analyzing and Securing Social Networks, and (e) Secure Data Science: Integrating Cyber Security and Data Science (<https://www.thriftbooks.com/a/latifur-khan/2403464/?srsltid=AfmBOoqX9orqfM2rYz-aPeIkDLdGmtkBT7RjgQ7z5MRXCwAjpOaLofl5>).

11. In addition, my research has resulted in my (co)inventing many technologies in my areas of research. As a result, I have filed patent applications, three of which are now fully issued patents, including: US 61/944,304: System and Methods for Automated Detection of Application Vulnerabilities, Latifur Rahman Khan, Bhavani Marienne Thuraisingham, Just Sahs, Zhiqiang Lin, (U.S. Patent and Trademark Office (USPTO) (granted); US 8965974: Systems and methods for determining user attribute values by mining user network data and information, Satyen Abrol, Vaibhav Khadilkar, Latifur Rahman Khan, Bhavani Marienne Thuraisingham (U.S. Patent and Trademark Office (USPTO) (granted); and US 9,165,051: Systems and methods for Detecting a Novel Class, Mohammad Mehedy Masud, Latifur Rahman Khan, Bhavani Marienne Thuraisingham, Qing Chen, Jing Gao, and Jiawei Han, U.S. Patent and Trademark Office (USPTO) (granted).

12. My research interests include Data Mining/Machine Learning, Generative AI, Cyber Security, Big Data Analytics and Management, Semantic Web, Multimedia Information Management, Cloud Computing, Healthcare Analytics, and Database Systems.

13. I am an acclaimed global educator and scholar in the big data analytics area. I have served as a Distinguished Visitor of the IEEE Computer Society for 2021-2023 and ACM Distinguished Speaker, 2020 – 2022. With remarkable achievements in research and technology, I have served as Program Chair for several prestigious data analytics/mining conferences including IEEE International Conference on Data Mining (ICDM), one of flagship conferences in Data Mining and IEEE Big Data, flagship conference on Big Data.

II. The Level of Ordinary Skill in the Art

14. I understand that a person of ordinary skill in the art is a hypothetical person who has ordinary skill in the art to which the claimed invention relates. Based on my experience, a person of ordinary skill in the art of computer science would have at least a bachelor's degree in electrical or computer science/engineering, or a related field, with at least two years of experience in the design or implementation of content management and analysis systems or a masters degree in electrical or computer science/engineering, or a related field,

with at least one year of experience in the design or implementation of content management and analysis systems. A higher level of education or skill can make up for less experience, and vice versa. For convenience, I may refer to a person of ordinary skill in the art as “a skilled artisan,” “one of skill in the art,” “a person of skill in the art,” “a person having ordinary skill in the art,” “one of skill,” “POSA,” or similar terms.

III. Abbreviations

15. For convenience, I will use the following abbreviations in this Declaration.

<u>Document/Proceeding</u>	<u>Abbreviation</u>
IPR2025-00270	IPR-270
U.S. Patent No. 8,073,911	the ‘911 patent
U.S. Patent Pub. No. 2003/0163537	Rohall
U.S. Patent Pub No. 2002/0120600	Schiavone
U.S. Patent No. 8,375,008	Gomes

IV. Legal Standards

A. Obviousness

16. I understand that a patent claim is obvious if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

17. I understand that the obviousness analysis takes place at the time the patented invention was made. I understand that the relevant date for the '911 Patent is at least as early as May 12, 2004, the date of the provisional applications that led to the issuance of the '911 Patent.

18. I understand that as part of the obviousness analysis one must consider whether prior art teaches away from the claimed invention.

19. I understand that when an obviousness challenge is based on a combination of references one must consider whether there is a motivation to combine the teachings of those references. There must be some motivation, reason, or incentive that would cause one of skill in the art at the relevant time to combine the prior art in the way embodied by the patent.

V. Claim Construction

20. I understand that claim terms should carry their “ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question” at the time of the invention. Unless otherwise stated herein, I have applied the ordinary meaning of such terms to one of skill in the art in light of the patents’ disclosure.

VI. Summary of Opinions

21. The opinions expressed in this Declaration are summarized below.

22. It is my opinion that claims 1-8, 10-13, 15, 18, and 20-21 of the ‘911 Patent are not made obvious by Rohall in view of Schiavone.

23. It is my opinion that claims 9 and 27 of the ‘911 Patent are not made obvious by Rohall in view of Schiavone and Gomes.

VII. Background on Linking Mechanisms

24. The association between a message container and its sub-messages can be implemented using various approaches, including **hierarchical models** (e.g., tree or graph structures) or **relational models**. Elmasri, Ramez, Navathe, Shamkant B., Fundamentals of Database Systems (**EX2004**).

25. Hierarchical data models were widely used in the early development of database management systems, most notably in IBM's Information Management System (IMS). In this model, data is structured in a tree-like format, with a single root node representing the top-level entity. Each node (or entity) can have multiple child nodes, forming a hierarchical structure. Every entity, except the root, has one parent and may have multiple children. This mirrors real-world hierarchical arrangements and inherently supports one-to-many relationships—each parent can have several children, but each child has only one parent. An example is described & depicted below:

A tree-structure diagram is the schema for a hierarchical database. Such a diagram consists of two basic components:

1. *Boxes*, which correspond to record types
2. *Lines*, which correspond to links

A tree-structure diagram serves the same purpose as an entity–relationship (E-R) diagram; namely, it specifies the overall logical structure of the database. A tree-structure diagram is similar to a data-structure diagram in the network model. The main difference is that, in the latter, record types are organized in the form of an arbitrary graph, whereas in the former, record types are organized in the form of a *rooted tree*.

We have to be more precise about what a *rooted tree* is. First, there can be no cycles in the underlying graph. Second, there is a record type that is designated as the root of the tree. The relationships formed in the tree-structure diagram must be such that only one-to-many or one-to-one relationships exist between a parent and a child. The general form of a tree-structure diagram appears in Figure E.2. Note that the arrows are pointing from children to parents. A parent *may* have an arrow pointing to a child, but a child *must* have an arrow pointing to its parent.

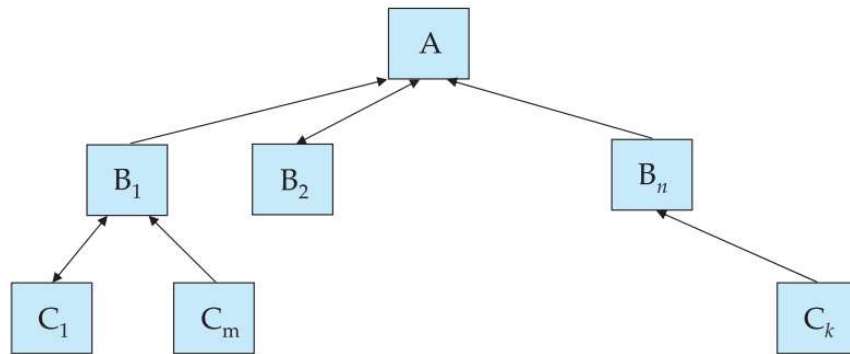


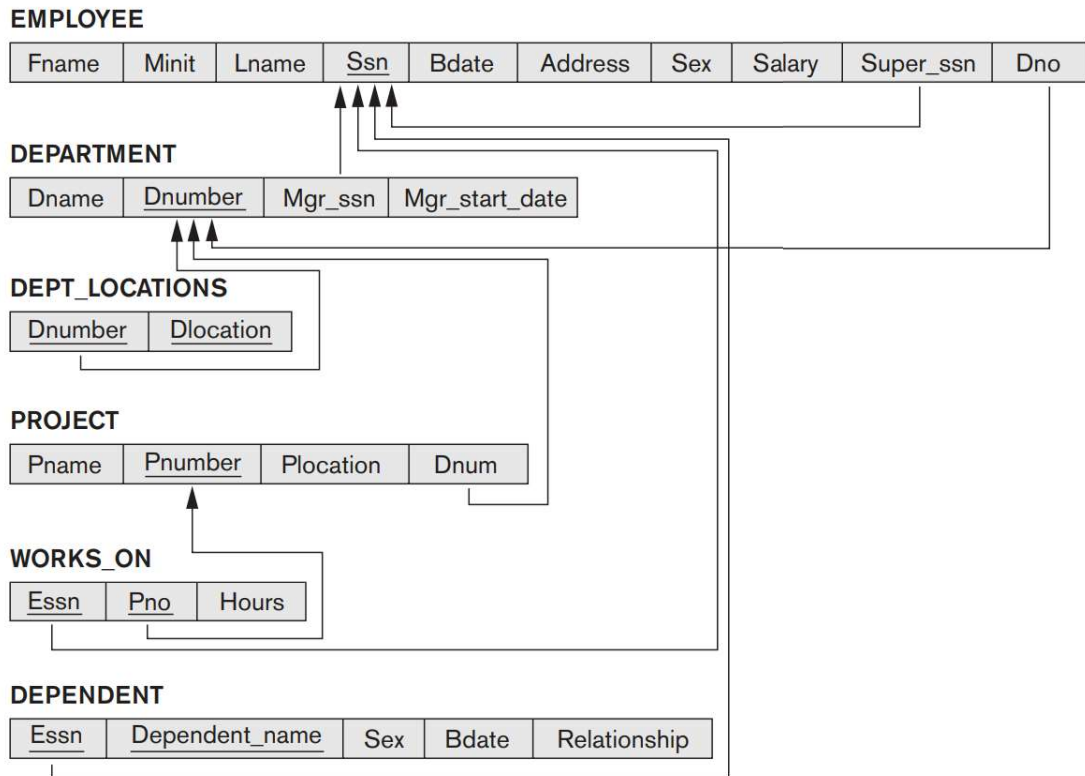
Figure E.2 General structure of a tree-structure diagram.

Available at <https://www.db-book.com/db6/appendices-dir/e.pdf>, at Fig. E.2.

26. The relational data model, introduced by Edgar Codd in 1970, transformed the design and implementation of databases and continues to serve as the foundation for modern relational database management systems (RDBMS). The relational model structures data in tables (also called relations) composed of rows and columns. An example is set forth below:

Figure 5.7

Referential integrity constraints displayed on the COMPANY relational database schema.



Available at [https://www.auhd.edu.ye/upfiles/elibrary/Azal2020-01-22-12-28-11-](https://www.auhd.edu.ye/upfiles/elibrary/Azal2020-01-22-12-28-11-76901.pdf)

[76901.pdf](https://www.auhd.edu.ye/upfiles/elibrary/Azal2020-01-22-12-28-11-76901.pdf), at Figure 5.7. In the relational model, relationships between tables and records are maintained through relational references, which help preserve data integrity and reduce the risk of human error during updates by ensuring a single source of truth. These references—commonly known as foreign keys—link records by pointing to the primary key of a related record in another table. **EX2004.**

27. It is important to note that the **relational model** deals solely with logical data relationships rather than physical structures. Because the relational

model provides an abstract representation of data through tables and logical relationships, it effectively hides the complexities of physical data storage and access from users and applications. This abstraction promotes greater flexibility, easier maintenance, and a high degree of data independence within database management systems. **EX2004.**

28. In contrast, **hierarchical data models**, such as trees, represent one-to-many relationships well but struggle with many-to-many scenarios. Since the hierarchical model enforces a strict parent-child structure, it is less suited for representing complex relationships such as many-to-many or cyclical associations. To model many-to-many relationships, the hierarchical model often requires redundant data or the introduction of artificial nodes to simulate these connections, which can result in inefficiencies and potential data inconsistencies. These models typically rely on physical pointers to link records, making them less flexible in complex referencing situations. Due to their rigid structure, hierarchical models often involve data duplication. In contrast, relational databases reduce redundancy through normalization techniques. Furthermore, hierarchical databases rely on predefined, fixed relationships, whereas relational databases offer greater

flexibility by allowing dynamic changes to relationships, making them more scalable and adaptable to evolving requirements. **EX2004.**

VIII. The ‘911 Patent

29. The ‘911 Patent is entitled “Enforcing compliance policies in a messaging system.”

30. The provisional patent applications that led to the issuance of the ‘911 Patent – i.e., provisional application No. 60/570,848 and provisional application No. 60/570,861 – were both filed on May 12, 2004. EX1001.

31. One of the problems addressed in the ‘911 Patent is that, in email messaging systems at the time of the invention, e-mail messages were just “simple text strings.” EX1001, 1:39-40. As a result, “[w]hen a user writes a message, it is formed into the first e-mail, but may then go on to be included in many other e-mails during its lifetime.” EX1001, 1:40-42. “This results in many copies of the same, user-authored message in different, unrelated mail ‘snapshots.’” EX1001, 1:42-44. As a result, the system often stores several redundant copies of the same message, leading to inefficient use of storage resources. EX1001, 1:44-45.

32. This problem of storing several redundant copies of the same message also means that it is not possible to track or log all of the separate instances of a message in the mail system. As a result, it is nearly impossible to “enforc[e] a

retention policy, access rights, security, or any other property onto messages.”

EX1001, 1:45-49. As a result, “the enterprise will have difficulty attempting to achieve compliance with internal or government-mandated regulations relating to business records.” EX1001, 1:52-55.

33. The ‘911 Patent explains that solutions that came before failed to solve the problem. EX1001, 1:36-38.

34. To address this inefficiency, the ‘911 Patent treats an email thread between two or more participants as a **message container**. EX1001, 1:65-2:2. This container references one or more **sub-messages**, each stored as a discrete component in a message database. EX1001, 1:65-2:4.

35. As discussed with reference to Fig. 2, the ‘911 Patent states that “message can be thought of as a container with relational references. The container itself does not contain content, but rather points to submessages and/or attachments in which the content resides.” EX1001, 4:61-64. This description describes use of a relational model **not** a hierarchical model.

36. In addition, in the ‘911 Patent, the messaging server includes a governance policy module having a governance policy database that stores one or more compliance policies. EX1001, 2:5-7. A compliance policy describes the set

of rules that apply to message components during their lifecycles in the messaging system. EX1001, 2:7-9. Each message component in the messaging system is associated with the compliance policy that was active at the time it was created. EX1001, 2:11-12. Accordingly, when an action occurs that involves a message component, the messaging system identifies the relevant compliance policy in the governance policy database and applies any rules that are applicable. EX1001, 2:14-19.

37. Importantly, in the ‘911 Patent, the message container itself does not contain the original message content; instead, it points to sub-messages stored elsewhere in the database. EX1001, 3:6-8 & 4:62-64. In addition, the container can point to other information about the message, such as audit, security, and governance policy information. EX1001, 4:64-66.

38. As discussed above, the association between a message container and its sub-messages can be implemented using various approaches, including hierarchical (e.g., tree or graph structures) or **relational models**. *Supra* ¶¶ 24-28. The ‘911 Patent adopts the **relational approach**, where message containers and sub-messages are linked via shared keys or identifiers (e.g., foreign keys and

primary keys). EX1001, 1:65-2:2 (“relational references”); EX1001, 2:60-62 (“uses a relational model”).

39. As discussed above, the relational model deals solely with logical data relationships rather than physical structures. *Supra*, ¶ 24-28. In the context of the ‘911 Patent, each message or sub-message is stored as a **single, unique copy**, and redundancy is avoided by linking containers to sub-messages using identifiers. EX1001, 5:54-63. The relational model effectively supports both **one-to-many** and **many-to-many** relationships through foreign keys and join operations. **EX2004**. For instance, a message container can be linked to multiple sub-messages, and conversely, a sub-message can be referenced by multiple message containers. **EX1001**, 1:67-2:2, 1:42-45.

IX. The Alleged Prior Art

A. Rohall

40. The Rohall patent application is titled “Method and apparatus for handling conversation threads and message groupings as a single entity.” EX1005.

41. The Rohall patent application was filed on December 30, 2002. EX1005.

42. The Rohall patent application describes the problem that, in electronic mail applications at the time of the invention, the electronic mail applications did

not have the ability to generate an entire conversation thread. EX1005, [0008]. As a result, email users were carbon copied (CC) or blind carbon copied (BCC) on messages without having seen the earlier parts of the conversation. EX1005, [0008]. Consequently, they may lack the necessary context to properly interpret the message. EX1005, [0008]. In addition, in electronic mail applications at the time of the invention, if messages were deleted (by the recipient) or not saved (by the sender), then there would be holes in the conversation threads. EX1005, [0008].

43. The Rohall patent application addresses this issue by ensuring that the **entire conversation thread** is sent to a recipient who has not previously received any messages from that thread—even if the conversation is ongoing and not newly initiated. EX1005, [0009].

44. Rohall utilizes a **hierarchical (tree) structure** combined with **shadow documents** to manage the email content and its delivery. EX1005, [0009] (“complete thread trees need to be constructed”); EX1005, [0056] (“parent/child tree hierarchy representing a conversation thread terminates at one extreme with a root document, or a shadow document thereof, and, at the other extreme, with one or more children documents, or shadows thereof, as the leaves of the tree”); Figs. 6A-D, 7, 8A; EX1005, [0056] (“Within a conversation thread, and a hierarchical

tree that represents such thread, children documents derive from a common root document.”); EX1005, [0056] (“a parent/child tree hierarchy representing a conversation thread terminates at one extreme with a root document, or a shadow document thereof, and, at the other extreme, with one or more children documents, or shadows thereof, as the leaves of the tree.”); EX1005, [0057] (referring to “the immediate parent document in... in the tree hierarchy” and “the immediate children documents ... in the tree hierarchy”); EX1005, [0063] (referencing identification of “the leaf nodes within the conversation tree”); EX1005, [0063] (“linked in a hierarchical manner”); EX1005, [0076] (“In the tree-like hierarchical organization of a message thread, parent and children documents exist at adjacent levels of the hierarchical organization.”).

45. A skilled artisan would understand these disclosures in Rohall regarding “tree hierarchy” and “link[ing] in a hierarchical manner” to refer only to a hierarchical model. A skilled artisan would understand from these disclosures that Rohall is not using a relational model.

46. For several reasons, it makes sense that, in the system in Rohall, a hierarchical model is used. First, Rohall discusses operating in a Lotus Notes environment. EX1005, [0043]. Rohall explains that, in such an environment, a

common problem is that users that are added to a thread or conversation – e.g., when carbon copied or blind copied – do not receive “the entire conversation thread” and, therefore, are unable to understand the context of the message. EX1005, [0008]. This is consistent with my understanding of how Lotus Notes operated at the time of the Rohall invention (2001-2002). Therefore, a skilled artisan would understand that the Lotus Notes environment in which Rohall was operating was **not** using a relational model to link together parts of a conversation thread. Second, in Rohall, because the environment does not keep parts of e-mail threads together, Rohall lends itself to a hierarchical model, reconstructing the complete e-mail string/thread by linking replies and forwards to the original message to physically represent the complete e-mail string/thread.

47. When Rohall discusses “forwarding,” it is generally referring to the action (a “user definable operation”) of “forwarding,” and Rohall discusses “forwarding” of an entire electronic mail conversation thread. EX1005, Abstract & [0013], [0125], [0130], Claim 5.

B. Schiavone

48. The Schiavone patent application is titled “System and method for rule-based processing of electronic mail messages.” EX1006.

49. The Schiavone patent application was filed on February 26, 2001.
EX1006.

50. The Schiavone patent introduces a rule-based system for processing electronic mail messages. EX1006, Abstract.

51. The Schiavone patent addresses the limitations of existing client-side filtering mechanisms. EX1006, [0002], [0003], [0004], [0005]. Traditional filters often lack the ability to customize messages for specific recipients and fail to account for evolving user preferences. EX1006, [0004], [0005]. Additionally, such systems may compromise the privacy and confidentiality of email content. EX1006, [0004], [0005].

52. Schiavone's invention focuses on user profiles, email messages, and a set of customizable rules. EX1006, Abstract & [0015]. Notably, multiple users can share a common set of rules. EX1006, [0007]. Messages are linked to rules based on sender-defined specifications, such as including a message-type specifier. EX1006, [0024]. Compliance is evaluated by referencing recipient preferences stored in a data repository—this may reside on the recipient's device, the sender's device, or an intermediary such as a trusted authority. EX1006, [0007].

53. The patent outlines a five-step process:

- i. **Store** the recipient's profile data in a private data store on their communication device.
- ii. **Identify** a message-type specifier associated with an incoming email.
- iii. **Determine** the rule corresponding to the message-type specifier.
- iv. **Reference** the recipient's profile data.
- v. **Evaluate** compliance: if the profile data aligns with the rule, the email is displayed to the recipient. Otherwise, the message may be rejected or modified based on the recipient's profile—for example, by changing its content, appearance, or length.

EX1006, [0024]-[0034] & FIGS. 1 & 2.

54. To ensure confidentiality, the recipient's profile data is categorized into two types:

- **Public preference data**, which may be freely shared, and
- **Private preference data**, which remains strictly confidential unless the recipient explicitly permits its disclosure. EX1006, [0022].

55. By processing email locally and leveraging private rule-based customization, the patent aims to deliver both personalized communication and enhanced privacy protection. EX1006.

56. When Schiavone discusses replying and forwarding, Schiavone is discussing the **actions** of sending an automated “reply” or forwarding a message. EX1006, [0007], [0036], [0038], [0039], [0041], Claims 24, 27, 30, 32. Schiavone does not discuss a “reply” or a “forward” as an individual component of an e-mail threads/strings, and Schiavone does not discuss applying different rules of a compliance policy to different portions of an e-mail thread. *See generally* EX1006.

C. Gomes

57. The Gomes patent is titled “Method and system for enterprise-wide retention of digital or electronic data.” EX1016. The application was filed on January 17, 2004.

58. The Gomes patent describes a method and system for managing electronic data within an enterprise. EX1016, Abstract. Data can originate from various sources, such as backup systems (e.g., backup tapes) or enterprise networks. EX1016, at Abstract. A file extraction engine is used to separate email files from other types of files—such as those extracted from backup tapes.

EX1016, 4:19-37. The extracted data is then loaded into a central, collective database. EX1016, 4:32-34.

59. A de-duplication engine processes both the extracted files and additional data from the network to remove duplicate content while preserving metadata for each version of the content. EX2016, 4:26-30. The metadata may include details such as file path and name, the last modified date on the original machine, a pointer to the content's location, file size, and similar attributes. EX1016, 7:14-20.

60. To identify duplicates, the de-duplication engine generates hashed values from the content portions and from the metadata portions of the file. EX1016, 7:21-23. One hashed value represents the file's content, while another hashed value corresponds to the file's metadata. EX2016, 7:24-26.

61. Targeted data can be identified from the collective database by applying filters or rules. EX2016, 7:21-25. Once identified, this data—originally stored on backup tapes—can be used for various purposes, including legal discovery, internal investigations, building specialized databases on specific topics, or deletion in accordance with data retention policies. EX1016, 7:25-30. A data

retention policy defines the criteria for evaluating electronic data, ensuring that only data meeting the specified conditions is preserved. EX1016, 7:33-47.

62. Gomes does not address the internal structure of email threads, such as original messages, replies, and forwards. *See generally* EX1016. As a result, Gomes also does not discuss applying different processing rules to individual components within a message. *See generally* EX1016. While the system in Gomes handles de-duplication of entire electronic messages (EX1016, 2:13-16), it does not consider sub-messages or employ a relational data model. Instead, its focus remains on enterprise-level data sourced from networks and backup systems.

X. Opinions Regarding IPR-270 (U.S. Patent No. 8,073,911)

63. In the paragraphs below, I detail the bases for my opinions relating to IPR-270. I address each ground of invalidity asserted by the petitioner in IPR-270.

A. Ground 1: Claims 1-8, 10-13, 15, 18, and 20-21 of the ‘911 patent are not obvious based on the combination of Rohall and Schiavone

1. Differences Between Rohall and the ‘911 Patent.

64. The inventions in the ‘911 Patent are very different from the invention in Rohall, in many ways.

65. One way in which Rohall and the ‘911 Patent differ is that they solve different problems. In many ways, Rohall and the ‘911 Patent are trying to solve

opposite problems. In particular, the ‘911 Patent is addressing the problem that there are **too many copies** of each submessage (due to text strings/threads replicating each submessage in every subsequent message) (EX1001, 1:40-55), whereas the Rohall reference is addressing the problem that there are **not enough copies** of parts of message threads because certain parts of message threads are “missing” or “have holes” (due to **the lack of** strings/threads). EX1005, [0008].

66. In particular, the ‘911 Patent addresses the problem of e-mail threads/strings, in which – as a result of various replies and forwards – the original message may be included in many other e-mails during its lifetime and, as a result, there are many copies of the same message. EX1001, 1:40-55. This repeated replication of submessages resulting from strings/threads leads to inefficient use of storage resources and difficulties enforcing policies. EX1001, 1:40-55. This solution is reflected in the claims of the ‘911 Patent, which include a requirement that “*each of the sent submessages is stored exactly once in within the email database.*” EX1001, Claim 27.

67. In contrast to the problem being solved by the ‘911 Patent, the Rohall reference is trying to solve the problem of **the lack of** e-mail threads – i.e., the electronic mail applications at the time did **not** have the ability to generate an

entire conversation thread, and, as a result, email users were carbon copied (CC) or blind carbon copied (BCC) on messages without having seen the earlier parts of the conversation. EX1005, [0008]. In addition, if messages were deleted (by the recipient) or not saved (by the sender), then there would be holes in the conversation threads. EX1005, [0008].

68. Another way in which Rohall and the '911 Patent differ is because the solutions are different. The '911 Patent solves the problem of the replication of submessages – and the related problems of storage and enforcing policies – in part by storing only a single copy of each submessage, resulting in there being **less data** to store. EX1001, 1:44-45 & Claim 27. In contrast, the Rohall reference solves the problem that parts of a thread are missing by creating shadow documents, data that needs to be stored. EX1005, [0013].

69. Another way in which Rohall and the '911 Patent differ is because of the models utilized. As discussed above, the Rohall reference utilizes a **hierarchical (tree) structure** combined with **shadow documents** to manage the email content and its delivery. In contrast, **the '911 Patent** relies on a relational model, using **relational references** to link message containers and sub-messages, emphasizing data normalization and compliance with storage efficiency policies.

EX1001, 1:60-62 & Claims. Each message and sub-message is treated as a **discrete message component** and can be stored as a **single copy** in the system.

EX1001, 2:2-4, 5:56-58, Claim 27.

2. Differences Between Schiavone and the ‘911 Patent.

70. There are significant differences between the ‘911 Patent, on the one hand, and Schiavone, on the other hand.

71. The ‘911 patent goes well beyond what the Schiavone patent offers.

72. One way in which the ‘911 patent goes well beyond what Schiavone offers is because the ‘911 Patent focuses on applying compliance policies to submessages, or individual message components. EX1001, Abstract & Claims. Every claim of the ‘911 Patent requires that “*different rules of the compliance policy are applicable to different ones of the plurality of sent submessages*” (Claims 1-12 & 27-29) or “*selectively applying rules of the compliance policy to the sent submessages,*” wherein “*rule elements describ[e] whether the rule is applicable to a sent submessage*” (Claims 13-26). EX1001, Claims. In contrast, Schiavone does not discuss or disclose the need to separate an e-mail string into submessages, and Schiavone does not discuss or disclose applying one rule to one submessage and another rule to another submessage. *See generally* EX1006.

73. Another way in which the ‘911 patent goes well beyond what Schiavone offers is because the ‘911 patent introduces not only a governance policy database but also explicitly defines and utilizes an audit information database and a security database. EX1001, 5:42-7:6 & 7:15-61. This is reflected in the claims of the ‘911 Patent. EX1001, Claim 24. In contrast, Schiavone does not address the concepts of an audit information database or a security database. *See generally* EX1006.

74. Another way in which the ‘911 patent goes well beyond what Schiavone offers is because the ‘911 Patent incorporates a tamper-detection mechanism within the audit database to ensure the integrity of messages. EX1001, 6:10-59. Authorization enforcement is handled through mechanisms defined in the security database. EX1001, 7:7-34. This is reflected in the claims of the ‘911 Patent. EX1001, Claim 19. Both of these components are absent in Schiavone. *See generally* EX1006.

75. Another way in which the ‘911 patent goes well beyond what Schiavone offers is because the ‘911 Patent presents a comprehensive and structured compliance policy. The ‘911 Patent defines a rule-based compliance framework comprising a collection of rules (“rule set”) that govern the handling of

message components and related data within the messaging system. EX1001, 9:26-36. These rules are reflected in the claims. EX1001, Claims. It also introduces a “Standard Rule Set” or default rule set that applies when no specific rule matches. EX1001, 9:26-36. In contrast, Schiavone has a limited scope, focusing primarily on recipient device specifications. *See generally* EX1006.

76. The ‘911 Patent categorizes rules into multiple types—including communication rules, readership rules, action rules, retention rules, and search rules—each managing different aspects of content control and compliance. EX1001, 9:26-36. Communication rules define which entities within the population structure are permitted to exchange messages through the messaging system. EX1001, 9:37-58. Readership rules determine which entities are allowed to access or read messages from others within the population structure. EX1001, 10:10-37. Validity rules specify the time frame during which a sent submessage or population structure entity remains active or usable. EX1001, 13:14-61. Retention rules establish the duration after which a sent submessage or population structure entity must be deleted from the messaging system. EX1001, 11:7-51. These types of rules are reflected in the claims. E.g., EX1001, Claims 5, 6, 9, 11, 12, 17, 18, 20

77. For all of these reasons, in my opinion, the governance capabilities and compliance framework of '911 Patent are far more advanced and cannot be substituted by what the Schiavone patent offers.

3. A Skilled Artisan Would Not Look to the Rohall Reference to Solve the Problems in the '911 Patent.

78. As discussed above, the Rohall reference solves the problem that parts of a message thread are missing. The solution in Rohall is to create shadow documents.

79. In contrast, the '911 Patent addresses the problem of message strings/threads replicating submessages many times in the system, resulting in storage problems and problems applying policies. The '911 Patent solves this problem in part by storing each submessage only once.

80. In my opinion, a skilled artisan would not look to the Rohall reference to solve the problems highlighted in the '911 Patent. This is because the Rohall reference does nothing to reduce storage. In fact, the solution in the Rohall hierarchical/tree reference (the creation of shadow documents) actually results in the system having even more data to store. This solution is contrary to the problem that the '911 Patent is trying to solve and, as a result, a skilled artisan would not

look to the Rohall reference to solve the problems the ‘911 Patent was trying to address.

4. A Skilled Artisan Would Not Be Motivated to Combine Rohall & Schiavone to Make the Inventions in the ‘911 Patent.

81. In my opinion, a skilled artisan at the time of the ‘911 Patent invention would not have been motivated to combine Rohall and Schiavone to come up with the inventions in the ‘911 Patent.

82. As discussed below, neither Rohall nor Schiavone discuss or disclose (1) “*relational references*” or (2) “*different rules of the compliance policy are applicable to different ones of the plurality of sent submessages.*” *Infra* ¶¶ 87-107. Therefore, even if a skilled artisan were to try to combine Rohall and Schiavone, the combination would not result in the inventions in the ‘911 Patent.

83. In addition to this problem, there are other reasons a skilled artisan at the time of the ‘911 Patent invention would not have been motivated to combine Rohall and Schiavone to come up with the inventions in the ‘911 Patent. It is my opinion that the only reason to combine Rohall and Schiavone to come up with the inventions in the ‘911 Patent would be hindsight reasoning, using the claims of the ‘911 Patent as a roadmap. I understand that this is prohibited in an obviousness analysis.

84. One reason a skilled artisan would not be motivated to combine Rohall and Schiavone to make the inventions in the '911 Patent is because Rohall does not discuss compliance policies, governance modules, or the application of rules to emails. Therefore, there is no teaching or disclosure in Rohall that would motivate a skilled artisan to add these rules from Schiavone to Rohall.

85. Another reason a skilled artisan would not be motivated to combine Rohall and Schiavone to make the inventions in the '911 Patent is because Schiavone does not discuss the different components of e-mail threads (i.e., original message, replies, forwards, etc.). Therefore, there is no teaching or disclosure in Schiavone that would motivate a skilled artisan to add the '911 Patent's concept of "submessages" to Schiavone's rules.

86. Another reason a skilled artisan would not be motivated to combine Rohall and Schiavone to make the inventions in the '911 Patent is because there is no teaching or disclosure in Rohall or Schiavone regarding the problem of email strings generating too many copies of the same submessages (and the storage issues that result). With respect to Rohall, the system that Rohall was addressing did not join together replies and forwards with the message they were responding to and, therefore, did not replicate submessages. With respect to Schiavone,

Schiavone does not discuss the problem of email systems replicating and storing multiple copies of the same submessages in email strings. Because neither Schiavone nor Rohall discuss this fundamental problem being solved by the ‘911 Patent, a skilled artisan would not be motivated to combine Rohall and Schiavone to create the solutions set forth in the ‘911 Patent.

5. Rohall Does Not Teach, Disclose, or Render Obvious the Limitation of “a message container containing relational references pointing to a plurality of submessages.”

87. Every claim of the ‘911 Patent requires “*relational references pointing to a plurality of submessages.*” EX1001, Claims. The specification states that the messaging system in the ‘911 Patent “uses **a relational model** to represent and store messages exchanged among the users.” EX1001, 2:60-62 (emphasis added). From these disclosures, a skilled artisan would understand that the “*relational references*” in the ‘911 Patent refer to a relational model.

88. In my opinion, the combination of Rohall and Schiavone does not teach, disclose, or render obvious using “*relational references.*” This is because neither Rohall nor Schiavone discuss or disclose using a relational model. As discussed above, Rohall uses only a hierarchical model, not a relational model with relational references. And, as discussed above, Schiavone does not discuss the

individual components of message threads and, therefore, does not discuss any model for linking individual components of message threads.

89. Dr. Black opines that the tree structures that Rohall uses are “*relational references*.” EX1003, ¶ 148. I disagree. The Rohall does not teach, disclose, or render obvious using “*relational references*.” Instead, as discussed above, the Rohall reference utilizes only a **hierarchical (tree) structure** combined with **shadow documents** to manage the email content and its delivery. The tree structure in Rohall is not the same as the “*relational references*” in the ‘911 Patent. Rohall does not use a relational model or relational references.

90. Dr. Black’s analysis of the “*relational references*” limitation does not address this difference between, on the one hand, the relational model in the ‘911 Patent and, on the other hand, the hierarchical model in Rohall. EX1003. Although he acknowledges Rohall’s use of “tree hierarchy” (EX1003, ¶ 150) and the ‘911 Patent’s use of “*relational references*,” he does not acknowledge that hierarchical models (Rohall) are different than relational models (the ‘911 Patent). For the reasons set forth above, Rohall’s hierarchical model does not disclose the required “*relational references*.”

91. It would not be obvious to add “*relational references*” to Rohall. In Rohall, shadow documents are stored as documents within a Lotus Notes database and are accessible through the Notes Storage Facility (NSF) Application Programming Interfaces (APIs). Every object in a Notes database is uniquely identified by an identifier.

92. Lotus Notes databases store information in the form of documents and are best described as collections of semi-structured or unstructured data, in contrast to relational databases. Shadow documents in this context represent parent-child relationships and typically include fields such as document ID, root ID, and parent ID. Using these identifiers, all original documents can be retrieved from the Notes database.

93. However, exporting data from Notes is a complex process. It involves managing various document components, including rich text fields, specific layouts, embedded links, file attachments, and hierarchical structures. Special effort is required to preserve the structure and integrity of the data during migration to a different system, such as a relational database. In short, exporting Notes data to relational formats would be neither trivial nor straightforward.

94. In contrast, the ‘911 Patent utilizes a relational model, where the database module includes a relational database system. Data is organized into sets of tables, allowing access and recombination in various ways without requiring table reorganization. Each row (or record) in a relational table is unique—duplicate tuples are not permitted.

95. The ‘911 Patent adopts a relational design in which message containers, sub-messages, and attachments are distributed across multiple tables. Each row within these tables is distinct; for example, each sub-message and its content are stored as a unique record. Tables for message containers and sub-messages are linked using shared keys (e.g., primary and foreign keys).

96. In contrast to the ‘911 Patent, the hierarchical model used in Rohall, with its rigid parent-child structure, is less suitable for representing complex relationships such as many-to-many or cyclical associations.

97. In the ‘911 Patent, such associations – i.e., complex relationships such as many-to-many or cyclical associations – may exist. For instance, a message container can be linked to multiple sub-messages, and a sub-message can be referenced by multiple containers.

98. To model many-to-many relationships, the hierarchical model typically relies on redundant data or the use of artificial nodes to simulate such links, leading to inefficiencies and potential data inconsistencies. Hierarchical models often depend on physical pointers to connect records, making them inflexible in handling complex referencing scenarios. Additionally, they tend to introduce data duplication due to their structure.

99. In contrast, relational databases minimize redundancy through normalization and support dynamic relationship changes. Notably, minimizing redundancy is one of the problems the ‘911 Patent’s solutions sought to address. EX1001, 1:40-55. This flexibility of relational databases makes them more scalable and better suited to evolving data requirements compared to hierarchical systems, which are constrained by their static and predefined relationships.

100. These differences between the hierarchical model in Rohall and the relational model in the ‘911 Patent demonstrate why it would not be obvious to incorporate a relational model and relational references into Rohall, and why a skilled artisan would not expect to succeed in doing so.

101. For these reasons, the combination of Rohall and Schiavone does not render obvious the “*relational references*” limitation in every claim of the ‘911

Patent. As a result, the combination of Rohall and Schiavone does not render obvious any claim of the '911 Patent.

6. The Combination of Rohall and Schiavone Does Not Teach, Disclose, or Render Obvious the Limitation of “different rules of the compliance policy are applicable to different ones of the plurality of sent submessages” (Claims 1-10 & 26-29) or “selectively applying rules of the compliance policy to the sent submessages ... wherein a rule of the compliance policy includes one or more rule elements describing whether the rule is applicable to a sent submessage” (Claims 11-25)

102. Claims 1-10 and Claims 26-29 of the '911 Patent require “*different rules of the compliance policy are applicable to different ones of the plurality of sent submessages.*” Similarly, Claims 11-25 of the '911 Patent require “*selectively applying rules of the compliance policy to the sent submessages... wherein a rule of the compliance policy includes one or more rule elements describing whether the rule is applicable to a sent submessage.*” Dr. Black admits that these limitations are missing from Rohall. EX1003, ¶ 195. In my opinion, Schiavone also does not disclose either of these limitations. This is because Schiavone does not discuss the different components of email threads (i.e., original message, replies, and forwards) **at all**. Instead, when Schiavone discusses replies or forwards, Schiavone is discussing the action of replying or forwarding an e-mail; Schiavone is not discussing replies or forwards as components within a message

thread. Because Schiavone does not discuss the different components of e-mail threads at all, Schiavone also does not discuss applying different rules to different parts of a message.

103. Dr. Black points to the disclosure in Schiavone “an example in which email messages sent to US recipients are delivered to recipients in accordance with laws for US residents, whereas email messages sent to recipients in France are delivered to recipients in accordance with laws for French residents.” EX1003, ¶ 195. These disclosures in Schiavone, however, discuss treatment of the message as a whole. At most, these disclosures in Schiavone relate to applying different rules to the same message. That is, the same message sent to two recipients – one residing in France and one residing in the United States – would have different rules applied to the same message.

104. Dr. Black also argues that Schiavone teaches different rules that apply to different messages (EX1003, ¶ 197), but Schiavone does not disclose different rules applying to different parts of a message (i.e., to different submessages).

105. Finally, Dr. Black cites the statement in Schiavone that users can modify messages before sending them to customize them for the recipient. EX1003, ¶ 197. This disclosure, however, relates to customizing the content of a

message; it teaches and discloses nothing about customizing the rules that are applicable to submessages. There is no disclosure in Schiavone of applying different rules to different submessages in a thread.

106. In addition to the fact that neither Rohall nor Schiavone discuss, disclose, or render obvious applying different rules to different submessages, in my opinion, Rohall would discourage a skilled artisan from adding this feature. That is, the teachings in Rohall would discourage a skilled artisan from applying different rules to different submessages. This is because Rohall criticizes systems in which “users must locate and act on each message individually.” EX1005, [0008]. Rohall asserts that acting on each message individually is “time consuming” and results in message items being “disconnected.” EX1005, [0008]. Therefore, even if a skilled artisan were to add rules to the system in Rohall, given the teachings in Rohall, a skilled artisan would not be motivated to apply different rules to different submessages.

107. In sum, Schiavone does not teach, disclose, or render obvious “*different rules of the compliance policy are applicable to different ones of the plurality of sent submessages*” or “*selectively applying rules of the compliance*

policy to the sent submessages.” Therefore, the combination of Rohall and Schiavone also does not render obvious these limitations.

B. Ground 2: Claims 9 and 27 of the ‘911 patent are not obvious based on the combination of Rohall, Schiavone, and Gomes.

108. Claims 9 and 27 of the ‘911 patent are not obvious based on the combination of Rohall, Schiavone, and Gomes.

1. The combination of Rohall, Schiavone, and Gomes does not render obvious Claims 9 or 27 for the same reasons set forth in Ground 1.

109. As discussed above, every claim of the ‘911 Patent, including Claims 9 and 27, requires “*relational references pointing to a plurality of sent submessages.*” As discussed above, however, the Rohall-Schiavone combination does not disclose this limitation, including because Rohall uses only a hierarchical model, not the claimed relational model that uses “*relational references.*” See *supra* ¶¶ 87-101. Dr. Black does not argue that Gomes discloses “*relational references.*” Therefore, the Rohall-Schiavone-Gomes combination also does not teach, disclose, or render obvious the limitation of “*relational references pointing to a plurality of sent submessages.*”

110. Claim 27 requires that “*different rules of the compliance policy are applicable to different ones of the plurality of sent submessages.*” Similarly, Claim

9 requires “[t]he messaging server of claim 1,” and Claim 1 requires “*different rules of the compliance policy are applicable to different ones of the plurality of sent submessages.*” As discussed above, however, the Rohall-Schiavone combination does not teach, disclose, or render obvious this limitation. *See supra* ¶¶ 102-107. And, Dr. Black does not argue that Gomes discloses this limitation. Therefore, the Rohall-Schiavone-Gomes combination also does not teach, disclose, or render obvious the limitation of “*different rules of the compliance policy are applicable to different ones of the plurality of sent submessages.*”

111. The combination of Rohall, Schiavone, and Gomes that Dr. Black proposes also does not render obvious Claims 9 or 27 because, as discussed above, a skilled artisan would not be motivated to look to the Rohall reference at all (because it solves the opposite problem than the ‘911 Patent seeks to solve), and a skilled artisan would not be motivated to combine Rohall and Schiavone to make the inventions set forth in the ‘911 Patent. *See supra* ¶¶ 78-86.

2. Claim 9: The combination of Rohall, Schiavone, and Gomes does not teach, disclose, or render obvious the limitation of “search rules describing which population structure entities can view which sent submessages when searching the sent submessages stored by the messaging system.”

112. Claim 9 of the ‘911 Patent requires “*search rules describing which population structure entities can view which sent submessages when searching the sent submessages stored by the messaging system.*” EX1001, Claim 9.

113. Dr. Black acknowledges that Rohall or Schiavone do not disclose this limitation. EX1003, ¶ 279.

114. Instead, Dr. Black asserts that Gomes discloses this limitation. EX1003, ¶ 279. I disagree.

115. Claim 9 requires the application of rules at the “*submessage*” level, including “*search rules*” describing which “*entities can view which sent submessages when searching.*” This is an important part of the invention in the ‘911 Patent. The ‘911 Patent explains that “[s]earch rules determine which end-users, domains, and groups are allowed to view content written by other end-users, domains, and groups when searching.” EX1001, 11:56-58. The ‘911 Patent explains that “[i]f the search produces submessages or other content that the searcher is not allowed to view,” “the messaging system can ‘cut the chain’ of the message at the prohibited content” (EX1001, 12:18-22) – i.e., the system can apply

the rule at the submessage level. The search rules can “automatically reflect an enterprise's reporting hierarchy,” such that “an end-user can search their own message components, as well as any components from users reporting to him.”

EX1001, 12:22-28. Again, this is describing applying the rule at the submessage (“message component”) level.

116. As discussed above, however, Gomes does not address “*submessages*” at all. For example, Gomes does not address the internal structure of email threads, such as original messages, replies, and forwards. *See generally* EX1016. As a result, Gomes also does not discuss applying different processing rules to individual components within a message. Therefore, Gomes does not disclose rules “*describing which population structure entities can view which sent submessages*.” The rules in Gomes are not applied at the submessage level.

117. Dr. Black asserts that Gomes discloses this limitation because Gomes includes rules for “search of files” (which include “email files”) and because Gomes discusses access by “authorized users.” EX1003, ¶ 280. Dr. Black, however, does not address the requirement that the rules requiring who can view content must be applied at the “*submessage*” level. Dr. Black’s analysis does not discuss the “*submessage*” portion of the limitation at all. Instead, his analysis

seems to assume that “email messages” are the same as “*sent submessages.*”

EX1003, ¶ 280 (“Therefore, Gomes discloses ... storing data such as “email messages” (e.g., ‘*the sent submessages*’).”). This is incorrect. The ‘911 Patent makes it clear that “messages” are different than “*submessages.*” EX1001, at 5:27-30 & Fig. 2. Dr. Black’s analysis ignores this important limitation in Claim 9.

118. For all of these reasons, Gomes does not teach, disclose, or render obvious the limitation of Claim 9 requiring that that “*search rules describing which population structure entities can view which sent submessages when searching the sent submessages stored by the messaging system.*” EX1001, Claim 27. This is another reason why the Rohall-Schiavone-Gomes combination does not render obvious any claim.

3. Claim 27: The combination of Rohall, Schiavone, and Gomes does not teach, disclose, or render obvious the limitations requiring that “each of the sent submessages is stored exactly once within the email database” and that “the first sent submessage is not duplicated within the email database.”

119. In addition to other limitations discussed above, independent Claim 27 of the ‘911 Patent requires that “*each of the sent submessages is stored exactly once within the email database*” and that “*the first sent submessage is not duplicated within the email database.*” EX1001, Claim 27. This is an important aspect of the ‘911 Patent invention, because the ‘911 Patent is focused on solving

the problems created by the replication of submessages within e-mail strings.

EX1001, at 40-55. By storing each submessage only once, the '911 Patent helps to address this problem.

120. Dr. Black admits that Rohall and Schiavone do not disclose this limitation. EX1003, ¶ 283 (chart relying upon his analysis of Gomes “below” to supply limitation No. 27.4 – i.e., “*each of the sent submessages is stored exactly once within the email database, and upon receipt of a reply to a first email having a first email container containing a first sent submessage, the reply is added to the message container as an additional sent submessage but the first sent submessage is not duplicated within the email database*”).

121. Dr. Black asserts that Gomes discloses this limitation. EX1003, ¶ 285. I disagree.

122. Claim 9 requires actions on a “*submessage*” level, including storing “*each of the sent **submessages** ... exactly once*” and “*not duplicat[ing]*” a “*first sent **submessage***” when replying. As discussed above, however, Gomes does not address “*submessages*” at all. That is, Gomes does not address the internal structure of email threads, such as original messages, replies, and forwards. *See generally* EX1016. Gomes does not disclose de-duping at the submessage level,

such that each submessage is stored only once. Instead, Gomes discloses de-duping each “electronic mail message,” such that the resulting database comprises “a single copy of the content portion for each ... electronic mail message...”

EX1016, 7:2-10 & 9:8-11. Therefore, Gomes does not disclose these “*submessage*” limitations required by Claim 27.

123. Dr. Black claims that Gomes discloses this limitation because Gomes discloses de-duplication of files, including email files. EX1003, ¶ 288 (citing EX1016, 2:4-16 & Abstract). The problem with Dr. Black’s argument is that Gomes does not disclose de-duplication of “*submessages*.” Dr. Black does not discuss the “*submessage*” portion of this limitation at all in his analysis. EX1003, ¶¶ 285-292.

124. Gomes does not teach, disclose, or render obvious the limitation of storing each submessage only once. This is because Gomes handles de-duplication of **entire** electronic messages, not submessages. Gomes does not consider sub-messages or employ a relational data model. Instead, the focus in Gomes remains on enterprise-level data sourced from networks and backup systems.

125. Importantly, when the de-duplication process described in Gomes is applied to e-mail strings, the process will **not** result in de-duplication of

“*submessages*”; it will only result in de-duplication of the entire string. This is because Gomes de-duplicates using hashed values.

126. When assigning hashed values to content, each reply and forward will be assigned a hashed value that is different from the other replies and forwards (and from the original message) in the same e-mail string/thread. As a result, different parts of the same e-mail conversation/string/thread will have different hashed values.

127. For example, assume Joe sends Katie an e-mail (Joe’s original message is “message 1”) and Katie replies to Joe’s message (Katie’s reply is “message 2”). As described in the ‘911 Patent, Katie’s reply (one “*submessage*”) will also include Joe’s original message (another “*submessage*”). In this example, the thread containing Katie’s reply to Joe and Joe’s original message (message 2) will have a different hashed value from the initial message that Joe sent to Katie (message 1). This is because the reply adds content to the original message, such that the initial message has, essentially, been altered. See EX1016, at 11:63-64 (“If the content of the file or record has been altered, the hashed value for the content will be changed.”). Therefore, when de-duplicating by hashed value (as taught by Gomes), the submessages within the thread will **not** be de-duplicated. For

example, in the example above, even after de-duplication, Joe's initial e-mail will still appear in the system twice: once in the initial message (which has its own unique hashed value) and again in the e-mail string/thread containing Katie's reply (which also has its own unique hashed value).

128. For all of these reasons, Gomes does not teach, disclose, or render obvious the limitations of Claim 27 requiring that that “*each of the sent submessages is stored exactly once within the email database*” and that “*the first sent submessage is not duplicated within the email database.*” EX1001, Claim 27. This is another reason why the Rohall-Schiavone-Gomes combination does not render obvious any claim.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 25th day of June 2025, in Plano, Texas.

Latifur Khan

Latifur Khan, Ph.D.