UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RESIDEO TECHNOLOGIES, INC.

Petitioner

v.

UBIQUITOUS CONNECTIVITY, LP,

Patent Owner.

Case: IPR2019-01335

U.S. Patent No. 8,064,935

DECLARATION OF SYLVIA D. HALL-ELLIS, Ph.D.

I. INTRODUCTION

1. My name is Sylvia D. Hall-Ellis. I have been retained as an expert by Petitioner, Resideo Technologies, Inc. ("Resideo "). I have written this report at the request of Resideo to provide my expert opinion regarding the authenticity and public availability of a journal publication. My report sets forth my opinions in detail and provides the basis for my opinions regarding the public availability of this publication.

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

3. 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.

4. All of the materials that I considered are discussed explicitly in this declaration.

II. QUALIFICATIONS

5. I am currently an Adjunct Professor in the School of Information at San José State University. I obtained a Masters 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.

6. 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 current 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, the national REFORMA Board of Directors, and the Editorial Board for the ALCTS premier cataloging journal, *Library Resources and Technical Services*.

7. 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.

8. My full curriculum vitae is attached hereto as Exhibit 1030.

III. LIBRARY CATALOGING PRACTICES

9. 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]

[1] The full text of the standard is available from the Library of Congress at http://www.loc.gov/marc/bibliographic/.

[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 December 12, 2019) ("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 forty 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

10. 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 recorded in Field 100, an item's International Standard Serial Number ("ISSN") is recorded in Field 022, an item's Library of Congress call number 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 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.

11. 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 report. To the extent this "mouse over" option was not available, I consulted the Directory of OCLC Libraries in order

---

library catalogs used today."). MARC is the ANSI/NISO Z39.2-1994 (reaffirmed 2016) standard for Information Interchange Format.

to identify the institution that created the MARC record.[3]

12. 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 at http://www.loc.gov/marc/bibliographic/. For example, 6XX fields are termed "Subject Access Fields." *See* http://www.loc.gov/marc/bibliographic/bd6xx.html. 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. 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.* Further, MARC records include call numbers, which themselves include a classification number. For example, the 050 field is the "Library of Congress Call Number." *See* http://www.loc.gov/marc/bibliographic/bd050.html. 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, included in the 050 field is a subject matter classification. Each item in a library has a single classification

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

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) and uses it consistently. When the Library of Congress assigns the classification number, it appears as part of the 050 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.

13. 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."[4] Among other services, OCLC and its members are responsible for maintaining the WorldCat database

[4] 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).

(http://www.worldcat.org/), used by independent and institutional libraries throughout the world.

14. 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 directly uploaded or may be 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 a participating institution, 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.

15. 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."[5] 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 report—the date reflected next to the label "Entered" is necessarily on or after the date the library first cataloged and indexed the underlying item.

[5] In this report, I sometimes refer to the "Entered" entry as Field 008, characters 00-05.

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

17. 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 journal 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.

18. Catalogers can create MARC records for all types of print, online, and digital resources. For example, MARC records cover serial publications, including both serially-published monographs and journals. OCLC hosts MARC records for more than 320 million serial publications. Serial publications are those publications that have the same collective title but are intended to be continued indefinitely with enumeration such as a volume or issue number (*e.g.*, magazines, journals, etc.). In the OCLC bibliographic database, the first issue or volume of the monographic serial is typically cataloged (*i.e.*, a corresponding MARC record is created), but the date is left open-ended with the use of a punctuation mark such as a dash. MARC records for serial publications represent the entire run of the title. With knowledge of the first issue or volume published, future issues or volumes can be predicted based on the information provided in the MARC record, for example in Field 362. In my extensive professional experience, is it highly unusual for a library to stop collecting and shelving a serial publication prior to the time it ceases publication. If a subscription to a serial publication ends or is cancelled, the library will denote that it has stopped receiving new issues or volumes by filling in the end date in the MARC record.

19. The handling of printed journal subscriptions is shown on the covers of individual issues. As was the best practice among libraries, issues arrived at a central

facility and were immediately received, verified as part of a subscription, checked in, and stamped with the institution's name and date. Determining that the issue was part of the library subscription ensured that the entire set of publications for the year had been received so that they could be professionally bound and retained. This process also verified that each of the published issues arrived so that the library staff did not have to request or claim an issue that did not arrive as expected. In large public libraries with branches and multi-campus libraries within academic institutions, the journals were sorted and delivered to the subscribing unit. The issues were frequently stamped again to acknowledge receipt. The new issue was placed in the public area; the older issue was stored so that it remained available.

20. The foregoing process has been standard library practice longer than I have been working in the profession. I first learned the steps in the process in the late 1970s and later supervised it. Although the checking in process has become automated and now links electronically to holdings records for the MARC record for each serial title, the manual stamping and placing the issue in a public area has not changed for 50 years. 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.

21. In preparing this report, I used authoritative databases, such as the OCLC bibliographic database and the Library of Congress Online Catalog, 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.

22. *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 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. However, date information for indexing entries is often unavailable. This is especially true for online indices.

23. 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.

24. 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.

25. Before the widespread development of online databases to index articles in journals, magazines, conference papers, and technical reports, libraries purchased printed volumes of indices. Graduate library school education mandated that students learn about the bibliographic control of disciplines, the prominent indexing volumes, and searching strategies required to use them effectively and efficiently. Half of the courses that I studied in library school were focused on the bibliography and resources in academic disciplines.

26. Librarians consult with information seekers to verify citations, check availability in union catalogs, printed books catalogs, the OCLC database, and make formal requests for materials (e.g., books, conference proceedings, journal articles). Requests were transmitted using Telex machines, rudimentary email systems, and the United States Postal Service. During my career, I have performed and supervised staff who handled these resource sharing tasks.

27. Online indexing services such as Google Scholar (https://scholar.google.com/) or ScienceDirect (https://www.sciencedirect.com/) 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.

28. A citation of a document by another is evidence that the document was

publicly available and in use no later than the publication date of the citing document.

IV. PRELIMINARIES

29. *Scope of this declaration.* I am rendering my expert opinion on the authenticity of the documents referenced herein and when and how each of these documents was disseminated or otherwise made available to the extent that persons, exercising reasonable diligence, could have located the documents on or about June 25, 2003.

30. 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.

31. 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 exercising reasonable diligence (*i.e.*, I understand that cataloging and indexing by a library in a manner that permits a person of ordinary skill in the relevant subject matter to locate the publication 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.

32. 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.

33. Based on my experience working in research libraries with researchers, it is my opinion that researchers would have been able to locate the material discussed herein on their own or with the assistance of a research librarian with relative ease using the tools and resources described herein.

V. EXHIBIT 1018 ("WU")

34. Exhibit 1018, submitted with Resideo's petition for *inter partes* review,

is a true and correct copy of portions of the July 15, 2003 issue of the journal *Computer Networks* (Volume 42, Issue 4). Exhibit 1018 comprises the article "System Integration of WAP and SMS for Home Network System" by Chi-Hsiang Wu and Rong-Hong Jan (hereafter "Wu"), which appears on pages 493–502 of the issue. The Wu article is also available online from the publisher.[6] The publisher indicates that the digital version of the Wu article was available on February 26, 2003. I personally obtained a copy of Exhibit 1018 from the Library of Congress in a condition that creates no suspicion about its authenticity. The text of the Wu article that I obtained from the Library of Congress, which is attached as Exhibit 1038, 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.

35. The copy I obtained of the July 15, 2003 issue of the journal *Computer Networks* has an ownership stamp affixed by or on behalf of the Library of Congress which shows that it was received, verified, and checked in on June 25, 2003. Therefore, in my experience, this ownership stamp indicates that this issue of the journal *Computer Networks* would have been available to users at the Library of Congress on or shortly after that date.

36. I reviewed MARC records that corroborate that the Library of Congress received the issue of the journal *Computer Networks* that contains a copy of Exhibit

[6] https://www.sciencedirect.com/science/article/abs/pii/S1389128603001981

1018. Attached hereto as Exhibit 1031 is a true and correct copy of the MARC record for the journal *Computer Networks* at the Library of Congress. The library ownership is indicated by the presence of the library's code (DLC) in the field 850. I personally identified and retrieved the MARC record that is Exhibit 1031. Exhibit 1031 also shows that Exhibit 1018 was catalogued with descriptor terms "Computer networks $v Periodicals," "Integrated services digital networks $v Periodicals," "Telecommunication systems $v Periodicals," and "Digital communications $v Periodicals" in the 650 fields.

37. Based on finding a print copy of Exhibit 1018 in the Library of Congress and MARC record in its online library catalog attached as Exhibit 1031, it is my opinion that Exhibit 1018, including the article "System Integration of WAP and SMS for Home Network System" by Wu and Jan published in the journal *Computer Networks*, was available at the Library of Congress on June 25, 2003.

38. As noted in the holdings information (field 362), the Library of Congress has received the journal *Computer Networks* since January 1999 and continues to receive the publication.[7] In view of the MARC record for Exhibit 1018, the Wu article was publicly available on or shortly after June 25, 2003, because the

[7] The journal was originally published using the title *Computer Networks and ISDN Systems* (1976-1986) when the current name was adopted.

serial title had been received, cataloged, and indexed at the Library of Congress and made part of its online catalog database.

39. I also reviewed other MARC records that corroborate that Exhibit 1018 was publicly available on June 25, 2003. Attached hereto as Exhibit 1032 is a true and correct copy of the MARC record for the journal *Computer Networks* obtained from the OCLC bibliographic database. I personally identified and retrieved the MARC record that is Exhibit 1032. As previously noted, the library that created the record is recorded in field 040 with a unique library code. For Exhibit 1032, that library code is "UHC," which means that the MARC record for this serial was cataloged at the University of Houston Clear Lake Library. As can be seen in the "Entered" field in the MARC record for this exhibit, a cataloger at the University of Houston Clear Lake Library created OCLC record number 40811573 on February 17, 1999. The "BLvl" entry in Exhibit 1032 is "s," which indicates that the journal *Computer Networks* is a serial publication. Field 310 of Exhibit 1032 reads "Monthly." Accordingly, the MARC record for Exhibit 1018 corresponds to those issues of the journal *Computer Networks* since the serial title adopted its current title in 1999 to the present day and indicates that every issue of *Computer Networks* was received by the Library of Congress.

40. Exhibit 1032 further includes an entry in field 050 ("TK5105.5 ‡b .C647"). 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). Exhibit 1032 further includes four English language subject entries reading "Computer networks $v Periodicals" (see Exhibit 1033, Library of Congress subject heading sh2008101495), "Integrated services digital networks $v Periodicals" (see Exhibit 1034, Library of Congress subject heading sh86000852 and Exhibit 1035, Library of Congress subject heading sh85099890), "Telecommunication systems $v Periodicals" (see Exhibit 1036, Library of Congress subject heading sh2010115961) and "Digital communications $v Periodicals" (see Exhibit 1037, Library of Congress subject heading sh85037972 and Exhibit 1035, Library of Congress subject heading sh85099890 in the 650 fields). Thus, as of its cataloging, the publication corresponding to the MARC record attached hereto as Exhibit 1032 was indexed according to its subject matter by virtue of at least two independently sufficient classifications: the field 050 entry and the field 650 entries. Further, the MARC record attached hereto as Exhibit 1032 is accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that subscribed to the serial. Therefore, these MARC records corroborate that a copy of the Wu article (Exhibit 1018), which was received by the Library of Congress by June 25, 2003, was publicly available as of that date because by that time it had been received, cataloged, and indexed and made part of the OCLC bibliographic database.

41. Exhibit 1032 also indicates that the journal *Computer Networks*, as cataloged at the University of Houston Clear Lake, is currently available from 209 libraries. For these reasons, it is my opinion that Exhibit 1018 was published and accessible to the public on or shortly after June 25, 2003.

VI. SUMMARY OF OPINIONS

42. In view of the foregoing, it is my opinion that the Wu reference, described above, was publicly available on or about June 25, 2003.

43. In signing this Declaration, I recognize that the Declaration may 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.

44. I hereby declare that all statements made herein of my own knowledge are true and that all opinions expressed herein are my own; and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

DATED: February 24, 2020

By: Sylvia D. Hall-Ellis

Dr. Sylvia D. Hall-Ellis