UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Sophos Ltd. and Sophos Inc.,
Petitioners

v.

Webroot Inc.,
Patent Owner.

Case No. IPR2023-00732

U.S. Patent No. 8,719,932

Declaration of Sylvia D. Hall-Ellis, Ph.D.
In Support of Petitioners in the
Petition for *Inter Partes* Review of U.S. Patent No. 8,719,932

Mail Stop **PATENT BOARD**
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P.O. Box 1450
Alexandria, VA 22313-1450

I, Sylvia D. Hall-Ellis, declare as follows:

I. INTRODUCTION

1. My name is Sylvia D. Hall-Ellis. I have been retained as an expert by Sophos Ltd. ("Petitioner").

2. I have written this declaration at the request of Petitioner to provide my expert opinion regarding the authenticity and public availability of two publications. My declaration sets forth my opinions in detail and provides the basis for my opinions regarding the authenticity and public availability of these publications. If called to testify in the above-captioned proceeding, I will testify regarding the opinions and bases set forth below.

3. I reserve the right to supplement or amend my opinions, and bases for them, in response to any additional evidence, testimony, discovery, argument, and/or other additional information that may be provided to me after the date of this declaration.

4. I am being compensated for my time spent working on this matter at my normal consulting rate of $350 per hour, plus reimbursement for any additional reasonable expenses. My compensation is not in any way tied to the content of this declaration, the substance of my opinions, or the outcome of this proceeding. I have no other interests in this proceeding or with any of the parties.

5. All the materials that I considered and relied upon are discussed explicitly in this declaration.

II. QUALIFICATIONS

6. I am currently an Adjunct Professor in the School of Information at San José State University in San José, California. I obtained a Master of Library Science from the University of North Texas in 1972 and a Ph.D. in Library Science from the University of Pittsburgh in 1985. Over the last fifty years, I have held various positions in the field of library and information resources. I was first employed as a librarian in 1966 and have been involved in the field of library sciences since, holding numerous positions.

7. I am a member of the American Library Association (ALA) and its Association for Library Collections & Technical Services (ALCTS) Division, and I served on the Committee on Cataloging: Resource and Description (which wrote the new cataloging rules) and as the chair of the Committee for Education and Training of Catalogers and the Competencies and Education for a Career in Cataloging Interest Group. I also served as the founding Chair of the ALCTS Division's Task Force on Competencies and Education for a Career in Cataloging. Additionally, I have served as the Chair for the ALA Office of Diversity's Committee on Diversity, as a member of the REFORMA National Board of Directors, as a member of the Editorial Board for the ALCTS premier cataloging

journal, *Library Resources and Technical Services,* and as a Co-Chair of the Membership Committee for the Library Research Round Table (LRRT) of the American Library Association. Currently I serve as a member of the LRRT Nominating Committee.

8. I have also given over one hundred presentations in the field, including several on library cataloging systems and Machine-Readable Cataloging ("MARC") standards. My current research interests include library cataloging systems, metadata, and organization of electronic resources.

9. I have been deposed twenty-seven times: (1) *Symantec Corp. v. Finjan, Inc.,* Petition for *Inter Partes Review* of U.S. Patent No. 7,613,926, May 26, 2016, on behalf of Symantec Corp.; (2) *Symantec Corp. v. Finjan, Inc.,* 14-cv-299-HSG (N.D. Cal.), on behalf of Symantec Corp., September 14, 2017; (3) one deposition for ten matters: *Intellectual Ventures I LLC v. AT&T Mobility LLC*; AT&T Mobility II LLC, New Cingular Wireless Services, Inc., SBC Internet Services, Inc., Wayport, Inc., and Cricket Wireless LLC, C.A. No. 12-193 (LPS); *Intellectual Ventures II LLC v. AT&T Mobility LLC*; AT&T Mobility II LLC, New Cingular Wireless Services, Inc., SBC Internet Services, Inc., Wayport, Inc., and Cricket Wireless LLC, C.A. No. 13-1631 (LPS); *Intellectual Ventures I LLC v. T-Mobile USA, Inc. and T-Mobile US, Inc.,* C.A. No. 13-1632 (LPS); *Intellectual Ventures II LLC v. T-Mobile USA, Inc. and T-Mobile US, Inc.,* C.A.

No. 13-1633 (LPS); *Intellectual Ventures I LLC, v. Nextel Operations, Inc., Sprint Spectrum L.P., Boost Mobile, LLC and Virgin Mobile USA, L.P.,* C.A. No. 13-1634 (LPS); *Intellectual Ventures II LLC v. Nextel Operations, Inc., Sprint Spectrum L.P., Boost Mobile, LLC and Virgin Mobile USA, L.P.,* C.A. No. 13-1635 (LPS); *Intellectual Ventures I LLC, v. United States Cellular Corporation*, C.A. No. 13-1636 (LPS); *Intellectual Ventures I LLC v. United States Cellular Corporation*, C.A. No. 13-1637 (LPS); *Intellectual Ventures II LLC v. AT&T Mobility LLC*, *AT&T Mobility II LLC, New Cingular Wireless Services, Inc.,* C.A. No. 15-799 (LPS); *Intellectual Ventures I LLC v. T-Mobile USA, Inc. and T-Mobile US, Inc.,* C.A. No. 15-800 (LPS), on behalf of AT&T Mobility LLC; AT&T Mobility II LLC, Boost Mobile, LLC Cricket Wireless LLC, Nextel Operations, Inc., New Cingular Wireless Services, Inc., SBC Internet Services, Inc., Sprint Spectrum L.P., T-Mobile USA, Inc., T-Mobile US, Inc., United States Cellular Corporation Virgin Mobile USA, L.P., and Wayport, Inc., November 15, 2016; (4) *Hitachi Maxell, LTD., v. Top Victory Electronics (Taiwan) Co. Ltd., et al.,* 2:14-cv-1121 JRG-RSP (E.D. Texas), on behalf of Top Victory Electronics (Taiwan) Co. LTD, *et. al.,* January 20, 2016; (5) *Sprint Spectrum, L.P. v. General Access Solutions, Ltd*., Petition for *Inter Partes Review* of U.S. Patent No. 7,173,916, on behalf of Sprint Spectrum L.P., July 13, 2018; (6) *Nichia Corporation v. Vizio, Inc*., 8:16-cv-00545; on behalf of Vizio, Inc., October 12, 2018; (7) *Intellectual Ventures I*

LLC, v. T-Mobile USA, Inc., T-Mobile US, Inc., Ericsson Inc., and Telefonaktiebolaget LM Ericsson, 2:17-cv-00557 (JRG), on behalf of T-Mobile USA, Inc., T-Mobile US, Inc., Ericsson Inc., and Telefonaktiebolaget LM Ericsson, October 19, 2018; (8) Pfizer, Inc. v. Biogen, Inc., Petition for *Inter Partes Review* of U.S. Patent No. 8,821,873, on behalf of Pfizer, November 3, 2018; (9) *Finjan, Inc. v. ESET, LLC and ESET SPOL. S.R.O.*, 3:17-cv-00183-CAB-BGS, on behalf of ESET, January 15, 2019; (10) *Finjan, Inc. v. Cisco Systems, Inc.,* 5:17-cv-00072-BLF-SVK, on behalf of Cisco Systems, Inc., September 6, 2019; (11) *Facebook, Inc., Instagram, LLC and Whatsapp Inc. v. Blackberry Limited*, Petition for *Inter Partes Review* of U.S. Patent No. 9,349,120 B2, on behalf of Facebook, Inc., Instagram, LLC and Whatsapp Inc. December 20, 2019; (12) *3Shape A/S and 3Shape Inc. v. Align Technology, Inc.,* Petition for *Inter Partes Review* of U.S. Patent No. 7,156,661, IPR 2020-00222 and IPR 2020-00223, August 10, 2020, on behalf of 3Shape A/S and 3Shape Inc.; (13) *Finjan Inc. v. Rapid7, Inc. and Rapid7 LLC*, Northern District of Delaware; 1:18-cv-01519-MN, September 15, 2020; (14) *VLSI Technology LLC v. Intel Corporation*, Western District of Texas, 6:19-cv-00254, 6:19-cv-00255, 6:19-cv-00256, on behalf of Intel Corporation, September 23, 2020; (15) *Finjan Inc. v. Sonicwall, Inc.,* Northern District of California, 5:17-cv-04467-BLF-HRL, on behalf of Sonicwall, Inc., October 27, 2020; (16) *VLSI Technology, LLC v. Intel*

Corporation, District of Delaware, 1:18-cv-00966-CFC-CJB, February 5, 2021, on behalf of the Intel Corporation; (17) *Unified Patents, LLC v. Good Kaisha IP Bridge 1*, Petition for *Inter Partes Review* of U.S. Patent 7,817,868, February 11, 2021, on behalf of Unified Patents; (18) *Finjan, Inc. v. Qualsys, Inc.,* Northern District of California, 4:18-cv-07229-YGR, March 1, 2021, on behalf of Qualsys, Inc.; (19) *Qualcomm, Inc. v. Monterey Research LLC*, Petition for *Inter Partes Review* of U. S. Patent 6,534,805, May 6, 2021, on behalf of Qualcomm, Inc.; (20) *Hulu, LLC v. Sound View Innovations, LLC*, Petition for *Inter Partes Review* of U.S. Patent 5,806,062, May 14, 2021, on behalf of Hulu, LLC; (21) *VLSI Technology LLC v. Intel Corporation*, Western District of Texas, 6:19-cv-00254, 6:19-cv-00255 and 6:19-cv-00256, August 3, 2021, on behalf of Intel Corporation; (22) *Liquidia Technologies, Inc. v. United Therapeutics Corporation*, Petition for *Inter Partes Review* of U.S. Patent 10,716,793 B2, October 20, 2021, on behalf of Liquidia Technologies, Inc.; (23) *EcoFactor, Inc. v. Google, Inc.,* Western District of Texas, 6:20-cv-00075 (ADA), 6:20-0078-ADA, and 6:20-cv-00080 ADA, October 27, 2021, on behalf of Google, Inc.; (24) *Liquidia Technologies, Inc. v. United Therapeutics Corporation*, Petition for *Inter Partes Review* of U.S. Patent 10,716,793 B2, March 11, 2022, on behalf of Liquidia Technologies, Inc.; (25) *Juniper Networks, Inc. v. Swarm Technology LLC*, Petition for *Inter*

Partes Review of U.S. Patent 9,852,004, May 5, 2022, on behalf of Juniper Networks, Inc.; (26) *ParkerVision, Inc. v. Intel Corporation*, Western District of Texas, 6:20-cv-108 (ADA), October 26, 2022, on behalf of the Intel Corporation; and, (27) *CommScope v. TQ Delta*, Petition for *Inter Partes Review* of U.S. Patents 9,094,348 and 10,833,809, February 16, 2023, on behalf of CommScope.

10. My full curriculum vitae is attached as Appendix 2.

III. PRELIMINARIES

A. Scope of Declaration and Legal Standards

11. I am not an attorney and will not offer opinions on the law. I am, however, rendering my expert opinion on the authenticity of the publications referenced herein and on when and how each of these documents was disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising ordinary diligence, could have located the documents before April 20, 2006.

12. I am informed by counsel that a printed publication qualifies as publicly accessible as of the date it was disseminated or otherwise made available such that a person interested in and ordinarily skilled in the relevant subject matter could locate it through the exercise of ordinary diligence.

13. While I understand that the determination of public accessibility under

the foregoing standard rests on a case-by-case analysis of the facts particular to an individual publication, I also understand that a printed publication is rendered "publicly accessible" if it is cataloged and indexed by a library such that a person interested in the relevant subject matter could locate it (*i.e.*, I understand that cataloging and indexing by a library is sufficient, though there are other ways that a printed publication may qualify as publicly accessible). One manner of sufficient indexing is indexing according to subject matter category. I understand that the cataloging and indexing by a single library of a single instance of a particular printed publication is sufficient, even if the single library is in a foreign country. I understand that, even if access to a library is restricted, a printed publication that has been cataloged and indexed therein is publicly accessible so long as a presumption is raised that the portion of the public concerned with the relevant subject matter would know of the printed publication. I also understand that the cataloging and indexing of information that would guide a person interested in the relevant subject matter to the printed publication, such as the cataloging and indexing of an abstract for the printed publication, is sufficient to render the printed publication publicly accessible.

14. I understand that routine business practices, such as general library cataloging and indexing practices, can be used to establish an approximate date on which a printed publication became publicly accessible.

B. Persons of ordinary skill in the art.

15. I am told by counsel that the subject matter of this proceeding relates to the monitoring and detection of malicious software (such as pestware) on endpoint computer systems.

16. I have been informed by counsel that a "person of ordinary skill in the art at the time of the invention" ("POSITA") is a hypothetical person who is presumed to be familiar with the relevant field and its literature at the time of the inventions. This hypothetical person is also a person of ordinary creativity, capable of understanding the scientific principles applicable to the pertinent field.

17. I am told by counsel that persons of ordinary skill in this subject matter or art at the time would have at least a Bachelor's degree in Computer Science, Computer Engineering, Electrical Engineering, or an equivalent discipline, and at least two years' worth of experience developing computer networking or network architecture, or a Master's degree in a related field. Or, instead of the education requirements, a POSITA could have four or more years of work experience in computer networking and in the development of client-server systems. A POSITA would have been familiar with at least the fields of computer networking, operating-system design, and distributed systems. I have been further informed by counsel that a person of ordinary skill in the art would have been

familiar with and able to understand the information known in the art relating to these fields, including the publication discussed in this declaration.

18. It is my opinion that such a person would have been engaged in research, learning, study, and practice in the field, and formal instruction so that bibliographic resources relevant to his or her research would be familiar. By April 20, 2006, such a person would have had access to a vast array of long-established print resources in telecommunications as well as to a rich set of online resources providing indexing information, abstracts, and full text services.

IV. LIBRARY PROFESSIONAL PRACTICES

19. In preparing this declaration, I used authoritative databases, such as the OCLC bibliographic database, the Library of Congress Online Catalog, and the Library of Congress Subject Authorities, to confirm citation details of the various publications discussed. Unless I note otherwise below in reference to a specific serial publication, it is my expert opinion that this standard protocol was followed for the serial publication discussed below.

20. *Indexing*. A researcher may discover material relevant to his or her topic in a variety of ways. One common means of discovery is to search for relevant information in an index of periodicals and other publications. Having found relevant material, the researcher will then normally obtain it online, look for it in libraries, or purchase it from the publisher, a bookstore, a document delivery

service, or other provider. Sometimes, the date of a document's public accessibility will involve both indexing and library date information. However, date information for indexing entries is often unavailable. This is especially true for online indices.

21. Indexing services use a wide variety of controlled vocabularies to provide subject access and other means of discovering the content of documents. The Library of Congress Subject Authorities includes standard forms of terms and cross references that are included in bibliographic records. Subject headings are terms that an individual seeking a document regardless of format can enter in the search bar of the online catalog. Subjects also connect an authenticated term (one included in the Library of Congress subject headings list) with related, broader, and narrower terms. The formats in which these access terms are presented vary from service to service.

22. Online indexing services commonly provide bibliographic information, abstracts, and full-text copies of the indexed publications, along with a list of the documents cited in the indexed publication. These services also often provide lists of publications that cite a given document. A citation of a document is evidence that the document was publicly available and in use by researchers no later than the publication date of the citing document. Prominent indexing services include *Scopus,* the *IEEE Xplore* database, the *ACM Digital Library, Google Scholar,* and the *Internet Archive*.

V. LIBRARY CATALOGING PRACTICES

23. I am fully familiar with the library cataloging standard known as the MARC standard, which is an industry-wide standard method of storing and organizing library catalog information.[1] MARC was first developed in the 1960s by the Library of Congress. A MARC-compatible library is one that has a catalog consisting of individual MARC records for each of its items. Today, MARC is the primary communications protocol for the transfer and storage of bibliographic metadata in libraries.[2]

24. Since at least the early 1970s and continuing to the present day,

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[1] The full text of the standard is available from the Library of Congress at http://www.loc.gov/marc/bibliographic/ (last visited March 2, 2023).

[2] Almost every major library in the world is MARC-compatible. *See, e.g.*, *MARC Frequently Asked Questions (FAQ)*, Library of Congress, https://www.loc.gov/marc/faq.html (last visited March 2, 2023) ("MARC is the acronym for Machine-Readable Cataloging. It defines a data format that emerged from a Library of Congress-led initiative that began nearly fifty years ago. It provides the mechanism by which computers exchange, use, and interpret bibliographic information, and its data elements make up the foundation of most library catalogs used today."). MARC is the ANSI/NISO Z39.2-1994 (reaffirmed 2016) standard for Information Interchange Format.

MARC has been the primary communications protocol for the transfer and storage of bibliographic metadata in libraries.[3] As explained by the Library of Congress:

> You could devise your own method of organizing the bibliographic information, but you would be isolating your library, limiting its options, and creating much more work for yourself. Using the MARC standard prevents duplication of work and allows libraries to better share bibliographic resources. Choosing to use MARC enables libraries to acquire cataloging data that is predictable and reliable. If a library were to develop a "home-grown" system that did not use MARC records, it would not be taking advantage of an industry-wide standard whose primary purpose is to foster communication of information.
>
> Using the MARC standard also enables libraries to make use of commercially available library automation systems to manage library operations. Many systems are available for libraries of all sizes and are designed to work with the MARC format. Systems are maintained and improved by the vendor so that libraries can benefit from the latest advances in computer technology. The MARC standard also allows libraries to replace one system with another with the assurance that their data will still be compatible. The document titled *Why Is a MARC Record Necessary?* is available from the Library of Congress. [4]

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[3] A complete history of the development of MARC can be found in *MARC: Its History and Implications* by Henrietta D. Avram (Washington, DC: Library of Congress, 1975) and available online from the Hathi Trust (https://babel.hathitrust.org/cgi/pt?id=mdp.39015034388556;view=1up;seq=1; last visited March 2, 2023).

[4] http://www.loc.gov/marc/umb/um01to06.html#part2

25. Thus, almost every major library in the world is MARC compatible. *See, e.g.*, *MARC Frequently Asked Questions (FAQ)*, LIBRARY OF CONGRESS.[5] ("MARC is the acronym for Machine-Readable Cataloging. It defines a data format that emerged from a Library of Congress-led initiative that began fifty years ago. It provides the mechanism by which computers exchange, use, and interpret bibliographic information, and its data elements make up the foundation of most library catalogs used today."). MARC is the ANSI/NISO Z39.2-1994 standard (reaffirmed in 2016) for Information Interchange Format. The full text of the standard is available from the Library of Congress.[6]

26. A MARC record comprises several fields, each of which contains specific data about the work. Each field is identified by a standardized, unique, three-digit code corresponding to the type of data that follow. For example, a work's title is recorded in Field 245; the primary author of the work is transcribed in Field 100; an item's International Standard Book Number ("ISBN") consisting of ten or thirteen digits is transcribed in Field 020; an item's International Standard Serial Number ("ISSN") is transcribed in Field 022; the Library of Congress classification notation is recorded in Field 050; and the publication date is recorded in Field 260 under the subfield "c." If a work is a periodical, then its publication

[5] https://www.loc.gov/marc/faq.html

[6] http://www.loc.gov/marc/bibliographic/

frequency is recorded in Field 310, and the publication dates (e.g., the first and last publication) are recorded in Field 362, which is also referred to as the enumeration/chronology field.[7]

27. The library that created the record is recorded in Field 040 in subfield "a" with a unique library code. When viewing the MARC record online via Online Computer Library Center's ("OCLC") bibliographic database, hovering over this code with the mouse reveals the full name of the library. I used this method of "mousing over" the library codes in the OCLC database to identify the originating library for the MARC records discussed in this declaration. Where this "mouse over" option was not available, I consulted the Directory of OCLC Libraries to identify the institution that created the MARC record.[8]

28. MARC records also include several fields that include subject matter classification information. An overview of MARC record fields is available through the Library of Congress.[9] For example, 6XX fields are termed "Subject Access Fields."[10] Among these, for example, is the 650 field; this is the "Subject

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[7] http://www.loc.gov/marc/bibliographic/bd3xx.html

[8] https://www.oclc.org/en/contacts/libraries.html

[9] http://www.loc.gov/marc/bibliographic/

[10] http://www.loc.gov/marc/bibliographic/bd6xx.html

Added Entry – Topical Term" field.[11] The 650 field is a "[s]ubject added entry in which the entry element is a topical term." These entries "are assigned to a bibliographic record to provide access according to generally accepted thesaurus-building rules (e.g., *Library of Congress Subject Headings* (LCSH), *Medical Subject Headings* (MeSH))." *Id.* Further, MARC records include call numbers, which themselves include a classification number. For example, the 050 field is the "Library of Congress Call Number."[12] A defined portion of the Library of Congress Call (LCC) Number is the classification number, and "source of the classification number is *Library of Congress Classification* and the *LC Classification-Additions and Changes*." Thus, included in the 050 field is a subject matter classification. Further, the 082 field is the "Dewey Decimal Call Number."[13] A defined portion of the Dewey Decimal Call (DDC) Number is the classification number, and "source of the classification number is the *Dewey Decimal Classification and Relative Index*." Thus, included in the 082 field is a subject matter classification. Each item in a library has a single classification number. A library selects a classification scheme (*e.g.*, the Library of Congress classification scheme just described or a similar scheme such as the Dewey Decimal

[11] http://www.loc.gov/marc/bibliographic/bd650.html

[12] http://www.loc.gov/marc/bibliographic/bd050.html

[13] http://www.loc.gov/marc/bibliographic/bd082.html

classification scheme) and uses it consistently. When the Library of Congress assigns the LCC classification number, it appears as part of the 050 field. When the Library of Congress assigns the DDC classification number, it appears as part of the 082 field. If a local library assigns the classification number, it appears in a 090 field. In either scenario, the MARC record includes a classification number that represents a subject matter classification.

29. The OCLC was created "to establish, maintain and operate a computerized library network and to promote the evolution of library use, of libraries themselves, and of librarianship, and to provide processes and products for the benefit of library users and libraries, including such objectives as increasing availability of library resources to individual library patrons and reducing the rate of rise of library per-unit costs, all for the fundamental public purpose of furthering ease of access to and use of the ever-expanding body of worldwide scientific, literary and educational knowledge and information."[14] Among other services, OCLC and its members are responsible for maintaining the WorldCat database (http://www.worldcat.org/), used by independent and institutional libraries throughout the world.

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[14] Third Article, Amended Articles of Incorporation of OCLC Online Computer Library Center, Incorporated (available at https://www.oclc.org/content/dam/oclc/membership/articles-of-incorporation.pdf).

30. OCLC also provides its members online access to MARC records through its OCLC bibliographic database. When an OCLC member institution acquires a work, it creates a MARC record for this work in its computer catalog system in the ordinary course of its business. MARC records created at the Library of Congress are tape loaded into the OCLC database through a subscription to MARC Distribution Services daily or weekly. Once the MARC record is created by a cataloger at an OCLC member institution or is tape loaded from the Library of Congress, the MARC record is then-made available to any other OCLC members online, and therefore made available to the public. Accordingly, once the MARC record is created by a cataloger at an OCLC member institution or is tape loaded from the Library of Congress or another library anywhere in the world, any publication corresponding to the MARC record has been cataloged and indexed according to its subject matter such that a person interested in that subject matter could, with reasonable diligence, locate and access the publication through any library with access to the OCLC bibliographic database or through the Library of Congress.

31. When an OCLC member institution creates a new MARC record, OCLC automatically supplies the date of creation for that record. The date of creation for the MARC record appears in the fixed Field (008), characters 00 through 05. The MARC record creation date reflects the date on which, or shortly

after which, the item was first acquired or cataloged. Initially, Field 005 of the MARC record is automatically populated with the date the MARC record was created in year, month, day format (YYYYMMDD) (some of the newer library catalog systems also include hour, minute, second (HHMMSS)). Thereafter, the library's computer system may automatically update the date in Field 005 every time the library updates the MARC record (*e.g.*, to reflect that an item has been moved to a different shelving location within the library). Field 005 is visible when viewing a MARC record via an appropriate computerized interface, but when a MARC record is printed to hardcopy, no "005" label appears. The initial Field 005 date (*i.e.*, the date the MARC record was created) does appear, however, next to the label "Entered."[15] The date upon which the most recent update to Field 005 occurred also appears, next to the label "Replaced." Thus, when an item's MARC record has been printed to hardcopy—as is the case with the exhibits to this declaration—the date reflected next to the label "Entered" is necessarily on or after the date the library first cataloged and indexed the underlying item.

32. Once one library has cataloged and indexed a publication by creating

[15] Field 005 is visible when viewing a MARC record via an appropriate computerized interface. But when a MARC record is printed directly to hardcopy from the OCLC database, the "005" label is not shown. The date in the 005 field instead appears next to the label "Replaced."

a MARC record for that publication, other libraries that receive the publication do not create additional MARC records—the other libraries instead rely on the original MARC record. They may update or revise the MARC record to ensure accuracy, but they do not replace or duplicate it. This practice does more than save libraries from duplicating labor. It also enhances the accuracy of MARC records. Further, it allows librarians around the world to know that a particular MARC record is authoritative (in contrast, a hypothetical system wherein duplicative records were created would result in confusion as to which record is authoritative).

33. Catalogers can create MARC records for all types of print, online, and digital resources. The date of creation of the MARC record by a cataloger at an OCLC member institution reflects when the underlying item is accessible to the public. Upwards of two-thirds to three-quarters of book sales to libraries come from a jobber or wholesaler for online and print resources. These resellers make it their business to provide books to their customers as fast as possible, often providing turnaround times of only a single day after publication. Libraries purchase a significant portion of the balance of their books directly from publishers themselves, which provide delivery on a similarly expedited schedule. In general, libraries make these purchases throughout the year as the books are published and shelve the books as soon thereafter as possible to make the books available to their patrons. Thus, books are generally available at libraries across the country within

just a few days of publication.

VI. PUBLICATION 1: *A Multiagent Approach to Outbound Intrusion Detection* by Salvador Mandujano Vergara. Exhibit 1001 ("Mandujano")

34. Exhibit 1001 is a copy of the cover, title page, copyright page, contents, list of figures, list of tables, abstract, and the text of the doctoral dissertation titled *A Multiagent Approach to Outbound Intrusion Detection* by Salvador Mandujara Vergara (hereafter "Mandujara") and published in 2004. The dissertation title page shows a date of December 2004. I obtained this dissertation from the Instituto Tecnológico y de Estudios Superiores de Monterrey Library (Monterrey, Nuevo León, Mexico) and made the copies which comprise Exhibit 1001. Specifically, the text is complete; no pages are missing, and the text on each page appears to flow seamlessly from one page to the next; further, there are no visible alterations to the document. Exhibit 1001 was found within the custody of the custodian to whom the author granted permission to make copies and reproductions. Exhibit 1001 is a true and correct copy in a condition that creates no suspicion about its authenticity.

35. A dissertation exhibits the following characteristics: the dissertation is attributed to a single creator or author (in this case Salvador Mandujano Vergara) who affixes a date of creation (in this case December 2004), recognizes a committee of faculty members (in this case Arturo Galván Rodríguez, Ramón Brena Pinero, Jesús Arturo Pérez Díaz, Gerardo Ayala San Martín, and Pascal

Meunier), a list of scholarly references (in this case, 225 references), and publishes the document through the higher education institute conferring the doctoral degree (in this case the Department of Electronics, Computing, Information and Communications at the Instituto Tecnológico y de Estudios Superiores de Monterrey).

36. Attached hereto as Attachment 1a is a true and correct copy of the online catalog record for this dissertation from the digital repository Repositorio Institucional del Tecnológico de Monterrey (RITEC) in the Instituto Tecnológico y de Estudios Superiores de Monterrey Library.[16] The Dublin Core (DC) metadata catalog record indicates that copies of the dissertation are available in print and online. The catalog record also includes a link to the dissertation in RITEC.[17] I personally identified and retrieved the library catalog record which is Attachment 1a.

37. Attached hereto as Attachment 1b is a true and correct copy of the MARC record for the dissertation titled *A Multiagent Approach to Outbound Intrusion Detection* obtained from the OCLC bibliographic database. As can be

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[16] https://eds.s.ebscohost.com/eds/results?vid=0&sid=11755105-6105-46b0-9492-0d3966cd9a11%40redis&bquery=Mandujano%2BVergara%252c%2BSalvador&bdata=JmNsaTA9RlQxJmNsdjA9WSZsYW5nPWVzJnR5cGU9MCZzZWFyY2hNb2RlPVN0YW5kYXJkJnNpdGU9ZWRzLWxpdmUmc2NvcGU9c2l0ZQ%3d%3d

[17] https://repositorio.tec.mx/handle/11285/572223

seen in the "Entered" field in the MARC record for this exhibit, a cataloger at the Instituto Tecnológico y de Estudios Superiores de Monterrey Library created OCLC record number 970596494 on December 9, 2004, as shown in the "Entered" field ("20041209"). The library continues to update and enhance this MARC record to meet current cataloging rules. The most recent enhancement to Attachment 1b occurred on August 31, 2022, as shown in the "Replaced" field ("20220831"). I personally identified and retrieved the MARC record that is Attachment 1b.

38. Attachment 1b further includes an entry in field 050 ("TK5101.59 $b .M35 2004") as described above, this includes a subject matter classification number consistent with the Library of Congress classification system (analogous to the Dewey Decimal classification system). Attachment 1b further includes a Spanish language descriptor term reading "Seguridad de computadores" (*see* Attachment 1c, Library of Congress Spanish subject headings) in the 650_4 field. Thus, as of its cataloging, the publication corresponding to the MARC record attached hereto as Attachment 1b was indexed according to its subject matter by virtue of at least two independently sufficient classifications: the field 050 entry and the field 650 entry. Further, as of December 9, 2004, the MARC record attached hereto as Attachment 1b was accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that added this

book to its collection, which means that the corresponding publication was publicly available on or before that same date through any library with access to the OCLC bibliographic database or through an individual library.

39. Attachment 1b indicates that the book titled *A Multiagent Approach to Outbound Intrusion Detection* as cataloged at the Instituto Tecnológico y de Estudios Superiores de Monterrey Library is currently available from that institution. In view of above, the book titled *A Multiagent Approach to Outbound Intrusion Detection* was publicly available on or shortly before December 9, 2004, because by that date it had been received, cataloged, and indexed in the Instituto Tecnológico y de Estudios Superiores de Monterrey Library and made part of the OCLC bibliographic database. For these reasons, it is my opinion that Exhibit 1001 was published and accessible to the public (and could have been located by a skilled researcher) by December 9, 2004.

VII. PUBLICATION 2: "UCLog: A Unified, Correlated Logging Architecture for Intrusion Detection" by Zhenmin Li, Jed Taylor, Elizabeth Partridge, Yuanyuan Zhou, William Yurcik, Cristina Abad, James J. Barlow, and Jeff Rosendale. Exhibit 1002 ("Li")

40. Exhibit 1002 is a copy of a conference paper published in the *Proceedings of the 12th International Conference on Telecommunication Systems: Modeling and Analysis* found in the digital repository Operating Systems Research

on Energy, Reliability and Autonomy (OPERA)[18] hosted by the Department of Computer Science and Engineering at the University of California – San Diego. The conference paper titled "UCLog: A Unified, Correlated Logging Architecture for Intrusion Detection" by Zhenmin Li, Jed Taylor, Elizabeth Partridge, Yuanyuan Zhou, William Yurcik, Cristina Abad, James J. Barlow, and Jeff Rosendale (hereafter "Li") appears beginning on page 12. The 12th International Conference on Telecommunication Systems: Modeling and Analysis was held on July 22-25, 2004, in Monterey, California. Exhibit 1002 is a true and correct copy of the Li conference paper (pages 12-27). I obtained this copy of the conference paper from the OPERA digital repository.[19] Specifically, the text of the Li conference paper is complete; no pages are missing, and the text on each page appears to flow seamlessly from one page to the next; further, there are no visible alterations to the document. Exhibit 1002 was found within the custody of a digital repository at a higher education institution – a place where, if authentic, a copy of this conference proceedings volume would likely be. Exhibit 1002 is a true and correct copy in a condition that creates no suspicion about authenticity.

41. The Li conference paper is also available in the digital repository

[18] https://opera.ucsd.edu/home

[19] https://drive.google.com/file/d/1YHI-Eq7qW92I6ZTj9EmWmafc8r-ApGBZ/view

ResearchGate,[20, 21,] and [22] the digital repository *Google Scholar*,[23] and the website *CiteSeer*.[24] Each of the digital repository documents indicates a publication date of January 2004.

42. Further evidence of the availability of the Li conference paper is provided by its citation by other researchers. The digital repository *Google Scholar* indicates that the Li conference paper has been cited 31 times.[25] The Li conference

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[20] https://www.researchgate.net/profile/Jeff-Rosendale

[21] https://www.researchgate.net/publication/228746403_UCLog_A_unified_correlated_logging_architecture_for_intrusion_detection

[22] https://www.researchgate.net/profile/Zhenmin-Li-3/research

[23] https://scholar.google.com/citations?view_op=view_citation&hl=en&user=rWl0U0oAAAAJ&cstart=20&pagesize=80&citation_for_view=rWl0U0oAAAAJ:O3NaXMp0MMsC

[24] https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=718ebaaa71f8568cfa68979088f6c467a4ff95a4

[25] https://scholar.google.com/scholar?hl=en&as_sdt=0%2C6&q=Uclog%3A+A+unified%2C+correlated+logging+architecture+for+intrusion+detection&btnG=

paper is listed among the works of Jeff Rosendale[26] and lists a January 2004 date. Co-author William Yurcik cited the Li conference paper (reference 7) in a research paper titled "UCLog+: A Security Data Management System for Correlating Alerts, Incidents, and Raw Data from Remote Logs" dated 2006, which can be downloaded from *ResearchGate*.[27] The Yurcik paper is also available through the digital repository *Semantic Scholar*[28] and lists a July 25, 2006, publication date.

43. In view of above, the Li conference paper was publicly available on or shortly before July 25, 2004, because by that date it had been written and presented at the 12th International Conference on Telecommunication Systems: Modeling and Analysis. For these reasons, it is my opinion that Exhibit 1002 was published and accessible to the public (and could have been located by a skilled researcher)

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26 https://www.researchgate.net/publication/228746403_UCLog_A_unified_correlated_logging_architecture_for_intrusion_detection

27 https://www.researchgate.net/publication/1959693_UCLog_A_Security_Data_Management_System_for_Correlating_Alerts_Incidents_and_Raw_Data_From_Remote_Logs?amp%3BenrichSource=Y292ZXJQYWdlOzE5NTk2OTM7QVM6OTg4MDY2NzQ3NTU1OTJAMTQwMDU2ODc1Njc2Mg%3D%3D&amp%3Bel=1_x_3&amp%3B_esc=publicationCoverPdf

28 https://www.semanticscholar.org/paper/UCLog%2B-%3A-A-Security-Data-Management-System-for-and-Yurcik-Abad/138966a95a259a85a1f2369087e47c1ae9f9f720

by January 31, 2005.

VIII. SUMMARY OF OPINIONS

44. In view of the foregoing, it is my opinion that the publications described above were publicly available no later than the corresponding date listed in the table below:

Exhibit	Publication	Publicly Available No Later Than
1001	Mandujano Vergara, Salvador. *A multiagent approach to outbound intrusion detection*. Dissertation. Graduate Program in Electronics, Computing, Information and Communications. Monterrey, Nuevo León, Mexico: Instituto Tecnológico y de Estudios Superiores de Monterrey, 2004.	December 9, 2004
1002	Li, Zhenmin, James "Jed" R. Taylor, Elizabeth Partridge, Yuanyuan Zhou, William Yurcik, Cristina Abad, James J. Barlow, and Jeff Rosendale. "UCLog: A Unified, Correlated Logging Architecture for Intrusion Detection." *International Conference on Telecommunication Systems (ICTSM), 2004.* Telecommunication Systems – TELSYS, 2004 (pp. 12–27).	January 31, 2005

45. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and 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.

Dated: March 27, 2023

Respectfully submitted,

Sylvia D. Hall-Ellis, Ph.D.