UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX, INC.
Petitioner,

v.

AVAGO TECHNOLOGIES INTERNATIONAL SALES PTE. LIMITED,,
Patent Owner

IPR2020-01582

U.S. Patent No. 8,572,138

DECLARATION OF SYLVIA HALL-ELLIS, Ph.D.

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

I. INTRODUCTION

1. My name is Sylvia D. Hall-Ellis. I have been retained as an expert by Sheppard Mullin LLP on behalf of Netflix, Incorporated (hereafter collectively "Netflix").

2. I have written this report at the request of Sheppard Mullin LLP to provide my expert opinion regarding the public availability of various publications. My report sets forth my opinions in detail and provides the basis for my opinions regarding the public availability of these publications.

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 report.

4. As of the preparation and signing of this declaration, libraries across the nation are closed pursuant to an order of the federal and state governments due to the COVID-19 virus. However, were the libraries open, I would expect to be able to obtain paper copies of the documents in this declaration. Additionally, it is my typical practice to obtain a paper copy of each publication to further confirm my opinions that the documents were available prior to the alleged availability date. I reserve the right to supplement my declaration when the libraries reopen to provide such information.

5. I am being compensated for my time spent working on this matter at my normal consulting rate of $300 per hour, plus reimbursement for any additional reasonable expenses. My compensation is not in any way tied to the content of this report, the substance of my opinions, or the outcome of this litigation. I have no other interests in this proceeding or with any of the parties.

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

II. QUALIFICATIONS

7. I am currently an Adjunct Professor in the School of Information at San José State University. 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 forty-five 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.

8. 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 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, the REFORMA National Board of Directors, and as a member of the Editorial Board for the ALCTS premier cataloging journal, *Library Resources and Technical Services*. Currently I serve as a Co-Chair for the Library Research Round Table of the American Library Association.

9. 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.

10. I have been deposed twelve times: (1) *Symantec Corp. vs. 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. vs. 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 vs. 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 vs. 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 vs. T-Mobile USA, Inc. and T-Mobile US, Inc.*, C.A. No. 13-1632 (LPS); *Intellectual Ventures II LLC vs. T-Mobile USA, Inc. and T-Mobile US, Inc.*, C.A. No. 13-1633 (LPS); *Intellectual Ventures I LLC, vs. 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 vs. 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, vs. United States Cellular Corporation*, C.A. No. 13-1636 (LPS); *Intellectual Ventures I LLC vs. United States Cellular Corporation*, C.A. No. 13-1637 (LPS); *Intellectual Ventures II LLC vs. AT&T Mobility LLC, AT&T Mobility II LLC, New Cingular Wireless Services, Inc.*, C.A. No. 15-799 (LPS); *Intellectual Ventures I LLC vs. 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. vs. 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 vs. Vizio, Inc.*, 8:16-cv-00545; on behalf of Vizio, Inc., October 12, 2018; (7) *Intellectual Ventures I LLC, vs. 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. vs. 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. vs. ESET, LLC and ESET SPOL. S.R.O.*, 3:17-cv-00183-CAB-BGS, on behalf of ESET, January 15, 2019; (10) *Finjan, Inc. vs. 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. vs. Blackberry Limited* 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; and, (12) *3Shape A/S and 3Shape Inc. vs. 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.

11. My full curriculum vitae is attached hereto as **Appendix A**.

III. PRELIMINARIES

A. Scope of Declaration and Legal Standards

12. 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 documents 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 reasonable diligence, could have located the documents before the dates discussed below with respect to the specific documents.

13. 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.

14. 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.

15. 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. I also understand that the indicia on the face of a reference, such as printed dates and stamps, are considered as part of the totality of the evidence.

B. Persons of Ordinary Skill in the Art

16. I am informed by counsel that the subject matter of this proceeding generally relates to computing environments and distributed computing systems.

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

understanding the scientific principles applicable to the pertinent field.

18. I am informed by counsel that a person of ordinary skill in this subject matter or art would typically be someone who possessed at least a bachelor's degree in electrical engineering, computer science, or a similar field with at least two years of experience in distributed computing systems or a person with a master's degree in electrical engineering, computer science, or a similar field with a specialization in distributed computing 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 publications discussed in this declaration.

C. Use of Authoritative Databases

19. In preparing this report, I used authoritative databases, such as the OCLC bibliographic database, the Library of Congress Online Catalog, *IEEE Xplore, ACM Digital Library, ResearchGate, Semantic Scholar, Google Scholar,* and the U.S. Copyright Office Online Catalog, to confirm citation details of the various publications discussed.

20. *U. S. Copyright Office*. Created by Congress in 1897, the Copyright Office is responsible for administering a complex and dynamic set of laws, which include registration, the recordation of title and licenses, a number of statutory licensing provisions, and other aspects of the *1976 Copyright Act* and the *1998*

Digital Millennium Copyright Act. The public catalog in the Copyright Office includes information filed since 1978. Individuals can search by title, personal or corporate name, key word, registration number, and document number. Works filed before 1978 can be located through the Copyright Public Records Reading Room.[1] A researcher can find the date on which an item was published and deposited for copyright.

21. 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 periodical 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.

22. Indexing services use a wide variety of controlled vocabularies to provide subject access and other means of discovering the content of documents. The formats in which these access terms are presented vary from service to service.

23. Online indexing services commonly provide bibliographic information, abstracts, and full-text copies of the indexed publications, along with a list of the

[1] https://www.copyright.gov/circs/circ23.pdf.

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.

24. *IEEE Xplore.*[2] This scholarly research database includes indexes, abstracts, and full-text for articles and papers on computer science, electrical engineering, and electronics. The database mainly covers material from the Institute of Electrical and Electronics Engineers (IEEE) and the Institution of Engineering and Technology. The IEEE *Xplore* digital library provides Web access to more than 5.1-million full-text documents from some of the world's most highly cited publications. The content comprises over 180 journals, over 1,400 conference proceedings, more than 3,800 technical standards, over 1,800 eBooks and over 400 educational courses. Approximately 20,000 new documents are added to *IEEE Xplore* each month. Abstracts are free to access, but access to full text requires a subscription or institutional login.

25. *ACM Digital Library.*[3] This index is produced by the Association for Computing Machinery, the world's largest scientific and educational computing society. The *ACM Digital Library* contains the full text of all ACM publications,

[2] https://ieeexplore.ieee.org/Xplore/home.jsp
[3] https://dl.acm.org/

hosted full-text publications from selected publishers, and the *ACM Guide to Computing Literature*—a comprehensive bibliography of computing literature beginning in the 1950s with more than a million entries. All metadata in the database are freely available on the Web, including abstracts, linked references, citing work, and usage statistics. Full-text articles are available with subscription.

26. *ResearchGate.*[4] A social networking site for scientists and researchers to share papers, ask and answer questions, and find collaborators, ResearchGate is the largest academic social network in terms of active users, although other services have more registered users, and a 2015–2016 survey suggests that almost as many academics have *Google Scholar* profiles. Features available to *ResearchGate* members include following a research interest and the work of other individual participants, a blogging feature for users to write short reviews on peer-reviewed articles, private chat rooms for sharing data, editing documents, or discussing confidential topics, and a research-focused job board. *ResearchGate* indexes self-published information on user profiles and suggests members to connect with others who have similar interests. Member questions are fielded to others who have identified relevant expertise on their profiles.

[4] www.researchgate.net

27. *Semantic Scholar*.[5] A project developed at the Allen Institute for Artificial Intelligence and publicly released in November 2015, *Semantic Scholar* is designed to be an AI-backed search engine for scientific journal articles which uses a combination of machine learning, natural language processing, and machine vision to add a layer of semantic analysis to the traditional methods of citation analysis, and to extract relevant figures, entities, and venues from papers. *Semantic Scholar* is designed to highlight important, influential papers, and to identify the connections between them. As of January 2018, following a 2017 project that added biomedical papers and topic summaries, the *Semantic Scholar* corpus included more than 40 million papers from computer science and biomedicine. As of August 2019, the number of included papers had grown to more than 173 million after the addition of the Microsoft Academic Graph records, already used by Lens.org.

28. *Google Scholar*.[6] A freely accessible web search engine, *Google Scholar* indexes the full text or metadata of scholarly literature across an array of publishing formats and disciplines. Released in beta in November 2004, the *Google Scholar* includes a significant number of peer-reviewed online academic journals, books, conference papers, theses and dissertations, preprints, abstracts, technical reports, and other scholarly literature. While Google does not publish the size of

[5] www.semanticscholar.org
[6] https://scholar.google.com

Google Scholar's database, scientometric researchers estimated it to contain roughly 389 million documents including articles, citations and patents making it the world's largest academic search engine in January 2018.

IV. LIBRARY CATALOGING PRACTICES

A. MARC Records

29. 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. MARC was first developed in the 1960's by the Library of Congress. A MARC-compatible library is one that has a catalog consisting of individual MARC records for works made available at that library.

30. Since at least the early 1970s and continuing to the present day, MARC has been the primary communications protocol for the transfer and storage of bibliographic metadata in libraries.[7] 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

[7] 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 July 15, 2020).

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.

Why Is a MARC Record Necessary? LIBRARY OF CONGRESS, http://www.loc.gov/marc/umb/um01to06.html#part2 (last visited July 15, 2020).

31. Thus, 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 July 15, 2020) ("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 standard (reaffirmed in 2016) for Information Interchange Format. The full text of the standard is available from the Library of Congress at http://www.loc.gov/marc/bibliographic/ (last visited July 15, 2020).

32. A MARC bibliographic 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. *See, e.g.*, http://www.loc.gov/marc/umb/um07to10.html (last visited July 15, 2020); http://www.loc.gov/marc/bibliographic/ (last visited July 15, 2020). For example, a work's title is recorded in field 245, the primary author of the work is recorded in field 100, a work's International Standard Book Number ("ISBN") is recorded in field 020, a work's International Standard Serial Number ("ISSN") is recorded in field 022, and the publication date is recorded in field 260 under the subfield "c." *Id.*[8] If a work is a periodical, then its publication 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. *See* http://www.loc.gov/marc/bibliographic/bd3xx.html (last visited July 15, 2020).[9]

[8] In some MARC records, field 264 is used rather than field 260 to record publication information. *See* http://www.loc.gov/marc/bibliographic/bd264.html (last visited July 15, 2020) ("Information in field 264 is similar to information in field 260 (Publication, Distribution, etc. (Imprint)). Field 264 is useful for cases where the content standard or institutional policies make a distinction between functions").

[9] 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 in order 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.

33. The library that initially created the MARC record is reflected in field 040 in subfield "a" with that library's unique library code. *See, e.g.*, http://www.loc.gov/marc/umb/um07to10.html (last visited July 15, 2020); http://www.loc.gov/marc/bibliographic/ (last visited July 15, 2020). Once a MARC record for a particular work is originally created by one library, other libraries can use that original MARC record to then create their own MARC records for their own copies of the same work. These other libraries may modify or add to the original MARC record as necessary to reflect data specific to their own copies of the work. However, the library that created the original MARC record would still be reflected in these modified MARC records (corresponding to other copies of the same work at other libraries) in field 040, subfield "a". The modifying library (or libraries) is reflected in field 040, subfield "d". *See* http://www.loc.gov/marc/bibliographic/bd040.html (last visited July 15, 2020).

34. I consulted the Directory of OCLC Libraries[10] in order to identify the institution that created or modified the MARC record. Moreover, when viewing the MARC record online via OCLC bibliographic database, which I discuss further below, hovering over a library code in field 040 with the mouse reveals the full name of the library. I also used this method of "mousing over" the library codes in the OCLC database to identify the originating and modifying libraries for the MARC

[10] http://www.oclc.org/contacts/libraries.en.html.

records discussed in this report.

35. MARC records also include one or more fields that show information regarding subject matter classification. For example, 6XX fields are termed "Subject Access Fields." *See* http://www.loc.gov/marc/bibliographic/bd6xx.html (last visited July 15, 2020). Among these, for example, is the 650 field; this is the "Subject Added Entry – Topical Term" field. *See* http://www.loc.gov/marc/bibliographic/bd650.html (last visited July 15, 2020). The 650 field is a "[s]ubject added entry in which the entry element is a topical term." *Id.* 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.*

36. Further, MARC records can include call numbers, which themselves contain a classification number. For example, a MARC record may identify a 050 field, which is the "Library of Congress Call Number." *See* http://www.loc.gov/marc/bibliographic/bd050.html (last visited July 15, 2020). A defined portion of the Library of Congress Call Number is the classification number, and "source of the classification number is *Library of Congress Classification* and the *LC Classification-Additions and Changes*." *Id.* Thus, the 050 field may be used to show information regarding subject matter classification.

37. 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 Classification scheme or the National Library of Medicine Classification scheme) and uses it consistently. When the Library of Congress assigns the classification number, it appears as part of the 050 field, as discussed above. For MARC records created by libraries other than the Library of Congress (e.g., a university library or a local public library), the classification number may appear in a 09X (e.g., 090) field. *See* http://www.loc.gov/marc/bibliographic/bd09x.html (last visited July 15, 2020).

38. When a MARC-compatible library acquires a work, it creates a MARC record for its copy of the work in its computer catalog system in the ordinary course of its business. This MARC record (for the copy of a work available at the particular library) may be later accessed by researchers in a number of ways. For example, many libraries, including the Library of Congress, make their MARC records available through their website. As an example, the MARC record for the copy of *The Unlikely Spy*, by Daniel Silva,[11] available at the Library of Congress can be viewed through the Library of Congress website, at https://catalog.loc.gov/vwebv/staffView?searchId=20265&recPointer=1&recCount=25&bibId=2579985 (last visited July 15, 2020). One could, of course, always

[11] *The Unlikely Spy* is a 1996 novel written by Daniel Silva, who happens to be one of my favorite authors.

physically visit the library at which the work is available, and request to see that library's MARC record for the work. Moreover, members of OCLC can access the MARC records of other member institutions through its online bibliographic database, as I explain further below.

B. OCLC

39. 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."[12] Among other services, OCLC and its members are responsible for building and maintaining the WorldCat database[13] (www.worldcat.org) in January 1998, used by independent and institutional libraries throughout the world. All libraries that are members of OCLC are MARC-compatible. *See, e.g.*, https://help.oclc.org/Metadata_Services/OCLC-

[12] 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; last visited July 15, 2020).
[13] http://www.worldcat.org/.

MARC_records/About_OCLC-MARC_records (last visited July 15, 2020) ("OCLC-MARC records describes records produced since November 1993."); https://www.oclc.org/support/services/worldcat/documentation/cataloging/electronicresources.en.html (last visited July 15, 2020) ("Like the two superseded OCLC documents, this revised set of guidelines is intended to assist catalogers in creating records for electronic resources in WorldCat, the OCLC Online Union Catalog. These guidelines pertain to OCLC-MARC tagging (that is, content designation). Cataloging rules and manuals (such as AACR2) govern the content of records. You should implement these guidelines immediately.").

40. When an OCLC member institution acquires a publication, like the other MARC-compatible libraries discussed above, it creates a MARC record for this publication 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 library or is tape-loaded from the Library of Congress, the MARC record is then made available to any other OCLC members online, and thereby made available to the public. Accordingly, once the MARC record is created by a cataloger at an OCLC member library or is loaded from the Library of Congress, 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.

41. When other MARC-compatible libraries acquire their own copies of the same work, as mentioned, they create MARC records in their own computer catalog systems for their copies in the ordinary course of business.[14] They may use a MARC record previously created for that work (by another MARC-compatible library) to create their own MARC records for their own copies of that same work.[15] If, when creating a MARC record to represent its own copy of the work, the cataloger at the participating library uses the master MARC record in its original form, the reenter data in the 008 field cannot be changed; therefore, the date in the 008 field will continue to reflect the date the MARC record was initially created by the originating library. On the other hand, if the participating library modifies the descriptive bibliographic data within the master MARC record for use in the local online catalog, the cataloger may enter into the 008 field of its own MARC record the date on which the local MARC record was created.[16] But the library that created the

[14] Initial contributions to the OCLC bibliographic database for a work are called "master records."

[15] When a local library uses a master record in OCLC and produces (or downloads) it to the in-house system, the three-character symbol for the subsequent library is added to the holdings for the work.

[16] This practice is not required by, but is nevertheless consistent with, the MARC standard. Many MARC records exist today whose 008 fields indicate when the

original MARC record would still be reflected in the master MARC record and in f subfield "a" of the 040 field. Thus, the work identified by any MARC record possessed by any MARC-compatible library would have been accessible to the public at least as of the date shown in the 008 field, or shortly thereafter, either from the library that possesses the MARC record itself, or from the originating library indicated in field 040, subfield "a". As discussed, a MARC-compatible library in the ordinary course of its business creates a MARC record in its own catalog system for a work when it acquires a copy of that work.

42. Moreover, when a MARC record is created by a library for its own copy of a work, **field 005** is automatically populated with the date that MARC record was created in year, month, day format (YYYYMMDD). *See* http://www.loc.gov/marc/bibliographic/bd005.html (last visited July 15, 2020).[17] 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). *Id.*[18] Thus, the work

---

first original MARC record for a work was created, rather than when a derivative record was created based on the original MARC record by a subsequently-acquiring library for its own computer catalog system.

[17] Some of the newer library catalog systems also include hour, minute, second (HHMMSS).

[18] 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."

identified by any MARC record possessed by any MARC-compatible library would have been accessible to the public at least as of the date shown in the 005 field, or shortly thereafter, from the library that possesses the MARC record itself. As noted, because the 005 field may be updated each time the library updates its MARC record, the work identified by the MARC record may, in fact, have been accessible to the public from that library much earlier than the date indicated in the 005 field.

43. Based on my personal experience as a professional librarian using the MARC and OCLC resources, it has been my experience that both of these resources were continuously operational and available since at least 1992. Indeed, in the course of my work, I have regularly used both of these resources over the past 30+ years, and I have consistently found the information contained within these resources to be complete and reliable. I have never found the date of accessibility as indicated in fields 008, 005, or 955 to be incorrect. And in only a minute number of cases have I found any errors at all in these records – none of which affected my ability to render an accurate opinion as to accessibility, indexing, or subject headings.

V. PUBLICATIONS IN THIS PROCEEDING

A. Publication 1 – "Application Performance Management in Virtualized Server Environments," by Gunjan Khanna, Kirk Beaty, Gautam Kar, and Andrzej Kochut (Exhibit 1008) ("Khanna")

44. Exhibit 1008 is a true and correct copy of the conference paper "Application Performance Management in Virtualized Server Environments," by Gunjan Khanna, Kirk Beaty, Gautam Kar, and Andrzej Kochut (hereafter "Khanna"). This conference paper was published online in the *Proceedings [of the] 2006 IEEE/IFIP Network Operations and Management Symposium* on pages 373 to 381. The 2006 IEEE/IFIP Network Operations and Management Symposium (NOMS 2006) was held April 3-7, 2006, in Vancouver, British Columbia, Canada.[19] Exhibit 1008 is a true and correct copy of the conference paper published in the proceedings book. The Khanna conference paper is available digitally in the *IEEE Xplore* database[20] and *Semantic Scholar*.[21] 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. I was able

[19] http://noms2006.ieee-noms.org/
[20] https://ieeexplore.ieee.org/document/1687567/authors#authors
[21] https://www.semanticscholar.org/paper/Application-Performance-Management-in-Virtualized-Khanna-Beaty/468c9ed488f1a0271de916a52ba1b40a5941d04f

to find the conference paper within the custody of a library – a place where an authentic copy of this document would likely be. Exhibit 1008 is a true and correct copy in a condition that creates no suspicion about its authenticity.

45. Attached hereto as Attachment 1a is a true and correct copy of the MARC record for the *Proceedings [of the] 2006 IEEE/IFIP Network Operations and Management Symposium* obtained from the OCLC bibliographic database. Attachment 1a indicates that a cataloger at the Verbundzentrale Des Gemeinsamen Bibliotheksverbundes (Göttingen, Germany) (as evidenced by library code GBVCP in field 040) created OCLC record number 836655403 on November 15, 2006, as shown in the "Entered" field ("20061115"). The library continues to update this MARC record and enhanced the MARC record to meet current cataloging rules. The most recent enhancement to Attachment 1a occurred on October 13, 2018, as shown in the "Replaced" field ("20131013"). I personally identified and retrieved the MARC record that is Attachment 1a.

46. As of November 15, 2006, the MARC record attached hereto as Attachment 1a was accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that purchased this six-volume set, 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.

47. Attachment 1a indicates that the *Proceedings [of the] 2006 IEEE/IFIP Network Operations and Management Symposium* as cataloged at the Verbundzentrale Des Gemeinsamen Bibliotheksverbundes is currently available online from 37 libraries (as shown in "37 other holdings"). In view of above, the *Proceedings [of the] 2006 IEEE/IFIP Network Operations and Management Symposium* was publicly available on or shortly after November 15, 2006, because by that date it had been received, cataloged, and indexed at the Verbundzentrale Des Gemeinsamen Bibliotheksverbundes and made part of the OCLC bibliographic database. For these reasons, it is my opinion that Exhibit 1008 was published and accessible to the public on or shortly after November 15, 2006.

48. Not only was Exhibit 1008 accessible and available to others in the field as of April 2006, researchers actually obtained and cited this conference paper in other works, which is still further confirmation of its availability and accessibility. For example, *Google Scholar* indicates that this conference paper has been cited 379 times (see Attachment 1b).

B. Publication 2 – "Dynamic Provisioning of Multi-tier Internet Applications," by Bhuvan Urgaonkar, Prashant Shenoy, Abhishek Chandra, and Pawan Goyal (Exhibit 1009) ("Urgaonkar")

49. Exhibit 1009 is a true and correct copy of the conference paper

"Dynamic Provisioning of Multi-tier Internet Applications," by Bhuvan Urgaonkar, Prashant Shenoy, Abhishek Chandra, and Pawan Goyal (hereafter "Urgaonkar"). This conference paper was published online in the *Proceedings of the Second International Conference on Automatic Computing* on pages 217 to 228. The Second International Conference on Automatic Computing (ICAC '05) was held June 13-16, 2005, in Seattle, Washington.[22] Exhibit 1009 is a true and correct copy of the conference paper published in the proceedings book. The Urgaonkar conference paper is available digitally in the *IEEE Xplore* database[23] and the *ACM Digital Library*.[24] 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. I was able to find the conference paper within the custody of a library – a place where an authentic copy of this document would likely be. Exhibit 1009 is a true and correct copy in a condition that creates no suspicion about its authenticity.

50. Attached hereto as Attachment 2a is a true and correct copy of the MARC record for the *Proceedings of the Second International Conference on Automatic Computing* obtained from the OCLC bibliographic database. Attachment 2a indicates that a cataloger at the University of Arizona Libraries (Tucson, Arizona)

[22] http://vldbarc.org/dblp/db/conf/icac/icac2005.html
[23] https://ieeexplore.ieee.org/document/1498066
[24] https://dl.acm.org/doi/10.1109/ICAC.2005.27

(as evidenced by library code AZU in field 040) created OCLC record number 61437273 on September 6, 2005, as shown in the "Entered" field ("20050906"). The library continues to update this MARC record and enhanced the MARC record to meet current cataloging rules. The most recent enhancement to Attachment 2a occurred on August 4, 2020, as shown in the "Replaced" field ("20200804"). I personally identified and retrieved the MARC record that is Attachment 2a.

51. Attachment 2a includes an entry in field 050 ("QA76.9.A97 $b I57 2005")—as described above, a subject matter classification number consistent with the Library of Congress classification system (analogous to the Dewey Decimal classification system) and an entry in field 082 ("004"), a subject matter consistent with the Dewey Decimal classification system. Attachment 2a further includes two English language descriptor terms reading "Autonomic computing $v Congresses" (see Attachment 2b, Library of Congress subject heading sh2004000410 and Attachment 2c, Library of Congress subject heading sh85031115) and "Middleware $v Congresses" (see Attachment 2d, Library of Congress subject heading sh95004140 and Attachment 2c, Library of Congress subject heading sh85031115) in the 650 fields. Thus, as of its cataloging, the publication corresponding to the MARC record attached hereto as Attachment 2a was indexed according to its subject matter by virtue of at least three independently sufficient classifications: the field 050 entry, the field 082 entry, and the field 650 entries.

52. As of September 6, 2005, the MARC record attached hereto as Attachment 2a was accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that purchased this six-volume set, 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.

53. Attachment 2a indicates that the *Proceedings of the Second International Conference on Automatic Computing* as cataloged at the University of Arizona Libraries is currently available online from 218 libraries (as shown in "218 other holdings"). In view of above, the *Proceedings of the Second International Conference on Automatic Computing* was publicly available on or shortly after September 6, 2005, because by that date it had been received, cataloged, and indexed at the University of Arizona Libraries and made part of the OCLC bibliographic database. For these reasons, it is my opinion that Exhibit 1009 was published and accessible to the public on or shortly after September 6, 2005.

54. Not only was Exhibit 1009 accessible and available to others in the field as of June 2005, researchers actually obtained and cited this conference paper in other works, which is still further confirmation of its availability and accessibility. For example, *Google Scholar* indicates that this conference paper has been cited 427 times (see Attachment 2e).

C. Publication 3 – *Artificial Intelligence - A Modern Approach*, 2nd edition, by Stuart J. Russell and Peter Norvig (Exhibit 1010) ("Russell")

55. Exhibit 1010 is a book, *Artificial Intelligence - A Modern Approach*, 2nd edition, by Stuart J. Russell and Peter Norvig and issued by Prentice-Hall/Pearson Education in 2003. Exhibit 1010 is a true and correct copy of the title page, title page verso, "about the authors," summary of contents, contents, and selected text from Chapter 9, "Interface in First-Order Logic" (pages 272-319) (collectively the "excerpted portion"). I obtained a copy of this book from counsel. Specifically, the text of Exhibit 1010 is complete with respect to the excerpted portion; no pages are missing from the excerpted portion, 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 1010 can be found within the custody of a library – a place where an authentic copy of this book would likely be. Exhibit 1010 is a true and correct copy in a condition that creates no suspicion about its authenticity.

56. Attached hereto as Attachment 3a is a true and correct copy of the MARC record for the book *Artificial Intelligence - A Modern Approach*, 2nd edition, by Russell and Norvig obtained from the OCLC bibliographic database. I personally identified and retrieved the MARC record that is Attachment 3a. As previously

noted, the library that created the record is recorded in field 040 with a unique library code. For Attachment 3a, that library code is "DLC," which means that the MARC record for this book was created at the Library of Congress. As can be seen in the "Entered" field in the MARC record for this exhibit, a cataloger at the Library of Congress created OCLC record number 51325314 on April 22, 2003, as shown in the "Entered" field ("20030422"). The International Standard Book Number (ISBN) on Exhibit 1010 (0-1379-0395-2) matches the ISBN in the first field 020 of Attachment 3a. The library continues to update this MARC record and enhanced the MARC record to meet current cataloging rules. The most recent enhancement to Attachment 3a occurred on January 29, 2019, as shown in the "Replaced" field ("20190129").

57. Attachment 3a includes an entry in field 050 ("Q335 $b .R86 2003")—as described above, a subject matter classification number consistent with the Library of Congress classification system (analogous to the Dewey Decimal classification system) and an entry in field 082 ("006.3"), a subject matter consistent with the Dewey Decimal classification system. Attachment 3a further includes three English language descriptor terms reading "Artificial intelligence" (see Attachment 3b, Library of Congress subject heading sh85077176). "Artificial intelligence $x Study and teaching" (see Attachment 3b, Library of Congress subject heading sh85077176 and Attachment 3c, Library of Congress subject heading sh85133052),

and "Artificial intelligence $v Handbooks, manuals, etc." (see Attachment 3b, Library of Congress subject heading sh85077176 and Attachment 3d, Library of Congress subject heading sj96005639) in the 650 fields. Thus, as of its cataloging, the publication corresponding to the MARC record attached hereto as Attachment 3a was indexed according to its subject matter by virtue of at least three independently sufficient classifications: the field 050 entry, the field 082 entry, and the field 650 entries. As of April 22, 2003, the MARC record attached hereto as Attachment 3a 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.

58. Attachment 3a indicates that the book *Artificial Intelligence - A Modern Approach*, 2nd edition, by Russell and Norvig as cataloged at the Library of Congress is currently available from 567 libraries (see "567 other holdings"). In view of above, this monograph *Artificial Intelligence - A Modern Approach*, 2nd edition, by Russell and Norvig was publicly available on or shortly after April 22, 2003, because by that date it had been received, cataloged, and indexed at the Library of Congress and made part of the OCLC bibliographic database. For these reasons, it is my opinion that Exhibit 1010 was published and accessible to the public on or

shortly after April 22, 2003.

59. Further supporting my opinion that Exhibit 1010 was publicly accessible to ordinarily skilled and interested researchers in the field is the fact that the book *Artificial Intelligence - A Modern Approach*, 2nd edition, by Russell and Norvig was registered with the U.S. Copyright Office as item TX0005677567 on February 4, 2003, and indicated a publication date of December 20, 2002 (see Attachment 3e, U.S. Copyright Office Public Catalog). As noted above, this would have provided a POSA with keyword searching capabilities and other tools to locate this book.

D. Publication 4 – "Xen and the Art of Virtualization," by Paul Barham, Boris Dragovic, Keir Fraser, Steven Hand, Tim Harris, Alex Ho, Rolf Neugebauer, Ian Pratt, and Andrew Warfield (Exhibit 1011) ("Barham")

60. Exhibit 1011 is a true and correct copy of the conference paper "Xen and the Art of Virtualization," by Paul Barham, Boris Dragovic, Keir Fraser, Steven Hand, Tim Harris, Alex Ho, Rolf Neugebauer, Ian Pratt, and Andrew Warfield (hereafter "Barham"). This conference paper was published online in the *Proceedings of the 19th ACM Symposium on Operating Systems Principles* on pages 164 to 177. The 19th ACM Symposium on Operating Systems Principles (SOSP

'03) was held October 19-22, 2003, in Bolton Landing, New York.[25] Exhibit 1011 is a true and correct copy of the conference paper published in the proceedings book. The Barham conference paper is available digitally in the *ACM Digital Library*[26] and *ResearchGate*.[27] 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. I was able to find the conference paper within the custody of a library – a place where an authentic copy of this document would likely be. Exhibit 1011 is a true and correct copy in a condition that creates no suspicion about its authenticity.

61. Attached hereto as Attachment 4a is a true and correct copy of the MARC record for the *Proceedings of the 19th ACM Symposium on Operating Systems Principles* obtained from the OCLC bibliographic database. Attachment 4a indicates that a cataloger at the Stanford University Libraries (Palo Alto, California) (as evidenced by library code STF in field 040) created OCLC record number 77976441 on January 26, 2004, as shown in the "Entered" field ("20040126"). The library continues to update this MARC record and enhanced the MARC record to meet current cataloging rules. The most recent enhancement to Attachment 4a

[25] https://www.cs.rochester.edu/meetings/sosp2003/
[26] https://dl.acm.org/doi/10.1145/945445.945462
[27] https://www.researchgate.net/publication/2923693_Xen_and_the_Art_of_Virtualization

occurred on September 2, 2016, as shown in the "Replaced" field ("20160902"). I personally identified and retrieved the MARC record that is Attachment 4a.

62. Attachment 4a includes an entry in field 050 ("QA76.6 $b .S9196 2003")—as described above, a subject matter classification number consistent with the Library of Congress classification system (analogous to the Dewey Decimal classification system). Attachment 4a further includes an English language descriptor term reading "Operating systems (Computers) $v Congresses" (see Attachment 4b, Library of Congress subject heading sh2010104443) in the 650 field. Thus, as of its cataloging, the publication corresponding to the MARC record attached hereto as Attachment 4a 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.

63. As of January 26, 2004, the MARC record attached hereto as Attachment 4a was accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that purchased this six-volume set, 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.

64. Attachment 4a indicates that the *Proceedings of the 19th ACM Symposium on Operating Systems Principles* as cataloged at the Stanford University

Libraries is currently available online from 16 libraries (as shown in "16 other holdings"). In view of above, the *Proceedings of the 19th ACM Symposium on Operating Systems Principles* was publicly available on or shortly after January 26, 2004, because by that date it had been received, cataloged, and indexed at the Stanford University Libraries and made part of the OCLC bibliographic database. For these reasons, it is my opinion that Exhibit 1011 was published and accessible to the public on or shortly after January 26, 2004.

65. Not only was Exhibit 1011 accessible and available to others in the field as of October 2003, researchers actually obtained and cited this conference paper in other works, which is still further confirmation of its availability and accessibility. For example, *Google Scholar* indicates that this conference paper has been cited 9,205 times (see Attachment 4c).

VI. SUMMARY OF OPINIONS

71. 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
Exhibit 1008	Khanna, Gunjan, Kirk Beaty, Gautam Kar, and Andrzej Kochut. "Application Performance Management in Virtualized Server Environments." In *Proceedings [of the] 2006 IEEE/IFIP Network Operations and Management Symposium* (pp. 373-381). NOMS 2006. Piscataway, NJ: IEEE Operations Center, 2006.	November 15, 2006
Exhibit 1009	Urgaonkar, Bhuvan, Prashant Shenoy, Abhishek Chandra, and Pawan Goyal. "Dynamic Provisioning of Multi-tier Internet Applications." In *Proceedings of the Second International Conference on Automatic Computing* (pp. 217-228). ICAC '05. Los Alamitos, CA: IEEE Computer Society, 2005.	September 6, 2005
Exhibit 1010	Russell, Stuart J., and Peter Norvig. *Artificial Intelligence - A Modern Approach*. 2nd ed. Chapter 9, "Inference in First-Order Logic" (pp. 272-319). Upper Saddle River, NJ: Prentice Hall, ©2003.	April 22, 2003
Exhibit 1011	Barham, Paul, Boris Dragovic, Keir Fraser, Steven Hand, Tim Harris, Alex Ho, Rolf Neugebauer, Ian Pratt, and Andrew Warfield. "Xen and the Art of Virtualization." In *Proceedings of the 19th ACM Symposium on Operating Systems Principles* (pp. 164-177). SOSP '03. New York: Association for Computing Machinery, 2003.	January 26, 2004

72. In signing this Declaration, I recognize that the Declaration will be filed as evidence in a case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United

States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

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

Respectfully submitted,

September 9, 2020

Sylvia D. Hall-Ellis, Ph.D.

in Denver, Colorado