

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MOTOROLA SOLUTIONS, INC.,

Petitioner,

v.

STA GROUP LLC,

Patent Owner.

IPR2023-01293

U.S. Patent No.: 8,849,134 B2

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 Motorola Solutions, Inc. (“Motorola”).

2. I have written this report at the request of Motorola to provide my expert opinion regarding the authenticity and public availability of several documents. My report sets forth my opinions in detail and provides the basis for my opinions regarding the authenticity and public availability of these documents.

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. 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 report, 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 of the materials that I considered and relied upon are discussed explicitly in this report.

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 and Information 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*, as a Co-Chair of the Membership Committee for the Library Research Round Table (LRRT) of the

American Library Association, and 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. My full curriculum vitae is attached as an Appendix to this report.

III. PRELIMINARIES

A. Scope of Report and Legal Standards

10. 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 September 2, 2008.

11. 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.

12. 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.

13. 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

14. I am told by counsel that the subject matter of this proceeding generally relates to providing a satellite link for multicasting.

15. 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.

16. I am told by counsel that persons of ordinary skill in this subject matter or art would have had at least a bachelor’s degree in computer science, electrical engineering, or a similar field, and would have had approximately three years industry experience in networking or communication systems, in particular addressing interoperability between different types of networks and satellite communications. I understand that this level of skill is approximate, and more experience would compensate for less formal education, and vice versa. 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 report.

17. 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 the bibliographic resources relevant to his or her research would be familiar. Before September 2, 2008, such a person would have had access to a vast array of long-established print resources in computer science and electrical engineering, and related fields, as well as to a rich set of online resources providing indexing information, abstracts, and full text services.

C. Library Cataloging Practices

1. MARC Records

18. 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.

19. Since at least the early 1970s and continuing to the present day, MARC has been the primary communications protocol for the transfer and storage

¹ The full text of the standard is available from the Library of Congress at <http://www.loc.gov/marc/bibliographic/> (last visited July 5, 2023).

of bibliographic metadata in libraries.² 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. *Why Is a MARC Record Necessary?* LIBRARY OF CONGRESS.³

20. Thus, almost every major library in the world is MARC-compatible.

See, e.g., *MARC Frequently Asked Questions (FAQ)*, LIBRARY OF CONGRESS.⁴

(“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

² 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 5, 2023).

³ <http://www.loc.gov/marc/umb/um01to06.html#part2>

⁴ <https://www.loc.gov/marc/faq.html>

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.⁵

21. 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 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.⁶

22. The library that created the record is recorded in Field 040 in subfield

⁵ <http://www.loc.gov/marc/bibliographic/>

⁶ <http://www.loc.gov/marc/bibliographic/bd3xx.html>

“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.

23. 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.⁷ For example, 6XX fields are termed “Subject Access Fields.”⁸ Among these, for example, is the 650 field; this is the “Subject Added Entry – Topical Term” field.⁹ 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)).”¹⁰ Further, MARC records include call numbers, which themselves include a classification number. For example, the 050 field is the “Library of Congress Call Number.”¹¹ A defined portion of the Library of

⁷ <http://www.loc.gov/marc/bibliographic/>

⁸ <http://www.loc.gov/marc/bibliographic/bd6xx.html>

⁹ <http://www.loc.gov/marc/bibliographic/bd650.html>

¹⁰ *Id.*

¹¹ <http://www.loc.gov/marc/bibliographic/bd050.html>

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.”¹² 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 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.

24. 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

¹² <http://www.loc.gov/marc/bibliographic/bd082.html>

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.”¹³ 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.

25. 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-

¹³ 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>).

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.

26. 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.”¹⁴ 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.

27. 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).

28. 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

¹⁴ 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.”

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.

2. Journals

29. MARC records that cover serial publications include 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 of the serial publication 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. OCLC serial publication MARC records represent the entire run of the serial title. With knowledge of the first issue published, future issues 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 end of its publication run. If a subscription to a serial publication ends its run or is cancelled before the end of its run, the library will denote that it has stopped receiving new volumes by filling in the end date in the MARC record.

30. The handling of printed journal subscriptions is shown on the cover or the first few pages 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 or labeled 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 all 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 new issue was placed in the public area; the older issue was stored so that it remained available.

31. 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 placement of a stamp or label 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 publications discussed below.

3. Indexing

32. 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 a 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.

33. 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.

34. 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 the *IEEE Xplore* database, the *ACM Digital Library*, and the digital repositories *ResearchGate* and *Semantic Scholar*.

IV. PUBLICATION 1: *Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP Interworking Over Satellite; Multicasting*. EXHIBIT 1004 (“ETSI-156”)

35. Exhibit 1004 is a true and accurate copy of the document titled *Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP Interworking Over Satellite; Multicasting* (hereafter called “ETSI-156”) as captured by me from the Internet by inserting the website address in Microsoft

Internet Explorer and downloading the pdf.¹⁵ Exhibit 1004 accurately reflects the contents of the above website link on the date of capture and has not been changed or altered in any way—the text of ETSI-156 in Exhibit 1004 is complete; no pages are missing; and, further, there are no visible alterations to the document. It is my opinion that the appearance, contents, substance, and distinctive characteristics of Exhibit 1004 creates no suspicion about its authenticity. As such, it is my opinion that Exhibit 1004 is authentic.

36. ETSI-156 is identified as ETSI TR 102 156, version 1.1.1 and carries the cover date of “2003-04.” Ex. 1004 at 1.¹⁶ The document has a header reading “ETSI TR 102 156 V1.1.1 (2003-04).” *Id.* Furthermore, ETSI-156 is dated April 2003, and includes a copyright date on the second page indicating “© European Telecommunications Standards Institute 2003.” *Id.* at 1-2. In my opinion, persons of at least ordinary skill in the art researching documents would rely on these dates as indications of when this document was first published, especially given that the source of this document is the European Telecommunications Standards Institute, a well-established source for these types of materials, as discussed further below. In view of the April 8, 2003 publication date, in my opinion, ETSI-156 was publicly

¹⁵

https://www.etsi.org/deliver/etsi_tr/102100_102199/102156/01.01.01_60/tr_102156v010101p.pdf

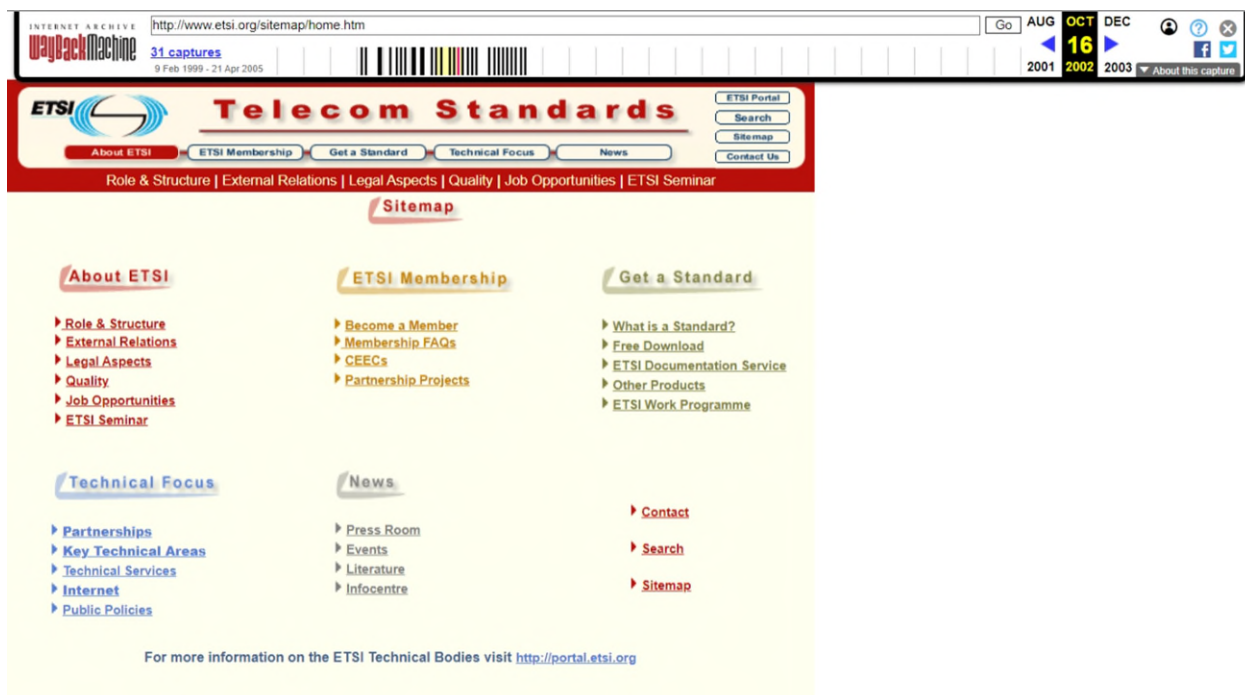
¹⁶ Citations to Exhibit 1004 are to the original page numbering in the exhibit.

available at least as early as April 8, 2003 which is consistent with the “Publication” date listed for ETSI-156 in Attachments 1A and 1B.

37. The European Telecommunications Standards Institute provided ETSI-156 on its website by April 8, 2003¹⁷ (see Attachment 1A). Based on information provided by ETSI on the “Work Programme” page for the development of ETSI TR 102 156, version 1.1.1, the standard was achieved on April 8, 2003, and has a cover date of April 2003 (see Attachment 1B). Attachment 1C describes the public availability of ETSI standards and indicates that ETSI standards are “[a]vailable to all” and “freely accessible on [ETSI’s] website.” Further, Attachment 1C describes that “[o]nce published as an ETSI TS or ETSI TR it becomes an ETSI specification with a number of advantages” including “broaden[ing] visibility.” Furthermore, the ETSI website was available online by April 2003:

¹⁷

https://www.etsi.org/deliver/etsi_tr/102100_102199/102156/01.01.01_60/tr_102156v010101p.pdf



See Attachment 1D. By clicking the “Free Download” link under the “Get a Standard” heading, the browser is redirected to an archived page from October 2002 which provides access to the “Publications Download Area” to “download ETSI standards free of charge.”

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See Attachment 1E. From there, clicking “DOWNLOAD NOW!” directs the browser to a search page where a POSITA could have searched for ETSI standards including ETSI-156.

2002-12-07

ETSI Publications Download Area Version 3.0

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See Attachment 1F.

38. In my opinion, prior to September 2, 2008, the European Telecommunications Standards Institute would have been known to persons at least of ordinary skill in the art as a European standards organization that produced technical standards related to telecommunications. As discussed above, ETSI was operating well before September 2, 2008, and was responsible for numerous standards documents and related publications, as reflected in Attachments 1D and 1E. Furthermore, I understand that persons of ordinary skill in the art would have reasonably considered this organization and its website – <http://www.etsi.org> – as reliable and useful sources of information for research, study, development, or design of systems providing a satellite link for multicasting.¹⁸

39. Given that, prior to September 2, 2008, the European Telecommunications Standards Institute was a well-known industry organization, and its website was accessible to the public and offered standards-related publications, including ETSI-156, in my opinion persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence could have located ETSI-156 using the search page discussed above. Indeed, upon accessing the ETSI website, such an interested researcher could have accessed a search engine on the ETSI website under the “Standards” link accessible, followed by

¹⁸ <https://www.etsi.org/about>

entering the document number and clicking the link. This search engine on the ETSI website was “a promotional tool that will allow you to download individual copies of ETSI Publications free of charge” and “access the complete range of ETSI Publications, including European Standards in the telecommunications series (EN, ETS, I-ETS, EG, ES, ETR, GTS, TBR, TR, TS).”

40. This search engine permits individuals to search for documents based on various criteria including title, scope, technical body name, standard type, and subject. ETSI-156 indicates that it could be searched using a variety of information including title, ETSI number, and content. These are reliable indicators that copies of ETSI-156 were available on the ETSI.org website on at least the dates indicated above to persons interested in searching for this information.

41. For the foregoing reasons, it is my opinion that Exhibit 1004 was publicly accessible to persons interested in and ordinarily skilled in the art exercising reasonable diligence at least as early as April 8, 2003 (if not sooner) which corresponds to the “Published” date listed for ETSI-156 in Attachments 1A and 1B.

V. PUBLICATION 2: *Request for Comments 2005: Resource ReSerVation Protocol (RSVP) – Version 1 Functional Specification*. EXHIBIT 1006 (“RFC-2205”)

42. Exhibit 1006 is a Request for Comments (RFC) document (hereafter called “RFC-2205”) that is issued and published by the Network Working Group

of the Internet Engineering Task Force (IETF). RFC-2205 was published on the IETF website¹⁹ as discussed below.

43. The RFC development and publication process is set forth in RFC-2026 (Attachment 2A), which I identify below. RFC-2026 explains that: (i) RFC publications are widely disseminated on the Internet (RFC-2026 at 4, 6); and (ii) once a standard is adopted, it will be formally published; (*id.* at 19). RFC-2026 also explains that RFC documents are published on a specific date, which starts a period for others to provide comments on the document (*id.* at 20). Based on my review and understanding, the publication date of each RFC is contained in the RFC, typically in the top right corner of the first page of the document. Exhibit 1006, RFC-2005, has a date of September 1997 in the top right corner. Exhibit 1006 at 1.

44. Each RFC document is uniquely numbered. If it becomes necessary to make a substantive change (*e.g.*, other than a minor typographical error), the RFC will be republished with a different number (*id.* at 20). Once RFCs are published, the IETF does not make changes to any published RFC. Attached hereto as Attachment 2B is the “Publication Process”²⁰ webpage of the RFC Editor, which publishes RFCs on behalf of the IETF (“RFCs from the IETF,” p. 2), indicating

¹⁹ <https://ietf.org/>

²⁰ <https://www.rfc-editor.org/pubprocess/>

that “We DO NOT make changes to RFCs once they have been published....”) (p. 4). Thus, in my opinion, the version of RFC-2205 in Exhibit 1006 is substantively the same as the version that existed in September 1997. For example, Attachment 2F is a web capture of a portion of RFC-2205 captured by the Wayback Machine in October 2004.²¹ And, while I have not undertaken a word-by-word comparison between Exhibit 1006 and the text in the web capture from the Wayback Machine (contained at Exhibit 1035), they appear to be substantively the same.

45. Also attached hereto as Attachment 2C is a true and correct copy of the MARC record²² for *Internet documentation (RFC's, FYI's, etc.) and IETF information* issued by the Internet Engineering Task Force (IETF) from the OCLC bibliographic database. The MARC record provided as Attachment 2C indicates that RFCs are serial publications, as I would expect from my review of Exhibit 1006 and Attachment 2C.

46. The library that created the record is recorded in field 040 with a unique library code. For Attachment 2C, that library code is “NBS,” which means that the MARC record for this document was cataloged at the National Institute of Standards and Technology Library (Gaithersburg, Maryland). As can be seen in the

²¹ <http://web.archive.org/web/20041010012205/https://www.rfc-editor.org/rfc/rfc2205.txt>. Exhibit 1035 is the version of RFC-2205 downloaded from this Wayback Machine link.

²² See *supra* Section IV.A for an explanation of MARC records.

“Entered” field in the MARC record for this exhibit, a cataloger at the National Institute of Standards and Technology Library created OCLC record number 37343206 on July 23, 1997, as shown in the “Entered” field (“19970723”). The most recent enhancement to Attachment 2C occurred on September 20, 2022, as shown in the “Replaced” field (“20220920”). I personally identified and retrieved the MARC record that is Attachment 2C.

47. Attachment 2C further includes an entry in field 050 (“TK5105.875.I57 \$b I555”)²³—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 2C further includes two English language field 650 entries reading “Internet” (see Attachment 2D, Library of Congress subject heading sh92002816) and “TCP/IP (Computer network protocol)” (see Attachment 2E, Library of Congress subject heading sh91005299). Thus, as of its cataloging, the IETF Internet documentation, including RFC-2205, corresponding to the MARC record attached hereto as Attachment 2C was indexed according to its subject matter by virtue of at least two independently sufficient classifications: the field 050 entry and the field 650

²³ TK5105.875.I57 = Electrical engineering. Electronics. Nuclear engineering—Telecommunication—Computer networks—Wide area networks—Special networks and systems, A-Z—Internet

entries. Further, as of July 23, 1997, the MARC record attached hereto as Attachment 2C was accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that acquired the IETF internet documentation. This means that the corresponding documentation for RFC-2205, an IETF internet document from September 1997, was publicly available on or before September 1997 through any library with access to the OCLC bibliographic database or through an individual library.

48. For the foregoing reasons, it is my opinion that Exhibit 1006 was publicly accessible to persons interested in and ordinarily skilled in the art exercising reasonable diligence at least as early as September 30, 1997 (if not sooner).

VI. PUBLICATION 3: *Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP Interworking over Satellite; Performance, Availability and Quality of Service*. EXHIBIT 1011 (“ETSI-157”)

49. Exhibit 1011 is a true and accurate copy of the document titled *Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP Interworking over Satellite; Performance, Availability and Quality of Service* (hereafter called “ETSI-157”) as captured by me from the Internet by inserting the

website address in Microsoft Internet Explorer and downloading the pdf.²⁴ Exhibit 1011 accurately reflects the contents of the above website link on the date of capture and has not been changed or altered in any way—the text of ETSI-157 in Exhibit 1011 is complete; no pages are missing; and, further, there are no visible alterations to the document. It is my opinion that the appearance, contents, substance, and distinctive characteristics of Exhibit 1011 creates no suspicion about its authenticity. As such, it is my opinion that Exhibit 1011 is authentic.

50. ETSI-157 is identified as ETSI TR 102 157, version 1.1.1 and carries the cover date of “2003-07.” Ex. 1011 at 1.²⁵ The document has a header reading “ETSI TR 102 157 V1.1.1 (2003-07).” *Id.* Furthermore, ETSI-157 is dated July 2003, and includes a copyright date on the second page indicating “© European Telecommunications Standards Institute 2003.” *Id.* at 1-2. In my opinion, persons of at least ordinary skill in the art researching documents would rely on these dates as indications of when this document was first published, especially given that the source of this document is the European Telecommunications Standards Institute, a well-established source for these types of materials, as discussed further below. In view of the July 10, 2003 publication date, in my opinion, ETSI-157 was publicly

²⁴

https://www.etsi.org/deliver/etsi_tr/102100_102199/102157/01.01.01_60/tr_102157v010101p.pdf

²⁵ Citations to Exhibit 1011 are to the original page numbering in the exhibit.

available at least as early as July 10, 2003 which is consistent with the “Publication” date listed for ETSI-157 in Attachments 3A and 3B.

51. The European Telecommunications Standards Institute provided ETSI-157 on its website by July 10, 2003²⁶ (see Attachment 3A). Based on information provided by ETSI on the “Work Programme” page for the development of ETSI TR 102 157, version 1.1.1, the standard was achieved on July 10, 2003, and has a cover date of July 10, 2003 (see Attachment 3B). Attachment 1C describes the public availability of ETSI standards and indicates that ETSI standards are “[a]vailable to all” and “freely accessible on [ETSI’s] website.” Further, Attachment 1C describes that “[o]nce published as an ETSI TS or ETSI TR it becomes an ETSI specification with a number of advantages” including “broaden[ing] visibility.” Furthermore, the ETSI website was available online by July 2003, as I described above for ETSI-156.

52. In my opinion, prior to September 2, 2008, the European Telecommunications Standards Institute would have been known to persons at least of ordinary skill in the art as a European standards organization that produced technical standards related to telecommunications. As discussed above, ETSI was operating well before September 2, 2008, and was responsible for numerous

²⁶

https://www.etsi.org/deliver/etsi_tr/102100_102199/102156/01.01.01_60/tr_102156v010101p.pdf

standards documents and related publications, as reflected in Attachments 3C and 3D. Furthermore, I understand that persons of ordinary skill in the art would have reasonably considered this organization and its website – <http://www.etsi.org> – as reliable and useful sources of information for research, study, development, or design of systems providing a satellite link for multicasting.

53. Given that, prior to September 2, 2008, the European Telecommunications Standards Institute was a well-known industry organization, and its website was accessible to the public and offered standards-related publications, including ETSI-157, in my opinion persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence could have located ETSI-157 using the search page discussed above. Indeed, upon accessing the ETSI website, such an interested researcher could have accessed a search engine on the ETSI website under the “Standards” link accessible, followed by entering the document number and clicking the link. This search engine on the ETSI website was “a promotional tool that will allow you to download individual copies of ETSI Publications free of charge” and “access the complete range of ETSI Publications, including European Standards in the telecommunications series (EN, ETS, I-ETS, EG, ES, ETR, GTS, TBR, TR, TS).”

54. This search engine permits individuals to search for documents based on various criteria including title, scope, technical body name, standard type, and

subject. ETSI-157 indicates that it could be searched using a variety of information including title, ETSI number, and content. These are reliable indicators that copies of ETSI-157 were available on the ETSI.org website on at least the dates indicated above to persons interested in searching for this information.

55. For the foregoing reasons, it is my opinion that Exhibit 1011 was publicly accessible to persons interested in and ordinarily skilled in the art exercising reasonable diligence no later than July 10, 2003 (if not sooner) which corresponds to the “Published” date listed for ETSI-157 in Attachments 3A and 3B.

VII. PUBLICATION 4: *Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP over Satellite*. EXHIBIT 1012 (“ETSI-985”)

56. Exhibit 1012 is a true and accurate copy of the document titled *Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP over Satellite* (hereafter called “ETSI-985”) as captured by me from the Internet by inserting the website address in Microsoft Internet Explorer and downloading the pdf.²⁷ Exhibit 1012 accurately reflects the contents of the above website link on the date of capture and has not been changed or altered in any way—the text of

²⁷

https://www.etsi.org/deliver/etsi_tr/101900_101999/101985/01.01.02_60/tr_101985v010102p.pdf

ETSI-985 in Exhibit 1012 is complete; no pages are missing; and, further, there are no visible alterations to the document. It is my opinion that the appearance, contents, substance, and distinctive characteristics of Exhibit 1012 creates no suspicion about its authenticity. As such, it is my opinion that Exhibit 1012 is authentic.

57. ETSI-985 is identified as ETSI TR 101 985, version 1.1.2 and carries the cover date of “2002-11.” Ex. 1012 at 1.²⁸ The document has a header reading “ETSI TR 101 985 V1.1.2 (2002-11).” *Id.* Furthermore, ETSI-985 is dated November 2002, and includes a copyright date on the second page indicating “© European Telecommunications Standards Institute 2002.” *Id.* at 1-2. In my opinion, persons of at least ordinary skill in the art researching documents would rely on these dates as indications of when this document was first published, especially given that the source of this document is the European Telecommunications Standards Institute, a well-established source for these types of materials, as discussed further below. In view of the November 14, 2002 publication date, in my opinion, ETSI-985 was publicly available at least as early as November 14, 2002 which is consistent with the “Publication” date listed for ETSI-985 in Attachments 4A and 4B.

²⁸ Citations to Exhibit 1012 are to the original page numbering in the exhibit.

58. The European Telecommunications Standards Institute provided ETSI-985 on its website by November 14, 2002²⁹ (see Attachment 4A). Based on information provided by ETSI on the “Work Programme” page for the development of ETSI TR 101 985, version 1.1.2, the standard was achieved on November 14, 2002, and has a cover date of November 2002 (see Attachment 4B). Attachment 1C describes the public availability of ETSI standards and indicates that ETSI standards are “[a]vailable to all” and “freely accessible on [ETSI’s] website.” Further, Attachment 1C describes that “[o]nce published as an ETSI TS or ETSI TR it becomes an ETSI specification with a number of advantages” including “broaden[ing] visibility.” Furthermore, the ETSI website was available online by November 2002, as I described above for ETSI-156.

59. In my opinion, prior to September 2, 2008, the European Telecommunications Standards Institute would have been known to persons at least of ordinary skill in the art as a European standards organization that produced technical standards related to telecommunications. As discussed above, ETSI was operating well before September 2, 2008, and was responsible for numerous standards documents and related publications, as reflected in Attachments 4C and

29

https://portal.etsi.org/webapp/workprogram/Report_WorkItem.asp?WKI_ID=1772

[3](#)

4D. Furthermore, I understand that persons of ordinary skill in the art would have reasonably considered this organization and its website – <http://www.etsi.org> – as reliable and useful sources of information for research, study, development, or design of systems providing a satellite link for multicasting.

60. Given that, prior to September 2, 2008, the European Telecommunications Standards Institute was a well-known industry organization, and its website was accessible to the public and offered standards-related publications, including ETSI-985, in my opinion persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence could have located ETSI-985 using the search page discussed above. Indeed, upon accessing the ETSI website, such an interested researcher could have accessed a search engine on the ETSI website under the “Standards” link accessible, followed by entering the document number and clicking the link. This search engine on the ETSI website was “a promotional tool that will allow you to download individual copies of ETSI Publications free of charge” and “access the complete range of ETSI Publications, including European Standards in the telecommunications series (EN, ETS, I-ETS, EG, ES, ETR, GTS, TBR, TR, TS).”

61. This search engine permits individuals to search for documents based on various criteria including title, scope, technical body name, standard type, and subject. ETSI-985 indicates that it could be searched using a variety of information

including title, ETSI number, and content. These are reliable indicators that copies of ETSI-985 were available on the ETSI.org website on at least the dates indicated above to persons interested in searching for this information.

62. For the foregoing reasons, it is my opinion that Exhibit 1012 was publicly accessible to persons interested in and ordinarily skilled in the art exercising reasonable diligence no later than November 14, 2002 (if not sooner) which corresponds to the “Published” date listed for ETSI-985 in Attachments 4A and 4B.

VIII. PUBLICATION 5 “The BGAN Extension Programme” by Juan J. Rivera, Eyal Trachtman, and Madhavendra Richharia. EXHIBIT 1014 (“RIVERA”)

63. Exhibit 1014 is a copy of the journal article titled “The BGAN Extension Programme” by Juan J. Rivera, Eyal Trachtman, and Madhavendra Richharia (hereafter “Rivera”). Rivera was published in the *European Space Agency Bulletin* 124 beginning on page 62 of this issue dated November 2005. Exhibit 1014 is a true and correct copy of the Rivera article (pages 62-68). Specifically, the text of the article 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. The Rivera article is available from the European Space Agency website.³⁰ I downloaded the Rivera article and made the

³⁰ https://www.esa.int/esapub/bulletin/bulletin124/bul124j_rivera.pdf

copy that is Exhibit 1014. Exhibit 1014 was found within the custody of the issuing agency – a place where an authentic copy of this journal would likely be. Exhibit 1014 is a true and correct copy in a condition that creates no suspicion about its authenticity.

64. Attached hereto as Attachment 5A is a true and correct copy of the MARC record for the journal *European Space Agency Bulletin* obtained from the OCLC bibliographic database. As previously noted, the library that created the record is recorded in field 040 with a unique library code. For Attachment 5A, that library code is “DLC,” which means that the MARC record for this serial was cataloged 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 2908353 on April 22, 1977, as shown in the “Entered” field (“19770422”). The library continues to update this MARC record and enhanced the MARC record to meet current cataloging rules. The most recent enhancement to Attachment 5A occurred on September 21, 2021, as shown in the “Replaced” field (“20210921”). I personally identified and retrieved the MARC record that is Attachment 5A. The “BLvl” entry in Attachment 5A is “s,” which indicates that the journal *European Space Agency Bulletin* is a serial publication. Field 310 of Attachment 5A reads “Quarterly, \$b <1978-.” Accordingly, the MARC record for Exhibit 1014 corresponds to the journal *European Space Agency Bulletin* from the

time the serial title adopted the current title and includes the date of the Rivera article. The journal ceased publication at the end of 2017.

65. Attachment 5A includes an entry in field 050 (“TL787 \$b .E88a”)—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 (“629.4/06/24”), a subject matter consistent with the Dewey Decimal classification system. Attachment 5A further includes a descriptor term reading “Astronautics \$v Periodicals” (see Attachment 5B, Library of Congress subject heading sh2007101535) in the 650 field. Thus, as of its cataloging, the publication corresponding to the MARC record attached hereto as Attachment 5A 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 entry. As of April 22, 1977, the MARC record attached hereto as Attachment 5A was accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that subscribed to the serial, 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.

66. Attachment 5A indicates that the journal *European Space Agency Bulletin* cataloged at the Library of Congress is currently available from 191

libraries. In view of the above, this issue of the journal *European Space Agency Bulletin* was publicly available on or shortly after November 30, 2005, because by that date it had been cataloged, indexed, and received at the Library of Congress and made part of the OCLC bibliographic database.

67. For the foregoing reasons, it is my opinion that Exhibit 1014 was publicly accessible to persons interested in and ordinarily skilled in the art exercising reasonable diligence at least as early as November 30, 2005 (if not sooner).

IX. SUMMARY OF OPINIONS

68. 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
1004	European Telecommunications Standards Institute. <i>Satellite Earth Stations and Systems (SES); Broadband satellite multimedia; IP Interworking Over Satellite; Multicasting</i> . Valbonne, France: ETSI, 2003.	April 8, 2003
1006	Internet Engineering Steering Group (IESG). Network Working Group. Request for Comments 2205. Resource ReSerVation Protocol (RSVP). Fremont, CA: IESG, 2003.	September 30, 1997
1011	European Telecommunications Standards Institute. <i>Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP Interworking Over Satellite; Performance, Availability and Quality of Service</i> . Valbonne,	July 10, 2003

Exhibit	Publication	Publicly Available No Later Than
	France: ETSI, 2007.	
1012	European Telecommunications Standards Institute. <i>Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP over Satellite</i> , Valbonne, France: ETSI, 2002.	November 14, 2002
1014	Rivera, Juan J., Eyal Trachtman, and Madhavendra Richharia. "The BGAN Extension Programme." <i>European Space Agency Bulletin 124</i> (November 2005): 62-68.	November 30, 2005

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

Dated: August 20, 2023

By: 
Sylvia D. Hall-Ellis, Ph.D.

Attachment 1A

2023-06-27

Work Programme

Version 2.3.3

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Details of 'DTR/SES-00075' Work Item



Work Item Reference	ETSI Doc. Number	STF	Technical Body in Charge	Download Standard
DTR/SES-00075	TR 102 156	214	SES BSM	
Current Status (Click to View Full Schedule)	Latest Version	Cover Date	Standstill	Creation Date
Publication (2003-04-08)	1.1.1	2003-04-08		2002-02-28
Rapporteur	Technical Officer	Harmonised Standard		
Harald Skinnemoen	Marcello Pagnozzi	No		

Title

Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP interworking over satellite; Multicasting

Scope and Field of Application

Review of IP Multicasting for different scenario. The report will cover the following : definition of the problem, identify relevant standards and recommend new ETSI Specifications.

Supporting Organizations

France Telecom, Eutelsat, Alcatel, Hughes, Nera, BT.

Keywords	Projects	Clusters	Frequencies	Mandates	Directives
BROADBAND INTERWORKING IP MULTIMEDIA SATELLITE		Content delivery Security Wireless Systems			

Official Journal

2003-01-30 kiacz Approved at SES#55.

Remarks

2002-10-08 kiacz WI reference changed from DTR/SES-075 to DTR/SES-00075 to align with SES WI numbering rules.



Any comments or problems with this application? Please [let us know...](#)

Attachment 1B

Details of '[DTR/SES-00075](#)' Work Item Schedule

Code	Milestone	Action	Action Nb	Target	Achieved	Version
0	Creation of WI by WG/TB			2002-02-28	2002-02-28	1.1.1
0 a	TB adoption of WI			2002-04-05	2002-04-05	
1	Start of work			2002-02-25	2002-02-25	
7	WG approval			2002-11-27	2002-11-27	
8	TB approval			2003-01-24	2003-01-24	
8 A	Draft receipt by ETSI Secretariat			2003-02-07	2003-01-30	
8 WA	Waiting - see "Remarks"				2003-03-07	
8 A	Draft receipt by ETSI Secretariat			2003-03-07	2003-04-07	
12	Publication	PU		2003-04-21	2003-04-08	1.1.1



Any comments or problems with this application? Please [let us know...](#)

Attachment 1C

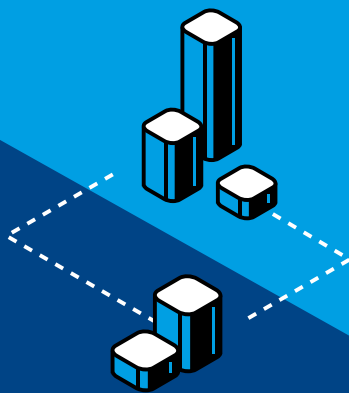


The Standards People



Publicly Available Specifications (PAS)

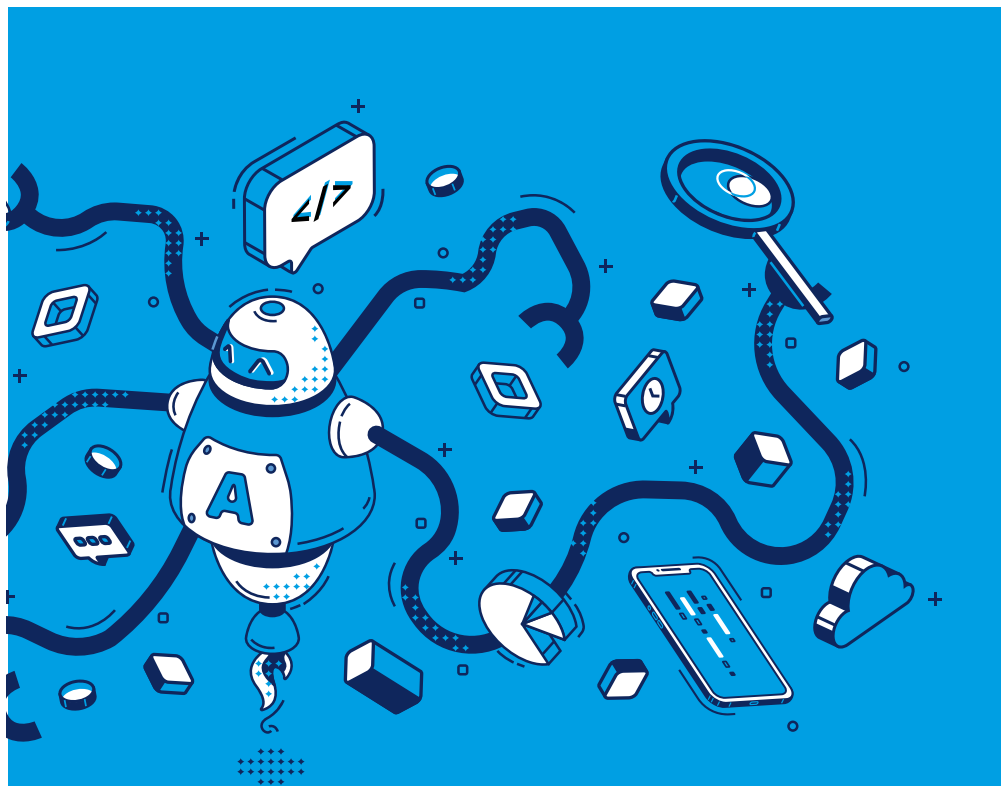
Evolve your standards with ETSI



ETSI recognizes that other Standards Development Organizations (SDOs), fora and consortia can provide useful contributions to our work in areas of ICT standardization and we seek to bring this into our work programme. ETSI offers to PAS submitters a speedy adoption, the reputation of high quality specifications and a greater visibility in Europe and worldwide.



A PAS can be any publicly available technical specification or report developed by an ETSI Partner that is submitted to us for adoption as an ETSI Technical Specification (TS) or Technical Report (TR).



WHAT IS A PAS?



WHAT ARE THE BENEFITS?



SOMETHING FOR EVERYONE

Once published as an ETSI TS or ETSI TR it becomes an ETSI specification with a number of advantages.

- Maintenance and evolvement of the specification(s) is part of the ETSI adoption process. It can be done by the PAS Submitter, by ETSI or jointly. The PAS Submitter keeps control of possible changes until adoption and publication.
- Gain wider acceptance of industry stakeholders through ETSI and increase your global reach through publication by ETSI. It can also help build greater trust in PAS-based products or services.
- Speedy adoption and publication by ETSI can broaden visibility. It also allows wider profit due to ETSI's reputation for quality.
- The ETSI process is based on existing procedures for the approval of ETSI specifications. This is of benefit to all concerned.

An adopted PAS benefits from ETSI's recognition as a European Standards Organization (ESO), as well as from ETSI's international reputation as a provider of standards for global use.

Standards and specifications from an ESO are automatically usable for public procurement in Europe. Publication as an ETSI TS may also be a first step towards it becoming a European Standard (EN).

It receives increased visibility from ETSI's broad community and the users of ETSI's specifications. The advantage of becoming an ETSI PAS also raises the profile of the PAS Submitter through the linkage with ETSI's respected brand.

- The PAS Submitter has the chance to engage with a new community of experts, therefore offering a new area of collaboration to their membership. The process ensures continued availability, stability and maintenance of a PAS even if the PAS Submitter no longer maintains it, or ceases its activity.
- Benefit from the ETSI promotion service to gain wider visibility.

HOW TO SUBMIT?



WHO?

Any Standards Development Organization, forum or consortium can submit a PAS to ETSI, provided that:

- it is a legal entity
- it has an IPR policy compatible with ETSI's
- it has signed a Cooperation Agreement



HOW?

A Guide to the PAS process which provides full details on how to submit a PAS and the process it goes through is provided at:

https://www.etsi.org/images/files/ETSI_PAS_Process_Guide.pdf

To start the process the PAS Submitter should contact: PAS@etsi.org

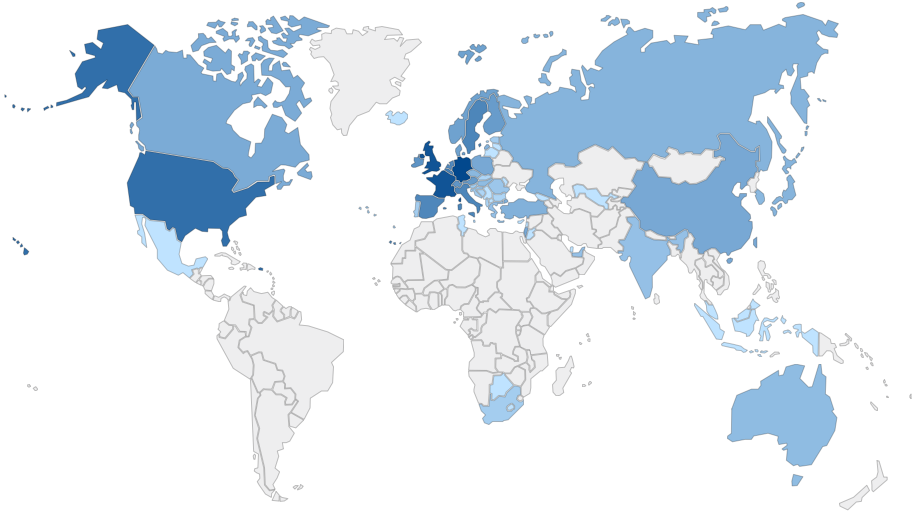


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ETSI is an open and global ICT standards organization

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At ETSI, more than 900 large and small member organizations across 65 countries work together to create high quality standards - enabling interoperability in a multi-vendor, multi-network, multi-service environment.

Available to all, our standards are freely accessible on our website. We have over 48 000 published deliverables with 18 million downloads and over 2 600 deliverables published annually.

We are officially recognized by the European Union to support EU regulation and policies, and our standards are key enablers for the Single European Market. By using ETSI standards, manufacturers and suppliers gain access to the largest unified marketplace in the world.



BRING YOUR **PAS** INTO ETSI

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The Standards People

Motorola Solutions, Inc., Ex1016, p. 53

Attachment 1D



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Attachment 1E

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Attachment 1F



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Attachment 2A

Network Working Group
Request for Comments: 2026
BCP: 9
Obsoletes: [1602](#)
Category: Best Current Practice

S. Bradner
Harvard University
October 1996

The Internet Standards Process -- Revision 3

Status of this Memo

This document specifies an Internet Best Current Practices for the Internet Community, and requests discussion and suggestions for improvements. Distribution of this memo is unlimited.

Abstract

This memo documents the process used by the Internet community for the standardization of protocols and procedures. It defines the stages in the standardization process, the requirements for moving a document between stages and the types of documents used during this process. It also addresses the intellectual property rights and copyright issues associated with the standards process.

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Bradner

Best Current Practice

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1. INTRODUCTION

This memo documents the process currently used by the Internet community for the standardization of protocols and procedures. The Internet Standards process is an activity of the Internet Society that is organized and managed on behalf of the Internet community by the Internet Architecture Board (IAB) and the Internet Engineering Steering Group (IESG).

1.1 Internet Standards

The Internet, a loosely-organized international collaboration of autonomous, interconnected networks, supports host-to-host communication through voluntary adherence to open protocols and procedures defined by Internet Standards. There are also many isolated interconnected networks, which are not connected to the global Internet but use the Internet Standards.

The Internet Standards Process described in this document is concerned with all protocols, procedures, and conventions that are used in or by the Internet, whether or not they are part of the TCP/IP protocol suite. In the case of protocols developed and/or standardized by non-Internet organizations, however, the Internet Standards Process normally applies to the application of the protocol or procedure in the Internet context, not to the specification of the protocol itself.

In general, an Internet Standard is a specification that is stable and well-understood, is technically competent, has multiple, independent, and interoperable implementations with substantial operational experience, enjoys significant public support, and is recognizably useful in some or all parts of the Internet.

1.2 The Internet Standards Process

In outline, the process of creating an Internet Standard is straightforward: a specification undergoes a period of development and several iterations of review by the Internet community and revision based upon experience, is adopted as a Standard by the appropriate body (see below), and is published. In practice, the process is more complicated, due to (1) the difficulty of creating specifications of high technical quality; (2) the need to consider the interests of all of the affected parties; (3) the importance of establishing widespread community consensus; and (4) the difficulty of evaluating the utility of a particular specification for the Internet community.

The goals of the Internet Standards Process are:

- o technical excellence;
- o prior implementation and testing;
- o clear, concise, and easily understood documentation;
- o openness and fairness; and
- o timeliness.

The procedures described in this document are designed to be fair, open, and objective; to reflect existing (proven) practice; and to be flexible.

- o These procedures are intended to provide a fair, open, and objective basis for developing, evaluating, and adopting Internet Standards. They provide ample opportunity for participation and comment by all interested parties. At each stage of the standardization process, a specification is repeatedly discussed and its merits debated in open meetings and/or public electronic mailing lists, and it is made available for review via world-wide on-line directories.
- o These procedures are explicitly aimed at recognizing and adopting generally-accepted practices. Thus, a candidate specification must be implemented and tested for correct operation and interoperability by multiple independent parties and utilized in increasingly demanding environments, before it can be adopted as an Internet Standard.
- o These procedures provide a great deal of flexibility to adapt to the wide variety of circumstances that occur in the standardization process. Experience has shown this flexibility to be vital in achieving the goals listed above.

The goal of technical competence, the requirement for prior implementation and testing, and the need to allow all interested parties to comment all require significant time and effort. On the other hand, today's rapid development of networking technology demands timely development of standards. The Internet Standards Process is intended to balance these conflicting goals. The process is believed to be as short and simple as possible without sacrificing technical excellence, thorough testing before adoption of a standard, or openness and fairness.

From its inception, the Internet has been, and is expected to remain, an evolving system whose participants regularly factor new requirements and technology into its design and implementation. Users of the Internet and providers of the equipment, software, and services that support it should anticipate and embrace this evolution as a major tenet of Internet philosophy.

[RFC 2026](#)

Internet Standards Process

October 1996

The procedures described in this document are the result of a number of years of evolution, driven both by the needs of the growing and increasingly diverse Internet community, and by experience.

1.3 Organization of This Document

[Section 2](#) describes the publications and archives of the Internet Standards Process. [Section 3](#) describes the types of Internet standard specifications. [Section 4](#) describes the Internet standards specifications track. [Section 5](#) describes Best Current Practice RFCs. [Section 6](#) describes the process and rules for Internet standardization. [Section 7](#) specifies the way in which externally-sponsored specifications and practices, developed and controlled by other standards bodies or by others, are handled within the Internet Standards Process. [Section 8](#) describes the requirements for notices and record keeping. [Section 9](#) defines a variance process to allow one-time exceptions to some of the requirements in this document. [Section 10](#) presents the rules that are required to protect intellectual property rights in the context of the development and use of Internet Standards. [Section 11](#) includes acknowledgments of some of the people involved in creation of this document. [Section 12](#) notes that security issues are not dealt with by this document. [Section 13](#) contains a list of numbered references. [Section 14](#) contains definitions of some of the terms used in this document. [Section 15](#) lists the author's email and postal addresses. [Appendix A](#) contains a list of frequently-used acronyms.

2. INTERNET STANDARDS-RELATED PUBLICATIONS

2.1 Requests for Comments (RFCs)

Each distinct version of an Internet standards-related specification is published as part of the "Request for Comments" (RFC) document series. This archival series is the official publication channel for Internet standards documents and other publications of the IESG, IAB, and Internet community. RFCs can be obtained from a number of Internet hosts using anonymous FTP, gopher, World Wide Web, and other Internet document-retrieval systems.

The RFC series of documents on networking began in 1969 as part of the original ARPA wide-area networking (ARPANET) project (see [Appendix A](#) for glossary of acronyms). RFCs cover a wide range of topics in addition to Internet Standards, from early discussion of new research concepts to status memos about the Internet. RFC publication is the direct responsibility of the RFC Editor, under the general direction of the IAB.

The rules for formatting and submitting an RFC are defined in [\[5\]](#). Every RFC is available in ASCII text. Some RFCs are also available in other formats. The other versions of an RFC may contain material (such as diagrams and figures) that is not present in the ASCII version, and it may be formatted differently.

```
*****
*
* A stricter requirement applies to standards-track
* specifications: the ASCII text version is the
* definitive reference, and therefore it must be a
* complete and accurate specification of the standard,
* including all necessary diagrams and illustrations.
*
*****
```

The status of Internet protocol and service specifications is summarized periodically in an RFC entitled "Internet Official Protocol Standards" [\[1\]](#). This RFC shows the level of maturity and other helpful information for each Internet protocol or service specification (see [section 3](#)).

Some RFCs document Internet Standards. These RFCs form the 'STD' subseries of the RFC series [\[4\]](#). When a specification has been adopted as an Internet Standard, it is given the additional label "STDxxx", but it keeps its RFC number and its place in the RFC series. (see [section 4.1.3](#))

Some RFCs standardize the results of community deliberations about statements of principle or conclusions about what is the best way to perform some operations or IETF process function. These RFCs form the specification has been adopted as a BCP, it is given the additional label "BCPxxx", but it keeps its RFC number and its place in the RFC series. (see [section 5](#))

Not all specifications of protocols or services for the Internet should or will become Internet Standards or BCPs. Such non-standards track specifications are not subject to the rules for Internet standardization. Non-standards track specifications may be published directly as "Experimental" or "Informational" RFCs at the discretion of the RFC Editor in consultation with the IESG (see [section 4.2](#)).

```
*****
*
*   It is important to remember that not all RFCs      *
*   are standards track documents, and that not all    *
*   standards track documents reach the level of       *
*   Internet Standard. In the same way, not all RFCs  *
*   which describe current practices have been given  *
*   the review and approval to become BCPs. See      *
*   RFC-1796 [6] for further information.              *
*
*****
```

[2.2](#) Internet-Drafts

During the development of a specification, draft versions of the document are made available for informal review and comment by placing them in the IETF's "Internet-Drafts" directory, which is replicated on a number of Internet hosts. This makes an evolving working document readily available to a wide audience, facilitating the process of review and revision.

An Internet-Draft that is published as an RFC, or that has remained unchanged in the Internet-Drafts directory for more than six months without being recommended by the IESG for publication as an RFC, is simply removed from the Internet-Drafts directory. At any time, an Internet-Draft may be replaced by a more recent version of the same specification, restarting the six-month timeout period.

An Internet-Draft is NOT a means of "publishing" a specification; specifications are published through the RFC mechanism described in the previous section. Internet-Drafts have no formal status, and are subject to change or removal at any time.

```
*****
*
*   Under no circumstances should an Internet-Draft  *
*   be referenced by any paper, report, or Request-  *
*   for-Proposal, nor should a vendor claim compliance *
*   with an Internet-Draft.                          *
*
*****
```

Note: It is acceptable to reference a standards-track specification that may reasonably be expected to be published as an RFC using the phrase "Work in Progress" without referencing an Internet-Draft. This may also be done in a standards track document itself as long as the specification in which the reference is made would stand as a complete and understandable document with or without the reference to the "Work in Progress".

[3.](#) INTERNET STANDARD SPECIFICATIONS

Specifications subject to the Internet Standards Process fall into one of two categories: Technical Specification (TS) and Applicability Statement (AS).

[3.1](#) Technical Specification (TS)

A Technical Specification is any description of a protocol, service, procedure, convention, or format. It may completely describe all of the relevant aspects of its subject, or it may leave one or more parameters or options unspecified. A TS may be completely self-contained, or it may incorporate material from other specifications by reference to other documents (which might or might not be Internet Standards).

A TS shall include a statement of its scope and the general intent for its use (domain of applicability). Thus, a TS that is inherently specific to a particular context shall contain a statement to that effect. However, a TS does not specify requirements for its use within the Internet; these requirements, which depend on the particular context in which the TS is incorporated by different system configurations, are defined by an Applicability Statement.

[3.2](#) Applicability Statement (AS)

An Applicability Statement specifies how, and under what circumstances, one or more TSs may be applied to support a particular Internet capability. An AS may specify uses for TSs that are not Internet Standards, as discussed in [Section 7](#).

An AS identifies the relevant TSs and the specific way in which they are to be combined, and may also specify particular values or ranges of TS parameters or subfunctions of a TS protocol that must be implemented. An AS also specifies the circumstances in which the use of a particular TS is required, recommended, or elective (see [section 3.3](#)).

An AS may describe particular methods of using a TS in a restricted "domain of applicability", such as Internet routers, terminal servers, Internet systems that interface to Ethernets, or datagram-based database servers.

The broadest type of AS is a comprehensive conformance specification, commonly called a "requirements document", for a particular class of Internet systems, such as Internet routers or Internet hosts.

An AS may not have a higher maturity level in the standards track than any standards-track TS on which the AS relies (see [section 4.1](#)). For example, a TS at Draft Standard level may be referenced by an AS at the Proposed Standard or Draft Standard level, but not by an AS at the Standard level.

[3.3](#) Requirement Levels

An AS shall apply one of the following "requirement levels" to each of the TSs to which it refers:

- (a) Required: Implementation of the referenced TS, as specified by the AS, is required to achieve minimal conformance. For example, IP and ICMP must be implemented by all Internet systems using the TCP/IP Protocol Suite.
- (b) Recommended: Implementation of the referenced TS is not required for minimal conformance, but experience and/or generally accepted technical wisdom suggest its desirability in the domain of applicability of the AS. Vendors are strongly encouraged to include the functions, features, and protocols of Recommended TSs in their products, and should omit them only if the omission is justified by some special circumstance. For example, the TELNET protocol should be implemented by all systems that would benefit from remote access.
- (c) Elective: Implementation of the referenced TS is optional within the domain of applicability of the AS; that is, the AS creates no explicit necessity to apply the TS. However, a particular vendor may decide to implement it, or a particular user may decide that it is a necessity in a specific environment. For example, the DECNET MIB could be seen as valuable in an environment where the DECNET protocol is used.

As noted in [section 4.1](#), there are TSs that are not in the standards track or that have been retired from the standards track, and are therefore not required, recommended, or elective. Two additional "requirement level" designations are available for these TSs:

- (d) Limited Use: The TS is considered to be appropriate for use only in limited or unique circumstances. For example, the usage of a protocol with the "Experimental" designation should generally be limited to those actively involved with the experiment.
- (e) Not Recommended: A TS that is considered to be inappropriate for general use is labeled "Not Recommended". This may be because of its limited functionality, specialized nature, or historic status.

Although TSs and ASs are conceptually separate, in practice a standards-track document may combine an AS and one or more related TSs. For example, Technical Specifications that are developed specifically and exclusively for some particular domain of applicability, e.g., for mail server hosts, often contain within a single specification all of the relevant AS and TS information. In such cases, no useful purpose would be served by deliberately distributing the information among several documents just to preserve the formal AS/TS distinction. However, a TS that is likely to apply to more than one domain of applicability should be developed in a modular fashion, to facilitate its incorporation by multiple ASs.

The "Official Protocol Standards" RFC (STD1) lists a general requirement level for each TS, using the nomenclature defined in this section. This RFC is updated periodically. In many cases, more detailed descriptions of the requirement levels of particular protocols and of individual features of the protocols will be found in appropriate ASs.

[4.](#) THE INTERNET STANDARDS TRACK

Specifications that are intended to become Internet Standards evolve through a set of maturity levels known as the "standards track". These maturity levels -- "Proposed Standard", "Draft Standard", and "Standard" -- are defined and discussed in [section 4.1](#). The way in which specifications move along the standards track is described in [section 6](#).

Even after a specification has been adopted as an Internet Standard, further evolution often occurs based on experience and the recognition of new requirements. The nomenclature and procedures of Internet standardization provide for the replacement of old Internet

Standards with new ones, and the assignment of descriptive labels to indicate the status of "retired" Internet Standards. A set of maturity levels is defined in [section 4.2](#) to cover these and other specifications that are not considered to be on the standards track.

[4.1](#) Standards Track Maturity Levels

Internet specifications go through stages of development, testing, and acceptance. Within the Internet Standards Process, these stages are formally labeled "maturity levels".

This section describes the maturity levels and the expected characteristics of specifications at each level.

[4.1.1](#) Proposed Standard

The entry-level maturity for the standards track is "Proposed Standard". A specific action by the IESG is required to move a specification onto the standards track at the "Proposed Standard" level.

A Proposed Standard specification is generally stable, has resolved known design choices, is believed to be well-understood, has received significant community review, and appears to enjoy enough community interest to be considered valuable. However, further experience might result in a change or even retraction of the specification before it advances.

Usually, neither implementation nor operational experience is required for the designation of a specification as a Proposed Standard. However, such experience is highly desirable, and will usually represent a strong argument in favor of a Proposed Standard designation.

The IESG may require implementation and/or operational experience prior to granting Proposed Standard status to a specification that materially affects the core Internet protocols or that specifies behavior that may have significant operational impact on the Internet.

A Proposed Standard should have no known technical omissions with respect to the requirements placed upon it. However, the IESG may waive this requirement in order to allow a specification to advance to the Proposed Standard state when it is considered to be useful and necessary (and timely) even with known technical omissions.

Implementors should treat Proposed Standards as immature specifications. It is desirable to implement them in order to gain experience and to validate, test, and clarify the specification. However, since the content of Proposed Standards may be changed if problems are found or better solutions are identified, deploying implementations of such standards into a disruption-sensitive environment is not recommended.

[4.1.2](#) Draft Standard

A specification from which at least two independent and interoperable implementations from different code bases have been developed, and for which sufficient successful operational experience has been obtained, may be elevated to the "Draft Standard" level. For the purposes of this section, "interoperable" means to be functionally equivalent or interchangeable components of the system or process in which they are used. If patented or otherwise controlled technology is required for implementation, the separate implementations must also have resulted from separate exercise of the licensing process. Elevation to Draft Standard is a major advance in status, indicating a strong belief that the specification is mature and will be useful.

The requirement for at least two independent and interoperable implementations applies to all of the options and features of the specification. In cases in which one or more options or features have not been demonstrated in at least two interoperable implementations, the specification may advance to the Draft Standard level only if those options or features are removed.

The Working Group chair is responsible for documenting the specific implementations which qualify the specification for Draft or Internet Standard status along with documentation about testing of the interoperation of these implementations. The documentation must include information about the support of each of the individual options and features. This documentation should be submitted to the Area Director with the protocol action request. (see [Section 6](#))

A Draft Standard must be well-understood and known to be quite stable, both in its semantics and as a basis for developing an implementation. A Draft Standard may still require additional or more widespread field experience, since it is possible for implementations based on Draft Standard specifications to demonstrate unforeseen behavior when subjected to large-scale use in production environments.

A Draft Standard is normally considered to be a final specification, and changes are likely to be made only to solve specific problems encountered. In most circumstances, it is reasonable for vendors to deploy implementations of Draft Standards into a disruption sensitive environment.

[4.1.3](#) Internet Standard

A specification for which significant implementation and successful operational experience has been obtained may be elevated to the Internet Standard level. An Internet Standard (which may simply be referred to as a Standard) is characterized by a high degree of technical maturity and by a generally held belief that the specified protocol or service provides significant benefit to the Internet community.

A specification that reaches the status of Standard is assigned a number in the STD series while retaining its RFC number.

[4.2](#) Non-Standards Track Maturity Levels

Not every specification is on the standards track. A specification may not be intended to be an Internet Standard, or it may be intended for eventual standardization but not yet ready to enter the standards track. A specification may have been superseded by a more recent Internet Standard, or have otherwise fallen into disuse or disfavor.

Specifications that are not on the standards track are labeled with one of three "off-track" maturity levels: "Experimental", "Informational", or "Historic". The documents bearing these labels are not Internet Standards in any sense.

[4.2.1](#) Experimental

The "Experimental" designation typically denotes a specification that is part of some research or development effort. Such a specification is published for the general information of the Internet technical community and as an archival record of the work, subject only to editorial considerations and to verification that there has been adequate coordination with the standards process (see below). An Experimental specification may be the output of an organized Internet research effort (e.g., a Research Group of the IRTF), an IETF Working Group, or it may be an individual contribution.

[4.2.2](#) Informational

An "Informational" specification is published for the general information of the Internet community, and does not represent an Internet community consensus or recommendation. The Informational designation is intended to provide for the timely publication of a very broad range of responsible informational documents from many sources, subject only to editorial considerations and to verification that there has been adequate coordination with the standards process (see [section 4.2.3](#)).

Specifications that have been prepared outside of the Internet community and are not incorporated into the Internet Standards Process by any of the provisions of [section 10](#) may be published as Informational RFCs, with the permission of the owner and the concurrence of the RFC Editor.

[4.2.3](#) Procedures for Experimental and Informational RFCs

Unless they are the result of IETF Working Group action, documents intended to be published with Experimental or Informational status should be submitted directly to the RFC Editor. The RFC Editor will publish any such documents as Internet-Drafts which have not already been so published. In order to differentiate these Internet-Drafts they will be labeled or grouped in the I-D directory so they are easily recognizable. The RFC Editor will wait two weeks after this publication for comments before proceeding further. The RFC Editor is expected to exercise his or her judgment concerning the editorial suitability of a document for publication with Experimental or Informational status, and may refuse to publish a document which, in the expert opinion of the RFC Editor, is unrelated to Internet activity or falls below the technical and/or editorial standard for RFCs.

To ensure that the non-standards track Experimental and Informational designations are not misused to circumvent the Internet Standards Process, the IESG and the RFC Editor have agreed that the RFC Editor will refer to the IESG any document submitted for Experimental or Informational publication which, in the opinion of the RFC Editor, may be related to work being done, or expected to be done, within the IETF community. The IESG shall review such a referred document within a reasonable period of time, and recommend either that it be published as originally submitted or referred to the IETF as a contribution to the Internet Standards Process.

If (a) the IESG recommends that the document be brought within the IETF and progressed within the IETF context, but the author declines to do so, or (b) the IESG considers that the document proposes

something that conflicts with, or is actually inimical to, an established IETF effort, the document may still be published as an Experimental or Informational RFC. In these cases, however, the IESG may insert appropriate "disclaimer" text into the RFC either in or immediately following the "Status of this Memo" section in order to make the circumstances of its publication clear to readers.

Documents proposed for Experimental and Informational RFCs by IETF Working Groups go through IESG review. The review is initiated using the process described in [section 6.1.1](#).

[4.2.4](#) **Historic**

A specification that has been superseded by a more recent specification or is for any other reason considered to be obsolete is assigned to the "Historic" level. (Purists have suggested that the word should be "Historical"; however, at this point the use of "Historic" is historical.)

Note: Standards track specifications normally must not depend on other standards track specifications which are at a lower maturity level or on non standards track specifications other than referenced specifications from other standards bodies. (See [Section 7](#).)

[5](#). **BEST CURRENT PRACTICE (BCP) RFCs**

The BCP subseries of the RFC series is designed to be a way to standardize practices and the results of community deliberations. A BCP document is subject to the same basic set of procedures as standards track documents and thus is a vehicle by which the IETF community can define and ratify the community's best current thinking on a statement of principle or on what is believed to be the best way to perform some operations or IETF process function.

Historically Internet standards have generally been concerned with the technical specifications for hardware and software required for computer communication across interconnected networks. However, since the Internet itself is composed of networks operated by a great variety of organizations, with diverse goals and rules, good user service requires that the operators and administrators of the Internet follow some common guidelines for policies and operations. While these guidelines are generally different in scope and style from protocol standards, their establishment needs a similar process for consensus building.

While it is recognized that entities such as the IAB and IESG are composed of individuals who may participate, as individuals, in the technical work of the IETF, it is also recognized that the entities

themselves have an existence as leaders in the community. As leaders in the Internet technical community, these entities should have an outlet to propose ideas to stimulate work in a particular area, to raise the community's sensitivity to a certain issue, to make a statement of architectural principle, or to communicate their thoughts on other matters. The BCP subseries creates a smoothly structured way for these management entities to insert proposals into the consensus-building machinery of the IETF while gauging the community's view of that issue.

Finally, the BCP series may be used to document the operation of the IETF itself. For example, this document defines the IETF Standards Process and is published as a BCP.

[5.1](#) BCP Review Process

Unlike standards-track documents, the mechanisms described in BCPs are not well suited to the phased roll-in nature of the three stage standards track and instead generally only make sense for full and immediate instantiation.

The BCP process is similar to that for proposed standards. The BCP is submitted to the IESG for review, (see [section 6.1.1](#)) and the existing review process applies, including a Last-Call on the IETF Announce mailing list. However, once the IESG has approved the document, the process ends and the document is published. The resulting document is viewed as having the technical approval of the IETF.

Specifically, a document to be considered for the status of BCP must undergo the procedures outlined in sections [6.1](#), and [6.4](#) of this document. The BCP process may be appealed according to the procedures in [section 6.5](#).

Because BCPs are meant to express community consensus but are arrived at more quickly than standards, BCPs require particular care. Specifically, BCPs should not be viewed simply as stronger Informational RFCs, but rather should be viewed as documents suitable for a content different from Informational RFCs.

A specification, or group of specifications, that has, or have been approved as a BCP is assigned a number in the BCP series while retaining its RFC number(s).

[6.](#) THE INTERNET STANDARDS PROCESS

The mechanics of the Internet Standards Process involve decisions of the IESG concerning the elevation of a specification onto the standards track or the movement of a standards-track specification from one maturity level to another. Although a number of reasonably objective criteria (described below and in [section 4](#)) are available to guide the IESG in making a decision to move a specification onto, along, or off the standards track, there is no algorithmic guarantee of elevation to or progression along the standards track for any specification. The experienced collective judgment of the IESG concerning the technical quality of a specification proposed for elevation to or advancement in the standards track is an essential component of the decision-making process.

[6.1](#) Standards Actions

A "standards action" -- entering a particular specification into, advancing it within, or removing it from, the standards track -- must be approved by the IESG.

[6.1.1](#) Initiation of Action

A specification that is intended to enter or advance in the Internet standards track shall first be posted as an Internet-Draft (see [section 2.2](#)) unless it has not changed since publication as an RFC. It shall remain as an Internet-Draft for a period of time, not less than two weeks, that permits useful community review, after which a recommendation for action may be initiated.

A standards action is initiated by a recommendation by the IETF Working group responsible for a specification to its Area Director, copied to the IETF Secretariat or, in the case of a specification not associated with a Working Group, a recommendation by an individual to the IESG.

[6.1.2](#) IESG Review and Approval

The IESG shall determine whether or not a specification submitted to it according to [section 6.1.1](#) satisfies the applicable criteria for the recommended action (see sections [4.1](#) and [4.2](#)), and shall in addition determine whether or not the technical quality and clarity of the specification is consistent with that expected for the maturity level to which the specification is recommended.

In order to obtain all of the information necessary to make these determinations, particularly when the specification is considered by the IESG to be extremely important in terms of its potential impact

on the Internet or on the suite of Internet protocols, the IESG may, at its discretion, commission an independent technical review of the specification.

The IESG will send notice to the IETF of the pending IESG consideration of the document(s) to permit a final review by the general Internet community. This "Last-Call" notification shall be via electronic mail to the IETF Announce mailing list. Comments on a Last-Call shall be accepted from anyone, and should be sent as directed in the Last-Call announcement.

The Last-Call period shall be no shorter than two weeks except in those cases where the proposed standards action was not initiated by an IETF Working Group, in which case the Last-Call period shall be no shorter than four weeks. If the IESG believes that the community interest would be served by allowing more time for comment, it may decide on a longer Last-Call period or to explicitly lengthen a current Last-Call period.

The IESG is not bound by the action recommended when the specification was submitted. For example, the IESG may decide to consider the specification for publication in a different category than that requested. If the IESG determines this before the Last-Call is issued then the Last-Call should reflect the IESG's view. The IESG could also decide to change the publication category based on the response to a Last-Call. If this decision would result in a specification being published at a "higher" level than the original Last-Call was for, a new Last-Call should be issued indicating the IESG recommendation. In addition, the IESG may decide to recommend the formation of a new Working Group in the case of significant controversy in response to a Last-Call for specification not originating from an IETF Working Group.

In a timely fashion after the expiration of the Last-Call period, the IESG shall make its final determination of whether or not to approve the standards action, and shall notify the IETF of its decision via electronic mail to the IETF Announce mailing list.

[6.1.3](#) Publication

If a standards action is approved, notification is sent to the RFC Editor and copied to the IETF with instructions to publish the specification as an RFC. The specification shall at that point be removed from the Internet-Drafts directory.

An official summary of standards actions completed and pending shall appear in each issue of the Internet Society's newsletter. This shall constitute the "publication of record" for Internet standards actions.

The RFC Editor shall publish periodically an "Internet Official Protocol Standards" RFC [\[1\]](#), summarizing the status of all Internet protocol and service specifications.

[6.2](#) Advancing in the Standards Track

The procedure described in [section 6.1](#) is followed for each action that attends the advancement of a specification along the standards track.

A specification shall remain at the Proposed Standard level for at least six (6) months.

A specification shall remain at the Draft Standard level for at least four (4) months, or until at least one IETF meeting has occurred, whichever comes later.

These minimum periods are intended to ensure adequate opportunity for community review without severely impacting timeliness. These intervals shall be measured from the date of publication of the corresponding RFC(s), or, if the action does not result in RFC publication, the date of the announcement of the IESG approval of the action.

A specification may be (indeed, is likely to be) revised as it advances through the standards track. At each stage, the IESG shall determine the scope and significance of the revision to the specification, and, if necessary and appropriate, modify the recommended action. Minor revisions are expected, but a significant revision may require that the specification accumulate more experience at its current maturity level before progressing. Finally, if the specification has been changed very significantly, the IESG may recommend that the revision be treated as a new document, re-entering the standards track at the beginning.

Change of status shall result in republication of the specification as an RFC, except in the rare case that there have been no changes at all in the specification since the last publication. Generally, desired changes will be "batched" for incorporation at the next level in the standards track. However, deferral of changes to the next standards action on the specification will not always be possible or desirable; for example, an important typographical error, or a technical error that does not represent a change in overall function

of the specification, may need to be corrected immediately. In such cases, the IESG or RFC Editor may be asked to republish the RFC (with a new number) with corrections, and this will not reset the minimum time-at-level clock.

When a standards-track specification has not reached the Internet Standard level but has remained at the same maturity level for twenty-four (24) months, and every twelve (12) months thereafter until the status is changed, the IESG shall review the viability of the standardization effort responsible for that specification and the usefulness of the technology. Following each such review, the IESG shall approve termination or continuation of the development effort, at the same time the IESG shall decide to maintain the specification at the same maturity level or to move it to Historic status. This decision shall be communicated to the IETF by electronic mail to the IETF Announce mailing list to allow the Internet community an opportunity to comment. This provision is not intended to threaten a legitimate and active Working Group effort, but rather to provide an administrative mechanism for terminating a moribund effort.

[6.3](#) Revising a Standard

A new version of an established Internet Standard must progress through the full Internet standardization process as if it were a completely new specification. Once the new version has reached the Standard level, it will usually replace the previous version, which will be moved to Historic status. However, in some cases both versions may remain as Internet Standards to honor the requirements of an installed base. In this situation, the relationship between the previous and the new versions must be explicitly stated in the text of the new version or in another appropriate document (e.g., an Applicability Statement; see [section 3.2](#)).

[6.4](#) Retiring a Standard

As the technology changes and matures, it is possible for a new Standard specification to be so clearly superior technically that one or more existing standards track specifications for the same function should be retired. In this case, or when it is felt for some other reason that an existing standards track specification should be retired, the IESG shall approve a change of status of the old specification(s) to Historic. This recommendation shall be issued with the same Last-Call and notification procedures used for any other standards action. A request to retire an existing standard can originate from a Working Group, an Area Director or some other interested party.

6.5 Conflict Resolution and Appeals

Disputes are possible at various stages during the IETF process. As much as possible the process is designed so that compromises can be made, and genuine consensus achieved, however there are times when even the most reasonable and knowledgeable people are unable to agree. To achieve the goals of openness and fairness, such conflicts must be resolved by a process of open review and discussion. This section specifies the procedures that shall be followed to deal with Internet standards issues that cannot be resolved through the normal processes whereby IETF Working Groups and other Internet Standards Process participants ordinarily reach consensus.

6.5.1 Working Group Disputes

An individual (whether a participant in the relevant Working Group or not) may disagree with a Working Group recommendation based on his or her belief that either (a) his or her own views have not been adequately considered by the Working Group, or (b) the Working Group has made an incorrect technical choice which places the quality and/or integrity of the Working Group's product(s) in significant jeopardy. The first issue is a difficulty with Working Group process; the latter is an assertion of technical error. These two types of disagreement are quite different, but both are handled by the same process of review.

A person who disagrees with a Working Group recommendation shall always first discuss the matter with the Working Group's chair(s), who may involve other members of the Working Group (or the Working Group as a whole) in the discussion.

If the disagreement cannot be resolved in this way, any of the parties involved may bring it to the attention of the Area Director(s) for the area in which the Working Group is chartered. The Area Director(s) shall attempt to resolve the dispute.

If the disagreement cannot be resolved by the Area Director(s) any of the parties involved may then appeal to the IESG as a whole. The IESG shall then review the situation and attempt to resolve it in a manner of its own choosing.

If the disagreement is not resolved to the satisfaction of the parties at the IESG level, any of the parties involved may appeal the decision to the IAB. The IAB shall then review the situation and attempt to resolve it in a manner of its own choosing.

The IAB decision is final with respect to the question of whether or not the Internet standards procedures have been followed and with respect to all questions of technical merit.

[6.5.2](#) Process Failures

This document sets forward procedures required to be followed to ensure openness and fairness of the Internet Standards Process, and the technical viability of the standards created. The IESG is the principal agent of the IETF for this purpose, and it is the IESG that is charged with ensuring that the required procedures have been followed, and that any necessary prerequisites to a standards action have been met.

If an individual should disagree with an action taken by the IESG in this process, that person should first discuss the issue with the IESG Chair. If the IESG Chair is unable to satisfy the complainant then the IESG as a whole should re-examine the action taken, along with input from the complainant, and determine whether any further action is needed. The IESG shall issue a report on its review of the complaint to the IETF.

Should the complainant not be satisfied with the outcome of the IESG review, an appeal may be lodged to the IAB. The IAB shall then review the situation and attempt to resolve it in a manner of its own choosing and report to the IETF on the outcome of its review.

If circumstances warrant, the IAB may direct that an IESG decision be annulled, and the situation shall then be as it was before the IESG decision was taken. The IAB may also recommend an action to the IESG, or make such other recommendations as it deems fit. The IAB may not, however, pre-empt the role of the IESG by issuing a decision which only the IESG is empowered to make.

The IAB decision is final with respect to the question of whether or not the Internet standards procedures have been followed.

[6.5.3](#) Questions of Applicable Procedure

Further recourse is available only in cases in which the procedures themselves (i.e., the procedures described in this document) are claimed to be inadequate or insufficient to the protection of the rights of all parties in a fair and open Internet Standards Process. Claims on this basis may be made to the Internet Society Board of Trustees. The President of the Internet Society shall acknowledge such an appeal within two weeks, and shall at the time of acknowledgment advise the petitioner of the expected duration of the Trustees' review of the appeal. The Trustees shall review the

situation in a manner of its own choosing and report to the IETF on the outcome of its review.

The Trustees' decision upon completion of their review shall be final with respect to all aspects of the dispute.

[6.5.4 Appeals Procedure](#)

All appeals must include a detailed and specific description of the facts of the dispute.

All appeals must be initiated within two months of the public knowledge of the action or decision to be challenged.

At all stages of the appeals process, the individuals or bodies responsible for making the decisions have the discretion to define the specific procedures they will follow in the process of making their decision.

In all cases a decision concerning the disposition of the dispute, and the communication of that decision to the parties involved, must be accomplished within a reasonable period of time.

[NOTE: These procedures intentionally and explicitly do not establish a fixed maximum time period that shall be considered "reasonable" in all cases. The Internet Standards Process places a premium on consensus and efforts to achieve it, and deliberately foregoes deterministically swift execution of procedures in favor of a latitude within which more genuine technical agreements may be reached.]

[7. EXTERNAL STANDARDS AND SPECIFICATIONS](#)

Many standards groups other than the IETF create and publish standards documents for network protocols and services. When these external specifications play an important role in the Internet, it is desirable to reach common agreements on their usage -- i.e., to establish Internet Standards relating to these external specifications.

There are two categories of external specifications:

(1) Open Standards

Various national and international standards bodies, such as ANSI, ISO, IEEE, and ITU-T, develop a variety of protocol and service specifications that are similar to Technical Specifications defined here. National and international groups also publish

"implementors' agreements" that are analogous to Applicability Statements, capturing a body of implementation-specific detail concerned with the practical application of their standards. All of these are considered to be "open external standards" for the purposes of the Internet Standards Process.

(2) Other Specifications

Other proprietary specifications that have come to be widely used in the Internet may be treated by the Internet community as if they were a "standards". Such a specification is not generally developed in an open fashion, is typically proprietary, and is controlled by the vendor, vendors, or organization that produced it.

[7.1](#) Use of External Specifications

To avoid conflict between competing versions of a specification, the Internet community will not standardize a specification that is simply an "Internet version" of an existing external specification unless an explicit cooperative arrangement to do so has been made. However, there are several ways in which an external specification that is important for the operation and/or evolution of the Internet may be adopted for Internet use.

[7.1.1](#) Incorporation of an Open Standard

An Internet Standard TS or AS may incorporate an open external standard by reference. For example, many Internet Standards incorporate by reference the ANSI standard character set "ASCII" [[2](#)]. Whenever possible, the referenced specification shall be available online.

[7.1.2](#) Incorporation of Other Specifications

Other proprietary specifications may be incorporated by reference to a version of the specification as long as the proprietor meets the requirements of [section 10](#). If the other proprietary specification is not widely and readily available, the IESG may request that it be published as an Informational RFC.

The IESG generally should not favor a particular proprietary specification over technically equivalent and competing specification(s) by making any incorporated vendor specification "required" or "recommended".

7.1.3 Assumption

An IETF Working Group may start from an external specification and develop it into an Internet specification. This is acceptable if (1) the specification is provided to the Working Group in compliance with the requirements of [section 10](#), and (2) change control has been conveyed to IETF by the original developer of the specification for the specification or for specifications derived from the original specification.

8. NOTICES AND RECORD KEEPING

Each of the organizations involved in the development and approval of Internet Standards shall publicly announce, and shall maintain a publicly accessible record of, every activity in which it engages, to the extent that the activity represents the prosecution of any part of the Internet Standards Process. For purposes of this section, the organizations involved in the development and approval of Internet Standards includes the IETF, the IESG, the IAB, all IETF Working Groups, and the Internet Society Board of Trustees.

For IETF and Working Group meetings announcements shall be made by electronic mail to the IETF Announce mailing list and shall be made sufficiently far in advance of the activity to permit all interested parties to effectively participate. The announcement shall contain (or provide pointers to) all of the information that is necessary to support the participation of any interested individual. In the case of a meeting, for example, the announcement shall include an agenda that specifies the standards- related issues that will be discussed.

The formal record of an organization's standards-related activity shall include at least the following:

- o the charter of the organization (or a defining document equivalent to a charter);
- o complete and accurate minutes of meetings;
- o the archives of Working Group electronic mail mailing lists; and
- o all written contributions from participants that pertain to the organization's standards-related activity.

As a practical matter, the formal record of all Internet Standards Process activities is maintained by the IETF Secretariat, and is the responsibility of the IETF Secretariat except that each IETF Working Group is expected to maintain their own email list archive and must make a best effort to ensure that all traffic is captured and included in the archives. Also, the Working Group chair is responsible for providing the IETF Secretariat with complete and accurate minutes of all Working Group meetings. Internet-Drafts that

have been removed (for any reason) from the Internet-Drafts directories shall be archived by the IETF Secretariat for the sole purpose of preserving an historical record of Internet standards activity and thus are not retrievable except in special circumstances.

[9.](#) VARYING THE PROCESS

This document, which sets out the rules and procedures by which Internet Standards and related documents are made is itself a product of the Internet Standards Process (as a BCP, as described in [section 5](#)). It replaces a previous version, and in time, is likely itself to be replaced.

While, when published, this document represents the community's view of the proper and correct process to follow, and requirements to be met, to allow for the best possible Internet Standards and BCPs, it cannot be assumed that this will always remain the case. From time to time there may be a desire to update it, by replacing it with a new version. Updating this document uses the same open procedures as are used for any other BCP.

In addition, there may be situations where following the procedures leads to a deadlock about a specific specification, or there may be situations where the procedures provide no guidance. In these cases it may be appropriate to invoke the variance procedure described below.

[9.1](#) The Variance Procedure

Upon the recommendation of the responsible IETF Working Group (or, if no Working Group is constituted, upon the recommendation of an ad hoc committee), the IESG may enter a particular specification into, or advance it within, the standards track even though some of the requirements of this document have not or will not be met. The IESG may approve such a variance, however, only if it first determines that the likely benefits to the Internet community are likely to outweigh any costs to the Internet community that result from noncompliance with the requirements in this document. In exercising this discretion, the IESG shall at least consider (a) the technical merit of the specification, (b) the possibility of achieving the goals of the Internet Standards Process without granting a variance, (c) alternatives to the granting of a variance, (d) the collateral and precedential effects of granting a variance, and (e) the IESG's ability to craft a variance that is as narrow as possible. In determining whether to approve a variance, the IESG has discretion to limit the scope of the variance to particular parts of this document and to impose such additional restrictions or limitations as it

determines appropriate to protect the interests of the Internet community.

The proposed variance must detail the problem perceived, explain the precise provision of this document which is causing the need for a variance, and the results of the IESG's considerations including consideration of points (a) through (d) in the previous paragraph. The proposed variance shall be issued as an Internet Draft. The IESG shall then issue an extended Last-Call, of no less than 4 weeks, to allow for community comment upon the proposal.

In a timely fashion after the expiration of the Last-Call period, the IESG shall make its final determination of whether or not to approve the proposed variance, and shall notify the IETF of its decision via electronic mail to the IETF Announce mailing list. If the variance is approved it shall be forwarded to the RFC Editor with a request that it be published as a BCP.

This variance procedure is for use when a one-time waving of some provision of this document is felt to be required. Permanent changes to this document shall be accomplished through the normal BCP process.

The appeals process in [section 6.5](#) applies to this process.

[9.2 Exclusions](#)

No use of this procedure may lower any specified delays, nor exempt any proposal from the requirements of openness, fairness, or consensus, nor from the need to keep proper records of the meetings and mailing list discussions.

Specifically, the following sections of this document must not be subject of a variance: 5.1, 6.1, 6.1.1 (first paragraph), 6.1.2, 6.3 (first sentence), 6.5 and 9.

[10. INTELLECTUAL PROPERTY RIGHTS](#)

[10.1. General Policy](#)

In all matters of intellectual property rights and procedures, the intention is to benefit the Internet community and the public at large, while respecting the legitimate rights of others.

[10.2](#) Confidentiality Obligations

No contribution that is subject to any requirement of confidentiality or any restriction on its dissemination may be considered in any part of the Internet Standards Process, and there must be no assumption of any confidentiality obligation with respect to any such contribution.

[10.3](#). Rights and Permissions

In the course of standards work, the IETF receives contributions in various forms and from many persons. To best facilitate the dissemination of these contributions, it is necessary to understand any intellectual property rights (IPR) relating to the contributions.

[10.3.1](#). All Contributions

By submission of a contribution, each person actually submitting the contribution is deemed to agree to the following terms and conditions on his own behalf, on behalf of the organization (if any) he represents and on behalf of the owners of any propriety rights in the contribution.. Where a submission identifies contributors in addition to the contributor(s) who provide the actual submission, the actual submitter(s) represent that each other named contributor was made aware of and agreed to accept the same terms and conditions on his own behalf, on behalf of any organization he may represent and any known owner of any proprietary rights in the contribution.

1. Some works (e.g. works of the U.S. Government) are not subject to copyright. However, to the extent that the submission is or may be subject to copyright, the contributor, the organization he represents (if any) and the owners of any proprietary rights in the contribution, grant an unlimited perpetual, non-exclusive, royalty-free, world-wide right and license to the ISOC and the IETF under any copyrights in the contribution. This license includes the right to copy, publish and distribute the contribution in any way, and to prepare derivative works that are based on or incorporate all or part of the contribution, the license to such derivative works to be of the same scope as the license of the original contribution.
2. The contributor acknowledges that the ISOC and IETF have no duty to publish or otherwise use or disseminate any contribution.
3. The contributor grants permission to reference the name(s) and address(es) of the contributor(s) and of the organization(s) he represents (if any).

4. The contributor represents that contribution properly acknowledge major contributors.
5. The contributor, the organization (if any) he represents and the owners of any proprietary rights in the contribution, agree that no information in the contribution is confidential and that the ISOC and its affiliated organizations may freely disclose any information in the contribution.
6. The contributor represents that he has disclosed the existence of any proprietary or intellectual property rights in the contribution that are reasonably and personally known to the contributor. The contributor does not represent that he personally knows of all potentially pertinent proprietary and intellectual property rights owned or claimed by the organization he represents (if any) or third parties.
7. The contributor represents that there are no limits to the contributor's ability to make the grants acknowledgments and agreements above that are reasonably and personally known to the contributor.

By ratifying this description of the IETF process the Internet Society warrants that it will not inhibit the traditional open and free access to IETF documents for which license and right have been assigned according to the procedures set forth in this section, including Internet-Drafts and RFCs. This warrant is perpetual and will not be revoked by the Internet Society or its successors or assigns.

[10.3.2. Standards Track Documents](#)

- (A) Where any patents, patent applications, or other proprietary rights are known, or claimed, with respect to any specification on the standards track, and brought to the attention of the IESG, the IESG shall not advance the specification without including in the document a note indicating the existence of such rights, or claimed rights. Where implementations are required before advancement of a specification, only implementations that have, by statement of the implementors, taken adequate steps to comply with any such rights, or claimed rights, shall be considered for the purpose of showing the adequacy of the specification.
- (B) The IESG disclaims any responsibility for identifying the existence of or for evaluating the applicability of any claimed copyrights, patents, patent applications, or other rights in the fulfilling of the its obligations under (A), and will take no position on the validity or scope of any such rights.

- (C) Where the IESG knows of rights, or claimed rights under (A), the IETF Executive Director shall attempt to obtain from the claimant of such rights, a written assurance that upon approval by the IESG of the relevant Internet standards track specification(s), any party will be able to obtain the right to implement, use and distribute the technology or works when implementing, using or distributing technology based upon the specific specification(s) under openly specified, reasonable, non-discriminatory terms. The Working Group proposing the use of the technology with respect to which the proprietary rights are claimed may assist the IETF Executive Director in this effort. The results of this procedure shall not affect advancement of a specification along the standards track, except that the IESG may defer approval where a delay may facilitate the obtaining of such assurances. The results will, however, be recorded by the IETF Executive Director, and made available. The IESG may also direct that a summary of the results be included in any RFC published containing the specification.

[10.3.3](#) Determination of Reasonable and Non-discriminatory Terms

The IESG will not make any explicit determination that the assurance of reasonable and non-discriminatory terms for the use of a technology has been fulfilled in practice. It will instead use the normal requirements for the advancement of Internet Standards to verify that the terms for use are reasonable. If the two unrelated implementations of the specification that are required to advance from Proposed Standard to Draft Standard have been produced by different organizations or individuals or if the "significant implementation and successful operational experience" required to advance from Draft Standard to Standard has been achieved the assumption is that the terms must be reasonable and to some degree, non-discriminatory. This assumption may be challenged during the Last-Call period.

[10.4.](#) Notices

- (A) Standards track documents shall include the following notice:

"The IETF takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Information on the IETF's procedures with respect to rights in standards-track and standards-related documentation can be found in [BCP-11](#). Copies of claims of rights made

available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementors or users of this specification can be obtained from the IETF Secretariat."

- (B) The IETF encourages all interested parties to bring to its attention, at the earliest possible time, the existence of any intellectual property rights pertaining to Internet Standards. For this purpose, each standards document shall include the following invitation:

"The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights which may cover technology that may be required to practice this standard. Please address the information to the IETF Executive Director."

- (C) The following copyright notice and disclaimer shall be included in all ISOC standards-related documentation:

"Copyright (C) The Internet Society (date). All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the Internet Society or other Internet organizations, except as needed for the purpose of developing Internet standards in which case the procedures for copyrights defined in the Internet Standards process must be followed, or as required to translate it into languages other than English.

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- (D) Where the IESG is aware at the time of publication of proprietary rights claimed with respect to a standards track document, or the technology described or referenced therein, such document shall contain the following notice:

"The IETF has been notified of intellectual property rights claimed in regard to some or all of the specification contained in this document. For more information consult the online list of claimed rights."

[11.](#) ACKNOWLEDGMENTS

There have been a number of people involved with the development of the documents defining the IETF Standards Process over the years. The process was first described in [RFC 1310](#) then revised in [RFC 1602](#) before the current effort (which relies heavily on its predecessors). Specific acknowledgments must be extended to Lyman Chapin, Phill Gross and Christian Huitema as the editors of the previous versions, to Jon Postel and Dave Crocker for their inputs to those versions, to Andy Ireland, Geoff Stewart, Jim Lampert, and Dick Holleman for their reviews of the legal aspects of the procedures described herein, and to John Stewart, Robert Elz and Steve Coya for their extensive input on the final version.

In addition much of the credit for the refinement of the details of the IETF processes belongs to the many members of the various incarnations of the POISED Working Group.

[12.](#) SECURITY CONSIDERATIONS

Security issues are not discussed in this memo.

[13.](#) REFERENCES

- [1] Postel, J., "Internet Official Protocol Standards", STD 1, USC/Information Sciences Institute, March 1996.
- [2] ANSI, Coded Character Set -- 7-Bit American Standard Code for Information Interchange, ANSI X3.4-1986.
- [3] Reynolds, J., and J. Postel, "Assigned Numbers", STD 2, USC/Information Sciences Institute, October 1994.
- [4] Postel, J., "Introduction to the STD Notes", [RFC 1311](#), USC/Information Sciences Institute, March 1992.
- [5] Postel, J., "Instructions to RFC Authors", [RFC 1543](#), USC/Information Sciences Institute, October 1993.
- [6] Huitema, C., J. Postel, and S. Crocker "Not All RFCs are Standards", [RFC 1796](#), April 1995.

[14.](#) DEFINITIONS OF TERMS

IETF Area - A management division within the IETF. An Area consists of Working Groups related to a general topic such as routing. An Area is managed by one or two Area Directors.

Area Director - The manager of an IETF Area. The Area Directors along with the IETF Chair comprise the Internet Engineering Steering Group (IESG).

File Transfer Protocol (FTP) - An Internet application used to transfer files in a TCP/IP network.

gopher - An Internet application used to interactively select and retrieve files in a TCP/IP network.

Internet Architecture Board (IAB) - An appointed group that assists in the management of the IETF standards process.

Internet Engineering Steering Group (IESG) - A group comprised of the IETF Area Directors and the IETF Chair. The IESG is responsible for the management, along with the IAB, of the IETF and is the standards approval board for the IETF.

interoperable - For the purposes of this document, "interoperable" means to be able to interoperate over a data communications path.

Last-Call - A public comment period used to gauge the level of consensus about the reasonableness of a proposed standards action. (see [section 6.1.2](#))

online - Relating to information made available over the Internet.
When referenced in this document material is said to be online when it is retrievable without restriction or undue fee using standard Internet applications such as anonymous FTP, gopher or the WWW.

Working Group - A group chartered by the IESG and IAB to work on a specific specification, set of specifications or topic.

[15.](#) AUTHOR'S ADDRESS

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APPENDIX A: GLOSSARY OF ACRONYMS

ANSI:	American National Standards Institute
ARPA:	(U.S.) Advanced Research Projects Agency
AS:	Applicability Statement
FTP:	File Transfer Protocol
ASCII:	American Standard Code for Information Interchange
ITU-T:	Telecommunications Standardization sector of the International Telecommunication Union (ITU), a UN treaty organization; ITU-T was formerly called CCITT.
IAB:	Internet Architecture Board
IANA:	Internet Assigned Numbers Authority
IEEE:	Institute of Electrical and Electronics Engineers
ICMP:	Internet Control Message Protocol
IESG:	Internet Engineering Steering Group
IETF:	Internet Engineering Task Force
IP:	Internet Protocol
IRSG:	Internet Research Steering Group
IRTF:	Internet Research Task Force
ISO:	International Organization for Standardization
ISOC:	Internet Society
MIB:	Management Information Base
OSI:	Open Systems Interconnection
RFC:	Request for Comments
TCP:	Transmission Control Protocol
TS:	Technical Specification
WWW:	World Wide Web

Attachment 2B

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Publication Process

The RFC publication process includes the stages described below. See the process flowchart here.

- RFC Submission Process
- RFC Editing Process

- Authors' Final Review
- Publication
- Copyright Notice and Legend

All RFCs are first published as Internet-Drafts (I-Ds). **All RFCs have been I-Ds, but not all I-Ds become RFCs.**

A well-formed RFC starts with a well-formed Internet-Draft. Please see the Internet-Drafts page on the [IETF site](#) for policy and submission guidelines, as it is authoritative regarding Internet-Drafts. In addition, we recommend the following for authors.

- Use **formatting tools** to create an Internet-Draft.
- Use the **Internet-Draft Submission Tool** to submit an I-D.
- Refer to the **RFC Style Guide** for details on formatting and style conventions.

RFC Submission Process

RFCs from the IAB

The IAB processes their documents as described in RFC 4845.

RFCs from the IETF

All RFCs in a Standards Track or Best Current Practice (BCP) category, as well as some Informational and Experimental RFCs, originate within the IETF process and reach the RFC Editor through the IESG. Members of the IESG include the IETF Area Directors (ADs), who are responsible for sets of related working groups. These working groups develop documents that may be approved for publication as RFCs by the ADs with IESG concurrence.

RFCs from the IRTF

The IRTF processes their documents as described in RFC 5743.

Independent Submissions

Anyone can write an Internet-Draft and independently submit it to the Independent Submissions Editor (ISE) for possible publication as an RFC (Informational, Experimental, and Historic categories only). It will be reviewed for technical competence, relevance, and adequate writing. It will also be reviewed by the ISE and by the IESG for possible conflict with the IETF process. If selected for publication, the submission will enter the RFC Editor's publication queue.

An independent submission must first be published as an Internet-Draft. Please see the instructions on the Independent Submissions page regarding submission.

RFC Editing Process

The RFC Editor maintains a list of documents in the editorial process. Since documents are processed in roughly FIFO order, this list is called the publication queue.

Each document in the queue is assigned to a *state* that tracks its progress. The **state diagram** shows the overall publication process.

Whenever a document enters the editorial queue, changes its state in the queue, or leaves the queue, an automatic email message summarizing the state change is sent to the authors. This message is for information only; it does not replace existing messages to authors, such as AUTH48 messages.

Here are the details of how we update your source file, and here are some important notes on the process.

- IANA processing generally takes place in parallel with editing, but occasionally a document can be held up a long time in IANA state (through no fault of IANA).
- A document A that has a normative reference to a document B that is not yet in the queue will be held at MISSREF state (perhaps a very long time) until B enters the queue. Once A and B are both in the queue, they will both be edited. For various reasons, this editing may require different times. A will be held in REF state, if necessary, until B's editing is complete, so that A and B will enter the final quality-control state RFC-EDITOR, together. Collections of 5 or more documents linked by such normative references are not unusual.
- IETF working groups sometimes submit sets of documents that should be published together although they are not explicitly coupled by normative references.

(Ideally, such document sets would be visible in the queue; we are working on that). A document that belongs to such an implicit set may be held (perhaps a long time) in RFC-EDITOR state, until the entire set has entered RFC-EDITOR state.

- Editing sometimes raises issues that lead to technical discussions involving the working group and an Area Director. If the delay is significant, the document is put into IESG state until the issue is resolved.
- A document may occasionally “fall out” of the queue at any time, e.g., because a working group, an author, or an Area Director requests that it be withdrawn.

Authors’ Final Review (AUTH48 State)

Once an RFC has been edited and is ready for publication, the author(s) are given “48 hours” (in practice, this often stretches over weeks) to look over their document for errors, editorial and otherwise. We DO NOT make changes to RFCs once they have been published, so please look over your document carefully. Upon approval by all authors, the RFC will be published.

The AUTH48 notification message sent to authors asks that they review the entire document, paying particular attention to:

- IANA considerations updates (if applicable),
- contact information, and
- references.

All AUTH48 messages will be CCed to auth48archive@rfc-editor.org, the archival mailing list that preserves the AUTH48 conversation. The [auth48archive](mailto:auth48archive@rfc-editor.org) list is **not** an active discussion list.

Note: If absolutely necessary, authors may temporarily opt out of the archiving of messages (e.g., to discuss a sensitive matter). If opting out, authors should add a note to the top of the message that indicates the auth48archive@rfc-editor.org has been dropped. When the discussion is concluded, the archive will be re-added to the CC list and its addition will be noted at the top of the message.

See the general AUTH48 process described [here](#).

If an author is no longer available, there are several options (as listed in the FAQ). Indefinite delays are not allowed, but when there is a choice, the RFC Editor would in general prefer to publish it right than to publish it early.

See the AUTH48 FAQ for more information.

Publication

When an RFC is published, an announcement is sent to ietf-announce and rfc-dist mailing lists. The URL for the info page of an RFC is of the form: <https://www.rfc-editor.org/info/rfcXXXX>. The most recently published RFCs are listed [here](#).

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Attachment 2C

OCLC 37343206		No holdings in XXX - no other holdings	
		Re	En 199
		c	tere 707
		Stat	d 23
		Re	place 0151715
		d	d .9
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		MRec	Ctry bb
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007 c \$b r \$d u \$e n

040 NBS \$b eng \$c NBS \$d OCL \$d OCLCQ \$d OCLCF \$d OCLCO \$d OCLCQ \$d OCLCO \$d OCLCQ

050 4 TK5105.875.I57 \$b I555

090 \$b

245 00 Internet documentation (RFC's, FYI's, etc.) and IETF information.

256 Electronic data.

260 [Place of publication not identified] : \$b InterNIC

538 Mode of access: Internet via World Wide Web.

516 Text (Hypertext links).

520 This web site maintains several archives that contain documents related to the Internet and to the activities of the Internet Engineering Task Force.

588 0 Printout of online display; title from home page screen.

650 0 Internet.

650 0 TCP/IP (Computer network protocol)

650 6 Internet. \$0 (CaQQLa)201-0235884

650 6 TCP/IP (Protocole de réseaux d'ordinateurs) \$0 (CaQQLa)201-0243407

650 7 Internet. \$2 aat \$0 (CStmoGRI)aat300265429

650 7 Internet. \$2 fast \$0 (OCoLC)fst00977184

650 7 TCP/IP (Computer network protocol) \$2 fast \$0 (OCoLC)fst01141584

710 2 Internet Engineering Task Force.

856 4 \$u <http://ds.internic.net/ds/dspg0intdoc.html>

Attachment 2D

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MARC Display

Labelled Display

LC control no.: sh 92002816

LCCN Permalink: <https://lcn.loc.gov/sh92002816>**HEADING:** Internet

000 02182cz a2200361n 450

001 4843868

005 20190825060150.0

008 920518i| anannbabn |a ana

010 __ |a sh 92002816

035 __ |a (DLC)sh 92002816

035 __ |a (DLC)5086759

035 __ |a (DLC)sp 92002816

035 __ |a (DLC)258300

040 __ |a DLC |c DLC |d DLC

053 _0 |a HM851 |c Sociology

053 _0 |a TK5105.875.I57 |c Telecommunication

053 _0 |a ZA4195 |b ZA4201 |c Information resources

150 __ |a Internet

450 __ |a DARPA Internet

450 __ |w nne |a Internet (Computer network)

550 __ |w g |a Wide area networks (Computer networks)

550 __ |a World Wide Web

670 __ |a Work cat.: 92016450: Malamud, C. Exploring the Internet : a technical travelogue, c1993.

670 __ |a Quarterman, J.S. The Matrix, c1990: |b p. 278-345 (Internet is an internetwork of many networks all running the TCP/IP protocol suite, connected through gateways, and sharing common name and address spaces. It is large not only covering the United States, but also extending to Canada, Europe, and Asia)

670 __ |a Engr. index: |b v. 89, pt. VII, p. 5071.

670 __ |a Byte. Feb. 1992, "Applying the Internet": |b p. 111-118.

670 __ |a OCLC Micro: |b v. 6, No. 4, Aug. 1990, p. 36-37 (Internet is an interconnected set of networks that is primarily North American in origin and use, but is increasingly developing connections to worldwide information resources. It started with ARPAnet, a wide-area experimental network connecting host and terminal servers)

- 670** __ |a 94234135: Brown, S. The Internet via Mosaic and World Wide Web, c1994 |b
(Although the World Wide Web is primarily used on a global scale as a part of the
Internet, it is feasible for a two-machine network to run the WWW client/server
software. Many corporations are looking into WWW as an inexpensive yet up-to-date
method of handling hypermedia applications on a local area network.)
- 675** __ |a ASTI; |a Hennepin; |a IAC; |a McGraw-Hill dict. sci. tech.; |a Random House; |a
Web. 3
- 906** __ |t 0019 |u te07 |v 0
- 910** __ |a Record saved by td04 on 09/23/2016 at 06:59:08
- 952** __ |a LC pattern: World Wide Web
- 953** __ |a fg11 |b ta25

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LIBRARY OF CONGRESS AUTHORITIES

[Help](#)[New Search](#)[Search History](#)[Headings List](#)[Start Over](#)< [Previous](#)[Next](#) >[MARC Display](#)[Labelled Display](#)**LC control no.:** sh 91005299**LCCN Permalink:** <https://lcn.loc.gov/sh91005299>**HEADING:** TCP/IP (Computer network protocol)

000 01261cz a2200241n 450

001 4840240

005 20120330074553.0

008 911011|| anannbabn |a ana

010 __ |a sh 91005299

035 __ |a (DLC)sh 91005299

035 __ |a (DLC)186925

040 __ |a DLC |c DLC |d DLC

053 _0 |a TK5105.585

150 __ |a TCP/IP (Computer network protocol)

450 __ |a TCP/IP Internet Protocol Suite (Computer network protocol)

450 __ |a Transmission Control Protocol/Internet Protocol (Computer network protocol)

550 __ |w g |a Computer network protocols

670 __ |a Work cat.: Comer, D. Internetworking with TCP/IP, c1991: |b p. 2 ("The DARPA technology includes a set of network standards that specify the details of how computers communicate, as well as a set of conventions for interconnecting networks and routing traffic. Officially named the TCP/IP Internet Protocol Suite and commonly referred to as TCP/IP (after the names of its two main standards) ...")

670 __ |a Personal communication, E. El-Hoshy, 10/8/91 |b (TCP/IP stands for Transmission Control Protocol/Internet Protocol)

906 __ |t 9145 |u fk03 |v 0

952 __ |a Made for existing bibliographic records

952 __ |a LC pattern: Futurebus+ (Computer network protocol)

953 __ |a fj25 |b jf08

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Attachment 3A

2023-08-18

Work Programme

Version 2.3.3

[Simple Search](#) | [Advanced Search](#) | [Pre-Defined Reports](#) | [Help](#)**Details of 'DTR/SES-00083' Work Item**

Work Item Reference	ETSI Doc. Number	STF	Technical Body in Charge	Download Standard
DTR/SES-00083	TR 102 157	237	SES BSM	
Current Status (Click to View Full Schedule)	Latest Version	Cover Date	Standstill	Creation Date
Publication (2003-07-10)	1.1.1	2003-07-10		2002-07-11
Rapporteur	Technical Officer	Harmonised Standard		
Marie José Montpetit	Marcello Pagnozzi	No		

Title

Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP Interworking over satellite; Performance, Availability and Quality of Service
IP over satellite - Performance, Availability and Quality of Service

Scope and Field of Application

Technical report detailing performance, availability and Quality of Service (QoS) relating to IP interworking over GSO satellites and recommending areas for future standardisation. This corresponds to Study Topics 3 & 4 (ST3&4) of the STF-214 work. Includes references to ITU-T Rec. Y.1541.

Supporting Organizations

Alcatel;BT;HNS;NERA

Keywords	Projects	Clusters	Frequencies	Mandates Directives
AVAILABILITY BROADBAND INTERNET INTERWORKING IP MULTIMEDIA PERFORMANCE QoS SATELLITE SECURITY		Content delivery Security Wireless Systems		

Official Journal

2003-05-20 pagnozzi Waiting for rapporteur's input

2003-04-14 kiacz Approved at SES#56.

2003-02-10 kiacz WI resumed, STF 237 started.

Remarks

2003-01-30 kiacz Work suspended on 31/12/2002 with the closure of STF 214. Work restarts on 10/02 /2003 in STF 237.

2002-10-08 kiacz WI reference changed from DTR/SES-083 to DTR/SES-00083 to align with SES WI numbering rules.

2002-07-11 kiacz WI created at SES#53 (June02)

Any comments or problems with this application? Please [let us know...](#)

Attachment 3B

[Simple search](#)
[Advanced search](#)
[Pre-Defined Reports](#)
[Help](#)

Details of '[DTR/SES-00083](#)' Work Item Schedule

Code	Milestone	Action	Action Nb	Target	Achieved	Version
0	Creation of WI by WG/TB			2012-10-15	2002-06-28	
0 a	TB adoption of WI			2002-06-28	2002-06-28	
1	Start of work			2002-06-28	2002-06-28	
5 S	1st draft			2002-09-15	2002-09-15	
5 S	2nd draft			2002-11-15	2002-11-21	
5 P	Suspend work			2002-12-31	2002-12-31	
5 Q	Resume work			2003-02-10	2003-02-10	
7	WG approval			2003-03-31	2003-02-26	
8	TB approval			2003-04-11	2003-04-11	
8 A	Draft receipt by ETSI Secretariat			2003-04-25	2003-04-16	
8 WA	Waiting - see "Remarks"			2003-05-19	2003-05-19	
8 A	Draft receipt by ETSI Secretariat			2003-06-27	2003-07-01	
12	Publication	PU		2003-07-15	2003-07-10	1.1.1



Any comments or problems with this application? Please [let us know...](#)

Attachment 4A

2023-07-14

Work Programme

Version 2.3.3

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Details of 'RTR/SES-00089' Work Item



Work Item Reference	ETSI Doc. Number	STF	Technical Body in Charge	Download Standard
RTR/SES-00089	TR 101 985		SES BSM	
Current Status (Click to View Full Schedule)	Latest Version	Cover Date	Standstill	Creation Date
Publication (2002-11-14)	1.1.2	2002-11-14		2002-11-14
Rapporteur	Technical Officer	Harmonised Standard		
Rupert Goodings	Balazs Kiacz	No		

Title

Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia; IP over Satellite BSM IP

Scope and Field of Application

Revision of TR 101 985 V1.1.1 to correct some incorrect references.

Supporting Organizations

Nera, Telia, BT, Alcatel.

Keywords	Projects	Clusters	Frequencies	Mandates	Directives
ARCHITECTURE BROADBAND IP MULTIMEDIA SATELLITE	eEurope	Content delivery Security Wireless Systems			

Official Journal

Remarks

2002-11-14 kiacz WI created to correct some referencing errors in TR 101 985 V1.1.1. Editorial revision confirmed by the TB chairman in accordance with clause 2.2.4.2 of the TWP.

Any comments or problems with this application? Please [let us know...](#)

Attachment 4B

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Details of '[RTR/SES-00089](#)' Work Item Schedule

Code	Milestone	Action	Action Nb	Target	Achieved	Version
0	Creation of WI by WG/TB			2002-11-14	2002-11-14	1.1.2
0 a	TB adoption of WI			2002-11-14	2002-11-14	
1	Start of work			2002-11-14	2002-11-14	
8	TB approval			2002-11-14	2002-11-14	
8 A	Draft receipt by ETSI Secretariat			2002-11-28	2002-11-14	
12	Publication	PU		2002-12-12	2002-11-14	1.1.2



Any comments or problems with this application? Please [let us know...](#)

Attachment 5A

OCLC 2908353		No holdings in XXX - 191 other holdings	
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		c	tere 704
		Stat	d 22
		d	.1
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BLvl	s	Form	
S/L	0	Orig	
Desc		SrTp	p
Srcce		GPub	i
Conf	0	Freq	q
EntW		Regl	r
Cont		DtSt	d
Ctrl		MRec	
Lang	eng	Alph	a
Ctry	ne	Dates	1975, 2017

010 75646893

040 DLC \$b eng \$c DLC \$d NSD \$d AIP \$d NST \$d IUL \$d SYS \$d NLM \$d OCLCQ \$d DLC \$d NLGGC \$d CGU \$d MYG \$d U9S \$d MYG \$d OCLCQ \$d OCLCO \$d OCLCQ \$d OCLCF \$d OCLCO \$d USD \$d DEBBG \$d UKMGB \$d MM9 \$d CUS \$d OCLCO \$d UEJ \$d OCLCQ \$d OCLCO \$d IUL \$d CUS \$d UMC \$d OCLCQ

012 4

016 7 2014738-7 \$2 DE-600

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016 7 007855187 \$2 Uk

019 535281099 \$a 604872988 \$a 641917038 \$a 664377022 \$a 1112803864 \$a 1160087227

022 0 0376-4265 \$l 0376-4265 \$2 0

030 ESABD8

037 \$b ESA Publications Division, ESTEC, P.O. Box 299, Noordwijk 2200 AG The Netherlands

041 0 eng \$a fre

042 pcc \$a nsdp

043 e-----

050 00 TL787 \$b .E88a

082 04 629.4/06/24

090 \$b

110 2 European Space Agency, \$e issuing body.

210 0 ESA bull.

222 0 E.S.A. bulletin \$b (Print)

245 10 ESA bulletin. \$b Bulletin ASE.

246 3 European Space Agency bulletin

246 31 Bulletin ASE

246 1 Bulletin Agence spatiale européenne

246 1 \$i Issues for <2009- have title: \$a Bulletin

260 Noordwijk, The Netherlands : \$b ESA Publications Division

300 volumes : \$b illustrations ; \$c 27 cm

310 Quarterly, \$b <1978-

336 text \$b txt \$2 rdacontent

337 unmediated \$b n \$2 rdamedia

338 volume \$b nc \$2 rdacarrier

362 0 June 1975-

362 1 Ceased with no. 172 (2017, 4th quarter)

500 Some issues accompanied by DVDs.

546 English and French.

588 Latest issue consulted: No. 172 (2017, 4th quarter) (surrogate).

610 20 European Space Agency \$v Periodicals.
 650 0 Astronautics \$v Periodicals.
 650 6 Astronautique.
 610 27 European Space Agency. \$2 fast \$0 (OCoLC)fst00521368
 650 7 Astronautics. \$2 fast \$0 (OCoLC)fst00819505
 650 17 Ruimtevaart. \$2 gtt
 650 17 Ruimteonderzoek. \$2 gtt
 650 17 European Space Agency. \$2 gtt
 655 7 Periodicals. \$2 fast \$0 (OCoLC)fst01411641
 655 7 Periodicals. \$2 lcgft \$0 <http://id.loc.gov/authorities/genreForms/gf2014026139>
 776 08 \$i Online version: \$a European Space Agency. \$t ESA bulletin \$x 1608-4713 \$w (OCoLC)50196032
 780 00 European Space Research Organisation. \$t ESRO/ELDO bulletin \$x 0012-799X \$w (DLC)
 76645743 \$w (OCoLC)2471136
 850 AzTeS \$a AzU \$a CoFS \$a CoU \$a DLC \$a KU \$a MCM \$a MiD \$a MiU \$a NjP \$a PU
 856 41 \$u <http://bibpurl.oclc.org/web/24036> \$u
http://www.esa.int/About_Us/ESA_Publications/ESA_Publications_Bulletin \$7 0
 856 4 \$u <http://bibpurl.oclc.org/web/76062> \$u <http://www.spacebooks-online.com/index.php?cPath=99&osCsid=1b88f9626268048125615de181cab870> \$z No longer valid
 when searched on: 01/08/2019 \$7 0

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LC control no.: sh2007101535

LCCN Permalink: <https://lcn.loc.gov/sh2007101535>

HEADING: Astronautics Periodicals

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005 20110729155809.0

008 070926|| anannbabn |n ana

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035 __ |a (DLC)367792

035 __ |a (DLC)sh2007101535

040 __ |a DLC |b eng |c DLC

150 __ |a Astronautics |v Periodicals

667 __ |a Record generated for validation purposes.

670 __ |a Work cat.: Klub Krile,

906 __ |t 8888 |u te00 |v 0

953 __ |a te00

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Appendix

CURRICULUM VITAE SYLVIA D. HALL-ELLIS

EDUCATION

Ph.D., University of Pittsburgh, Pittsburgh, Pennsylvania, 1985
 M.P.S., University of Denver, Denver, Colorado, 2014
 Post Graduate Studies, University of Texas – San Antonio, Texas, 1975-1976
 M.L.S., University of North Texas, Denton, Texas, 1972
 B.A., Rockford University, Rockford, Illinois, 1971

PROFESSIONAL EXPERIENCE

- 1981-** **Consultant for higher education, non-profit organizations, and corporations.**
- 2002-** **Adjunct Professor, School of Information, San José State University, San José, California.** Serve as part-time faculty member teaching graduate students in technical services (cataloging, bibliographic control, classification), “core courses,” and special topics.
- 2014-2016** **Director, Grants and Resource Development, Colorado Community College System.**
 Provided leadership and vision to foster the continued growth of rigorous scholarship, innovative projects, and creative work for statewide system, 13 campuses, and 50 teaching sites serving 155,000 students. Responsible for leadership and ensured efficient functioning of contract and grants in compliance with state & federal requirements and successful implementation and management. Served as a subject matter expert and liaison for college Grant Directors for all issues relating to grants and subcontracts.
- 2010-2014** **Senior Grant Administrator, Morgridge College of Education, University of Denver (Colorado).** Provided leadership and vision to foster continued growth of rigorous scholarship, innovative research, and creative work in the Morgridge College of Education. Ensure that contract and grants processes function effectively and efficiently for 60 faculty and researchers with a focus on the successful progression and efficient management of grants totaling \$13M. Worked effectively and collegially with Department Chairs and Program Coordinators on operational grant-related management activities and with a broad range of internal and external constituencies. Supported the dissemination and promotion of faculty research and scholarship to outside constituents at conferences and through publications. Assisted Principal Investigators and grant project teams by coaching, mentoring, and financial management.
- 2011-2013** **Interim Director & Assistant Dean, Westminster Law Library, Sturm College of Law, University of Denver.** Planned, organized, and directed all administrative activities for the library serving students, faculty, and alumni; oversaw the employment, retention, promotion, transfer and termination of library personnel; represented the library at professional conferences and public meetings; created and promoted a climate and culture of acceptance for new programs and services, a positive high-quality image of the law library, and that reflect the organization’s values, encourage excellent performance, and reward high productivity and innovation; provided leadership and set strategic direction of the organization; ensured that the library provided excellent customer service through solution-oriented staff response to patron needs and by responsiveness and continuous improvement of the organization; promoted, developed, and maintained positive working relationships with colleagues and customers including key stakeholders and groups, higher education institutions, the legal community, other regional libraries and districts statewide, and national library organizations.

- 2007-2014** **Associate Professor, Library & Information Science, Morgridge College of Education, University of Denver (Colorado).** Served in leadership role and worked collaboratively in program, college, campus and community environments. Advised and supervised students, taught core and specialized courses at the graduate level in an integrative, student-centered learning environment. Served on LIS, College, and University committees, and maintained working relationships with colleagues in other academic units and information professionals in the Rocky Mountain region and beyond. Served on and chair doctoral student dissertation committees. Oversaw and facilitated the College and LIS graduate student association.
- 2002-2007** **Assistant Professor, Library & Information Science, College of Education, University of Denver (Colorado).** Served as tenure-track faculty member teaching graduate students in “core courses,” resource description and access, service learning, and independent studies. Advised graduate students, participate on LIS and College committees, and serve on doctoral student dissertation committees. Oversaw and facilitated the LIS graduate student association and alumni association.
- 2000-2002** **Affiliate Faculty, Library & Information Science, College of Education, University of Denver (Colorado).** Served as part-time faculty member teaching graduate students in technical services (cataloging, bibliographic control, classification), “core courses,” and special topics. Oversaw and facilitated the LIS graduate student association and alumni association.
- 2000-2001** **Special Assistant to the Secretary’s Regional Representative, U.S. Department of Education, Region VIII, Denver, Colorado.** Served as the principal advisor and representative of the U. S. Secretary of Education’s Regional Representative (SRR). Ensured the implementation of major goals of the SRR and the Secretary. Provided leadership on behalf of the SRR in contacts with high-level officials in Region VIII requiring sensitive policy interpretation in communication with senior Department officials to solve problems and resolve issues raised by State and local education officials. Served as the primary contact for School-to-Work/Career, Children’s Health Insurance Program, and Safe and Drug-Free Schools. Delivered technical assistance to local education agencies and institutions of higher education in technology, professional development, and school construction.
- 1999-2000** **Catalog Librarian, Jefferson County Public Library, Lakewood, Colorado.** Performed original, copy cataloging and classification of library materials (English and Spanish) using standard library protocols; completed original descriptive cataloging and subject analysis; enhanced brief catalog and authority records in III.
- 1997-1999** **Development Officer, McREL International, Aurora, Colorado.** Served as senior member of corporate management team in strategic planning, development of proposals and contracts, implementation, and evaluation of new services, products, and programs for educational agencies. Provided creative leadership to corporate committees to solicit ideas, identify goals and objectives, plan, develop, present, and evaluate professional development opportunities.
- 1995-1997** **Education Specialist, Education Service Center, Region One, Edinburg, Texas.** Served as member of Administrative Cabinet team in strategic planning, development of proposals and contracts, implementation, and evaluation of telecommunications capabilities, services, products, and programs for 40 school districts serving 283,000 students in 7 counties. Provided creative leadership to regional and state committees to solicit ideas, identify strategic goals and objectives, plan, develop, present, and evaluate funding opportunities and professional development for 400 librarians.

- 1993-1996 Assistant Professor of Library Science, Sam Houston State University, Huntsville, Texas.** Served as faculty member teaching 400 graduate students in technical services (cataloging, bibliographic control, classification), automation, and networking. Participated in distance education program and coordinated annual conference. Conducted university and Texas Library Association-funded field research focused on library collection development and academic achievement.
- 1992-1993 Head Librarian, Rocky Mountain College of Art & Design, Denver, Colorado.** Responsible for the daily operation, selection and acquisition of materials, formulation of policies for library operations, media center, and photography/slides archives. Designed and implemented library automation and delivery of electronic resources to college community.
- 1981-1985 Development Officer, PRLC, Inc., Pittsburgh, Pennsylvania.** Served as senior member of corporate management team in strategic planning, development of proposals and contracts, implementation, and evaluation of new services, products, and programs for 100 institutional member organizations. Coordinated the development of proposals and contracts totaling \$4,000,000 annually. Provided creative leadership to corporate committees to solicit ideas, identify goals and objectives, plan, develop, present, and evaluate professional development opportunities.
- 1981 Director of Library Development, Pennsylvania Department of Education, Harrisburg, Pennsylvania.** Responsible for statewide development, technical assistance, professional development, resource sharing, children's services, institutional library services, networking, and state aid program for all libraries throughout the Commonwealth. Functioned as liaison to Governor's Advisory Council, LSCA Advisory Council, District Administrators, private colleges, universities, consortia managers, and network directors. Supervised \$14,000,000 formula-based state aid program and \$3,000,000 grant awards to individual libraries, consortia, and networks.
- 1978-1981 Assistant Director, Southern Tier Library System, Corning, New York.** Coordinated operation of system-wide programs (technical assistance, professional development, resource sharing, technical services, outreach) to 40 public libraries in 5 counties serving 500,000 residents. Solicited ideas, identified goals, sponsored, and evaluated professional development opportunities and technical assistance sessions.
- 1976-1978 Division Librarian for Technical Services, Corpus Christi Public Libraries, Corpus Christi, Texas.** Provided leadership in acquisitions, cataloging, serials control, and processing for main library and 4 branches serving 250,000 residents. Participated as senior member of library management team. Compiled and prepared technical evaluations, reports, and statistical analyses of Division operations to measure the achievement and cost of annual goals, objectives, and staff performance.
- 1975-1976 System Coordinator, San Antonio Major Resource Center, San Antonio, Texas.** Served as senior member of the management team for District X Office, charged to provide technical assistance, resource sharing, media services, and professional development to librarians and staff representing 30 public library jurisdictions in 21 counties serving 1,500,000 residents. Functioned as liaison to System Director, staff, and members of governing bodies with the System Board of Directors and the Texas State Library and Historical Commission. Prepared LSCA grant applications and monitored awards totaling \$1,100,000 annually.

- 1973-1975** **Bilingual Branch Librarian, San Antonio Public Library, San Antonio, Texas.** Worked as librarian providing reference, information, and readers' advisory services in branch serving 50,000 Spanish-speaking residents in southwest San Antonio. Participated in collection development and resource acquisition activities, specializing in children's work, Spanish language resources, and multicultural studies.
- 1972-1973** **Librarian, Holding Institute, Laredo, Texas.** Worked as high school librarian serving 500 boarding students in Spanish-speaking environment of private school. Provided reference, research assistance, and library instruction to students and 35 faculty members.
- 1966-1971** **Rockford Public Library, Rockford, Illinois.** Worked in branches as part-time as a Library Assistant, Clerk, and Page in city library serving 150,000 residents.

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- Historia Económica de México*. Coordinator, Enrique Semo. México: Universidad Nacional Autónoma de México, Editorial Oceano de México, 2004. 13 vols. 970-32-0805+3 (obra completa), \$9.25 each [*Críticas*, August 2005]
- Czarnowsky, Christyne A. and Michael H. Williams. *Managing Your Wired Workforce: A Practical Guide*. Denver, Colo.: Bradford Pub., 2003. 1-883726-79-4, \$24.95 [*Colorado Libraries*, 2004]
- Abraham Lincoln*. Colección Grandes Biografías. Madrid: Edimat Libros, 2003. 84-8403-858-0, €4.95 [*Críticas*, 2004]
- Alponte, Juan María. *Colón: el Hombre, el Navegante, la Leyenda*. México, D.F.: Aguilar, 2003. 968-19-1260-8, \$16.95 [*Críticas*, 2004]
- Olcese Salvatecci, Alfieri. *Cómo Estudiar con Éxito: Técnicas y Hábitos Para Aprender Mejor*. México, D.F.: Alfaomega Grupo Editor, 2002. 970-15-0764-9 [*Críticas*, 2003]
- Mujeres Como Islas: Antología de Narradoras Cubanas, Dominicanas, Puertorriqueñas*. Edición: Olga Marta Pérez, Thelma Jiménez, Andrés Blanco D., eds. Santo Domingo, República Dominicana: Ediciones Ferilibro, 2002. 959-209-419-5 [*Críticas*, 2003]
- Tibol, Raquel. *Los Murales de Diego Rivera: Universidad Autónoma Chapingo*. México, D.F.: Editorial RM, Universidad Autónoma Chapingo, 2002. 968-5208-08-5 [*Críticas*, 2003]
- Lindsay-Poland, John. *Emperors in the Jungle: the Hidden History of the U.S. in Panama*. Durham, N.C.: Duke University Press, 2003. 0-8223-3098-9, \$18.95 [*Críticas*, 2003]
- Kaplan, Allison G. and Ann Marlowe Riedling. *Catalog It! A Guide to Cataloging School Library Materials*. Worthington, Ohio: Linworth Pub., 2002. 1-58683-014-7, \$44.95 [*Colorado Libraries*, 2002]
- Bardach, Ann Louise. *Cuba Confidential: Love and Vengeance in Miami and Havana*. New York: Random, 2002. 0-375-50489-3, \$25.95 [*Library Journal*, 2002]
- Swan, James. *Fundraising for Libraries: 25 Proven Ways to Get More Money for Your Library*. New York: Neal Schuman, 2002. 1-55570-433-6, \$69.95 [*Colorado Libraries*, 2002]
- Puig de Lange, Victoria. *Sol Con Agua*. Nashville, Tenn.: Editorial Vistazo/Ediciones Reio Negro, 2002. 0-9724506-0-2, \$17.75 [*Críticas*, 2002]
- The Encyclopedia of Latin American Politics*. Edited by Diana Kapiszewski; assistant editor, Alexander Kazan. Westport, Conn.: Oryx Press, 2002. 1-57356-306-4, \$74.95 [*Library Journal*, 2002]
- Vargas Lizano, Isabel. *Y Si Quieres Saber de Mi Pasado*. Con la colaboración de J.C. Vales. Madrid: Santillana Ediciones Generales, S.L., 2002. 84-03-09278-4, \$18.95 [*Críticas*, 2002]
- Ruy Sánchez, Alberto. *Los Jardines Secretos de Mogador: Voces de Tierra*. México, D.F.: Alfaguara, S.A., 2001. 968-19-0879-1, \$16.95 [*Críticas*, 2002]
- Chávez, Ricardo and Celso Santajuliana. *El Final de las Nubes*. Barcelona: RBA Libros, S.A., 2001. 84-7901-760-0, \$11.95 [*Críticas*, 2002]

The Power of Language / El Poder de la Palabra: Selected Papers from the Second REFORMA National Conference. Edited by Lillian Castillo-Speed and the REFORMA National Conference Publications Committee. Englewood, Colo.: Libraries Unlimited, 2001. 1-563089459, \$35.00 [*Colorado Libraries*, 2001]

Martínez, Rubén. *Crossing Over: A Mexican Family on the Migrant Trail.* Metropolitan: Holt, 2001. 0-8050-4908-8, \$26.00 [*Library Journal*, 2001]

Guevara, Ernesto "Che." *The African Dream: the Diaries of the Revolutionary War in the Congo.* Translated from the Spanish by Patrick Camiller. With an introduction by Richard Gott and a foreword by Aleida Guevara March. New York: Grove Press, 2001. 0-8021-3834-9, \$13.00 [*Library Journal*, 2001]

Cooper, Gail and Garry Cooper. *New Virtual Field Trips.* Englewood, Colo.: Libraries Unlimited, 2001. 1-56308-887-8, \$27.50 [*Colorado Libraries*, 2001]

NATIONAL SERVICE & PROFESSIONAL AFFILIATIONS

American Library Association, Life Member

Association for Library Collections & Technical Services (now CORE)
Cataloging, Classification, and Metadata Section
ALCTS Editorial Board, Member, 2015-2019
Committee on Cataloging: Description and Access, Member, 2008-2012
Test Site for RDA, Manager, 2009-2011
Nominating Committee, Member, 2007-2008
Committee for Education and Training of Catalogers, Chair, 2006-2007, Member, 2003-2007
Competencies & Education for a Career in Cataloging Interest Group, Chair, 2010-2012; Member, 2010-
President's Program Committee, 2015-2016
Education Committee, Member, 2005-2007
Task Force on Competencies and Education for a Career in Cataloging, Chair, 2007-2009
2007 Annual Meeting Pre-conference, "What They Don't Teach in Library School: Competencies,
Education and Employer Expectations for a Career in Cataloging," Steering Committee Chair
Fundraising Committee, Member, 2004-2006
Office of Diversity
Committee on Diversity, Chair, 2010-2011
Diversity Research Advisory Committee, Member, 2009-2010
Spectrum Scholar Mentor, 2009
Diversity Grants Review Committee, Member, 2007, 2010, 2012
Office of Statistics and Research
Research and Statistics Committee, Member, 2005-2007; Intern, 2003-2005
Library Research Round Table
Nominating Committee, 2022-2023
Membership Committee, 2019-2021
Board of Directors, Member At-Large, 2009-2012
Office of Accreditation
Accreditation Panel Member (training completed 2004)
Accreditation Review Panel Member (training completed 2004)

REFORMA, Life Member

National Board of Directors, 2005-2013
National Fundraising Chair, 2005-2013
National Recruiting and Mentoring Committee, 2008-2010
Colorado Chapter, Secretary, 2004-2005
Colorado Chapter Liaison to National Board of Directors, 2004-2013

American Association of Law Libraries (AALL), Life Member Online Audiovisual Catalogers Association (OLAC) Colorado Association of Law Librarians (CoALL)

American Association of University Women Association for Library and Information Science Education (ALISE)

University of Denver ALISE Representative, 2003-2008; 2010-2011
Membership Advisory Committee, 2007-2010
Technical Services Education Special Interest Group, 2003-
Garfield Doctoral Dissertation Award Reviewer, 2012
Garfield Doctoral Dissertation Scholarship Reviewer, 2014

American Association of University Professors (AAUP), 2006-

American Grant Writers Association, 2014- Grant Professionals Institute, 2016- National Grants Management Association, 2014-

Grant Reviewer (National and Regional Team Leader), U.S. Department of Education, 1998- Grant Reviewer, Broadband Technologies Opportunity Program, U.S. Department of Commerce, 2009
Grant Reviewer, Institute of Museum and Library Services, 1998-2000
Grant Reviewer, Colorado Department of Education, 2014-
Grant Reviewer, Colorado State Library, 1998-
Grant Reviewer, American Association of Community Colleges *Working Connections* program, 1999
Peer Reviewer, *Journal for Library and Information Science Education*, 2005-
Peer Reviewer, *Journal of Library Metadata*, 2009
Peer Reviewer, *International Journal of Library and Information Science*, 2011
Regular Columnist, *The Bottom Line*, 2013-2016
Book Reviewer, *Library Journal*, 2001
Book Reviewer, *Críticas*, 2002-2009
Book Reviewer, *Colorado Libraries*, 2000-2012

REGIONAL SERVICE & PROFESSIONAL AFFILIATIONS

Mountain Plains Library Association

Professional Development Grants Committee, Member, 2005-2006
Professional Development Policy and Guidelines Sub-committee Chair, 2006

Colorado Association of Libraries

“Student Voices” Column Editor, *Colorado Libraries*, 2005-2006
Conference Planning Committee, Member, 2002
Technical Services and Automation Division, Chair, 2002-2003; Member, 2000-
Academic Libraries Division, Peer Review Conference Papers Committee, Member, 2007-2009
Education Committee, Member, 1988-1993
Diverse Populations Committee, Member, 2009-2013

SERVICE TO THE UNIVERSITY OF DENVER

Center for Teaching and Learning Faculty Advisory Board, 2007-2008; 2010-2012
Center for Community Engagement and Service Learning Advisory Board, 2007-2012
Faculty Senate
Executive Committee, 2008-2013
Nominations, Rules & Credentials Committee, Chair, 2008-2013; Member 2007-2013
Appointment, Promotion, and Tenure Revision Committee, 2010-2012
Grievance Policy Committee Member, 2007-2010
Law Library Director Search Committee Chair, 2012-2013
PROF Grant Review, College Representative to the University Review Team, 2006, 2008
Project Homeless Connect Evaluations, Principal Investigator, 2006-2009
University Technology Council, 2007-2009
University of Denver Hyde Interviews for Incoming Freshmen, 2003-2012

SERVICE TO THE MORGRIDGE COLLEGE OF EDUCATION

Appointment, Tenure & Review Committee
Member, voting, 2003-2005; 2007- 2009
Chair, Clinical Faculty Promotion & Tenure Policy Subcommittee, 2008-2009
Member, Community Engagement Subcommittee, 2007-2009
Member, Tenure Review Panel, 2003
Advancement and Alumni Relations Committee, Chair, 2003-2007; Member, 2002-2007
College Building Committee Member, 2004-2010

College of Education Student Association, Faculty Advisor, 2004-2007; 2009-2010
Faculty Senator, 2007-2013
Research and Scholarship Committee, Chair, 2008-2009; Member, 2002-2003, 2008-2009
Research and Grant Mentoring Committee, Chair, 2009-2010
Research Task Force Member, 2010-2012
Search Committee Member, Assistant Professor for Curriculum & Instruction, 2010-2011
Workload Task Force Member, 2010-2011

SERVICE TO THE LIBRARY & INFORMATION SCIENCE PROGRAM

Library and Information Science Student and Alumni Association, Faculty Advisor, 2002-2008
ALA Student Chapter, Faculty Advisor, 2005-2008
Beta Phi Mu Phi Chapter, Faculty Advisor, 2004-2014
Steering Committee Member, Accreditation by the American Library Association, 2001-2004
Search Committee Member, Associate Professor for LIS, 2006
Search Committee Chair, Assistant Professors for LIS, 2003, 2005, 2006, 2007
Search Committee Ex-Officio Member, Director for LIS, 2004

SERVICE TO SAM HOUSTON STATE UNIVERSITY

Rio Roundup: South Texas Literature Conference, Conference Coordinator, 1993
External Relations, Fund Raising, Grants Committee, Chair, 1993-1995
Advisory Council Committee, Chair, 1993-1995
Students, Admissions, and Advisement Committee, Chair, 1994
Institutional Effectiveness Committee, Member, 1993-1995

SERVICE TO THE COLLEGE OF EDUCATION AND APPLIED SCIENCE

Faculty Affairs Committee, Member, 1993-1995
Curriculum Committee, Member, 1993-1995
Continuing Education Committee, Member, 1993-1995

SERVICE TO THE COMMUNITY

French Teacher & Student Exchange with Laon, France, Monarch High School, Boulder Valley School District (Boulder, Colorado), 2017-
Denver/Boulder Games 2022, Board of Directors, Secretary-Treasurer, 2015-2018
United Way Campaign Committee, College of Education, 2006
Arapahoe County, Election Judge for the County Clerk and Recorder, 2000-2005
Arthritis Foundation, Rocky Mountain Chapter, Certified Educator & Trainer, 1999-2008
Bonfils Blood Center, Silver Level Donor, 2000-2016
Denver Museum of Natural History, Docent, 1992
Tech Prep of the Lower Rio Grande Valley, Inc. (Harlingen, Texas) Board of Directors, 1995-1997
Executive Committee, 1996-1997; Chair, Development Committee, 1995-1997; Chair, Fiscal Agency Committee, 1995-1996; Chair, Colleges and Universities Committee, 1996-1997
Gilpin County (Colorado) Public Library Board of Trustees, 1986-1989; Vice President, 1987-1989
City of Central (Colorado) Economic Development Committee, 1987-1989
Columbine Family Health Centers, Inc. (Nederland and Black Hawk, Colorado) Board of Directors, 1988-1989

CERTIFICATION

Permanent Public Librarian Certificate - Pennsylvania, New York, Texas
Westlaw Expert Witness, 2008-
Certified Grant Writer®, 2016-

AWARDS AND HONORS

Advanced Practitioner for Service Learning and Community Engagement, University of Denver, 2011
Platinum Star Alumnae, College of Information, Library Science & Technologies, University of North Texas, 2009
Commendation for Integration of Technologies in Teaching & Learning Environment, University of Denver, 2006
Outstanding Adjunct Faculty Member Award, College of Education, University of Denver, 2002
Beta Phi Mu, Pi, University of Pittsburgh, 1985
Alpha Lambda Sigma, University of North Texas, 1972
Albert Nelson Marquis Lifetime Achievement Award, Who's Who in America
Who's Who in American Women
Who's Who of Women Executives
Dictionary of International Biography
Who's Who in the East
Who's Who in the South and Southwest
Who's Who in the World
Who's Who of Online Professionals
Who's Who in Library and Information Science
2,000 Notable Women
Who's Who of Emerging Leaders
Who's Who in Professional and Executive Women
Who's Who in American Education
International Who's Who of Professional and Business Women
International Leaders in Achievement
International Educator of the Year
Who's Who in Finance and Industry
Who's Who in Finance and Business

Invited International and National Conference Presentations

Driscoll, Margaret, Christy Confetti Higgins, Scott Brown, and Sylvia D. Hall-Ellis. *A View from Within: Open House Tour of Three Canvas Core Courses*. Presentation to be delivered at the School of Information, San José State University Professional Development Seminar, San José, California, October 17, 2019.

Hall-Ellis, Sylvia D. *Invest in Me -- I'm Your Future: Succession Planning for Libraries*. Keynote presentation delivered at the ALCTS President's Symposium, Boston, Mass., January 8, 2016.

Seidel, Kent E. and Sylvia D. Hall-Ellis. *Making Grants Work for You: Strategies for Doctoral Students and Early Career Scholars*. Presentation delivered at the University Council for Educational Administration, Early Career Scholars Session, Indianapolis, Ind., November 9, 2013.

Hall-Ellis, Sylvia D. *So You Want to be a Manager; Leadership Skills and Competencies for Technical Services Managers and Administrators*. Presentation delivered at the 138th Annual Conference, American Library Association, Chicago, Ill., June 29, 2013.

Seidel, Kent E., Karen S. Riley, Lyndsay Agans, Susan Korach, and Sylvia D. Hall-Ellis. *Making Grants Work for You (Instead of Just Working for Grants)*. A panel discussion delivered at the University Council for Educational Administration, Early Career Scholars Session, Denver, Colo., November 17, 2012.

Hall-Ellis, Sylvia D. *After the Great TS Reorganization: The Westminster Law Library*. Presentation delivered at the 137th Annual Conference, American Library Association, Anaheim, Calif., June 23, 2012.

- Hall-Ellis, Sylvia D. *Conversations with Catalogers in the 21st Century*. A panel discussion sponsored by the ALCTS Competencies for a Career in Cataloging Interest Group, delivered at the 137th Annual Conference, American Library Association, Anaheim, Calif., June 22, 2012.
- Hall-Ellis, Sylvia D., moderator. *Mid-Career Leaders Program*. A panel discussion sponsored by the ALA Committee on Diversity delivered at the 136th Annual Conference, American Library Association, New Orleans, La., June 26, 2011.
- Hall-Ellis, Sylvia D., moderator. *Diversity Town Hall*. A community conversation sponsored by the ALA Committee on Diversity delivered at the 136th Annual Conference, American Library Association, New Orleans, La., June 24, 2011.
- LaBarre, Kathryn, Sylvia D. Hall-Ellis, Karen Anderson, Rick Hasenyager, Christopher Cronin, and Penny Baker. *Briefings from RDA Test Participants*. A panel discussion delivered at the Midwinter Conference, American Library Association, San Diego, Calif., January 7, 2011.
- Miksa, Shawne, Marjorie Bloss, and Sylvia D. Hall-Ellis. *Educating the Next Generation of Catalogers: Teaching RDA*. A panel discussion delivered at the 97th Annual Conference, Association for Library and Information Science Education, San Diego, Calif., January 7, 2011.
- Hall-Ellis, Sylvia D., Robert Maxwell, John Hostage, and George Prager. *RDA Panel: What Cataloging Managers Need to Know*. Presentation delivered at the 103rd Annual Conference, American Association of Law Librarians, Denver, Colo., July 12, 2010.
- Hall-Ellis, Sylvia D. and Stacey L. Bowers. *Catalogers in the RDA Environment: Skill Sets, Expectations and Challenges*. Presentation delivered at the 103rd Annual Conference, American Association of Law Librarians, Denver, Colo., July 11, 2010.
- Hall-Ellis, Sylvia D. *Comfortable in Your Cataloging and Metadata Specialist Skin? Or, So You Want to Hire a Cataloger*. Presentation delivered to the ALCTS Research Group at the 134th Annual Conference, American Library Association, Chicago, Ill., July 11, 2009.
- Perez, Megan, Sylvia D. Hall-Ellis, and Denise Anthony. *From Novice to Expert: Collaboration for Succession Planning*. A “hot topic” presentation delivered at the 14th ACRL Conference, Seattle, Wash., March 13, 2009.
- Hall-Ellis, Sylvia D. *Cataloging in the RDA Environment: Skill Sets, Expectations and Challenges*. Presentation delivered to the ALCTS Research and Publications Committee at the Midwinter Conference, American Library Association, Denver, Colo., January 24, 2009.
- Hall-Ellis, Sylvia D. *LIS Cataloging Education for the 21st Century: Expectations and Challenges*. A panel discussion held at the 95th Annual Conference, Association for Library and Information Science Education, Denver, Colo., January 23, 2009.
- Chu, Clara, Sylvia D. Hall-Ellis, and Mark Winston. *The Doctoral Degree & Building a Career*. A panel discussion delivered at the ALA Office of Diversity Spectrum Doctoral Fellows E.J. Josey Leadership Institute, Midwinter Conference, American Library Association, Denver, Colo., January 20, 2009.
- Hall-Ellis, Sylvia D. and Robert O. Ellett, Jr. *Fundamentals of Cataloging Course: An Overview of the ALCTS Online Course*. Presentation delivered to the ALCTS Big Heads Group, 133rd Annual Conference, American Library Association, Anaheim, Calif., June 30, 2008.

- Hall-Ellis, Sylvia D. *Employers' Expectations for Technical Services Librarians: What We Don't Know*. Presentation delivered to the ALCTS Research and Publications Committee Program, 133rd Annual Conference, American Library Association, Anaheim, Calif., June 28, 2008.
- Hall-Ellis, Sylvia D., Virginia R. Maloney, and Mary Stansbury. *Institutional Responses to Engaged Scholarship: The Carnegie Foundation Engaged University Classification at Two Universities*. Presentation delivered to the 94th Annual Conference, Association for Library and Information Science Education, Philadelphia, Pa., January 11, 2008.
- Hall-Ellis, Sylvia D. *Puzzles, Problems, and Predicaments*. Presentation delivered to the ALCTS Research Discussion Group, 132nd Annual Conference, American Library Association, Washington, D.C., June 23, 2007.
- Hall-Ellis, Sylvia D. *Cataloging Education: A New Emphasis for the Library and Information Science Curriculum*. Presentation delivered to the ALCTS Pre-conference, 132nd Annual Conference, American Library Association, Washington, D.C., June 22, 2007. <http://www.loc.gov/catdir/cpsocareercat.html>
- Ellett, Jr., Robert O. and Sylvia D. Hall-Ellis. *Copy Cataloging Done Smarter*. Presentation delivered to the International Conference on Interdisciplinary Information Sciences and Technologies (InSciT2006), October 25-28, 2006.
- Hall-Ellis, Sylvia D. and Robert O. Ellett, Jr. *Cooperative Cataloging: Challenges and Opportunities for Defense Libraries*. Presentation delivered to the 1st Annual Conference of Defense Libraries, Spanish Ministry of Defense, Madrid, Spain, July 7, 2006.
- Hall-Ellis, Sylvia D. *Cataloger Competencies: Do the Employers Require What the Professors Teach?* Presentation delivered to the ALCTS CCS Heads of Cataloging Discussion Group, 131st Annual Conference, American Library Association, New Orleans, La., June 26, 2006.
- Greal, Deborah S. and Sylvia D. Hall-Ellis. *From Research to Practice: The Scholarship of Teaching and Learning in LIS Education*. Presentation delivered to the 92nd Annual Conference, Association for Library and Information Science Education, San Antonio, Tex., January 18, 2006.
- Hall-Ellis, Sylvia D. *Employers' Expectations for Entry-Level Catalogers: What Position Announcement Data Indicate*. Research paper delivered to the Technical Services Special Interests Group, 91st Annual Conference, Association for Library and Information Science Education, Boston, Mass., January 12, 2005. <http://dlist.sir.arizona.edu/>
- Hall-Ellis, Sylvia D. *Common Errors in MARC Records Prepared by LIS Students: What Does It Mean?* Research paper delivered to the ALCTS CCS Cataloging Norms Discussion Group, Mid-Winter Conference, 90th American Library Association, San Diego, Calif., January 10, 2004.
- Hall-Ellis, Sylvia D. *Visual Arts as Foundation for Successful Library Automation: The Rocky Mountain College of Art & Design Experience*. Paper delivered at the 6th Annual Conference of Higher Education, Charleston, S. C., 1993.
- Hall, Sylvia D. *Design Elements for Bibliographic Databases: An Overview*. Paper delivered at the 14th Online National Conference, New York, 1983.

Invited Regional Conference Presentations

Hall-Ellis, Sylvia D., Hudson, Christopher D., Brittany Cronin, and Kathryn Michaels. "The Colorado Law Project: Meeting the Public's Need for Legal Information." Panel discussion delivered at the Mountain Plains Library Association Conference, Billings, Mont., April 9, 2011.

Grealy, Deborah S. and Sylvia D. Hall-Ellis. *Education for Information Professionals in New Mexico: Library & Information Science Graduate Education at the University of Denver*. Presentation delivered at the New Mexico Library Education Summit, Las Vegas, N.M., September 26, 2005.

Hall-Ellis, Sylvia D. *Public Library-School Library Partnerships*. Presentation delivered at the 3rd Annual Colorado Association of Libraries Conference with the Mountain Plains Library Association, Denver, Colo., October 22, 2004.

Hall-Ellis, Sylvia D. *Learn All You Can – Educational Partnership Opportunities for the Lewis and Clark Bicentennial Commemoration*. Paper delivered at the 3rd Annual Lewis and Clark Bicentennial Council National Planning Conference, Bismarck, N.D., April 26, 1998.

Invited State Conference Presentations

Grealy, Deborah S. and Sylvia D. Hall-Ellis. *Academic Library Leadership Changes: Using Succession Planning and Mentoring*. Presentation delivered at the Minnesota Library Education Conference, St. Cloud, Minn., October 10, 2013.

Hall-Ellis, Sylvia D., Merrie Valliant, and Melissa Powell. *RDA: What Is It and What Do You Need To Do With It At Your Library?* Presentation delivered at the Colorado Library Consortium Spring Conference, Ft. Morgan, Colo., April 26, 2013.

Hall-Ellis, Sylvia D. *Service Learning and the Library & Information Science Graduate Education at the University of Denver*. Presentation delivered at the 4th LEADS Scholars Orientation, Denver, Colo., August 5, 2009.

Hall-Ellis, Sylvia D. *Service Learning: Enhancement to Library & Information Science Graduate Education at the University of Denver*. Presentation delivered at the 3rd LEADS Scholars Orientation, Denver, Colo., June 2008.

Hall-Ellis, Sylvia D. *Law Librarianship: A Community Conversation*. Sponsored by the Colorado Association of Law Libraries. Paper delivered at the Colorado Supreme Court Library, Denver, Colo., May 14, 2008.

Hall-Ellis, Sylvia D. *Opportunities and Challenges in Law Librarianship: A Community Conversation*. Presentation delivered at the Sturm College of Law, Denver, Colo., November 7, 2007.

Ellis, Sylvia D. *Grant Writing Resources for Nursing Professionals*. Presentation delivered at the Presbyterian / St. Luke's Health One Medical Center 1st Annual Research Symposium, Denver, Colo., October 17, 2007.

Hall-Ellis, Sylvia D. *Project Homeless Connect 4 Event Evaluation – Insights and Lessons Learned*. Presentation delivered at the Homelessness Research Symposium: What is DU Doing about Homelessness in Denver, Denver, Colo., September 14, 2007.

Hall-Ellis, Sylvia D. *Service Learning and the Library & Information Science Graduate Education at the University of Denver*. Presentation delivered at the 2nd LEADS Scholars Orientation, Denver, Colo., August 10, 2007.

Hall-Ellis, Sylvia D. *Education for Information Professionals in a Digital Environment: Library & Information Science Graduate Education at the University of Denver*. Presentation delivered at the 15th Spring Mountains and Plains Parapros Conference, Denver, Colo., February 24, 2007.

Hall-Ellis, Sylvia D. *Public Library Service to Spanish-Speaking and Latino Residents in Denver: A Case Study*. Presentation delivered at the 4th Annual Colorado Association of Libraries Conference, Denver, Colo., November 10, 2005.

Hall-Ellis, Sylvia D. *Education for Information Professionals in a Digital Environment: Library & Information Science Graduate Education at the University of Denver*. Presentation delivered at the 14th Annual Mountains and Plains Parapros Conference, Aurora, Colo., July 29, 2005.

Hall-Ellis, Sylvia D. *Educational Opportunities: Library & Information Science Graduate Education at the University of Denver*. Presentation delivered at the 13th Annual Mountains and Plains Parapros Conference, Centennial, Colo., August 6, 2004.

Hall-Ellis, Sylvia D. *Library Education & Training: Focus on the West: An LIS Faculty Member's Personal Response*. Presentation delivered at the 1st Annual Colorado Association of Libraries Conference, Keystone, Colo., October 18, 2002.

Hall-Ellis, Sylvia D. *Grant Writing for School Librarians*. Presentation delivered at the 2002 Annual Colorado Education Media Association Conference, Colorado Springs, Colo., February 15, 2002.

Hall-Ellis, Sylvia D. *Grants – Opportunities for the Future*. Paper delivered at the Southeast Regional Accountability Annual Conference, Lamar, Colo., November 12, 1998.

Hall-Ellis, Sylvia D. *The Texas Library Connection and Interlibrary Loan: An Experiment in Resource Sharing*. Paper delivered at the Texas Computer Educators' Association Annual Conference, Austin, Tex., February 6, 1997.

Hall-Ellis, Sylvia D. *Finding Grant Sources on the Internet: A Guide for Librarians*. Paper delivered at the 2nd Annual Institute for School Library Personnel, Pharr-San Juan-Alamo North High School, Pharr, Tex., July 29, 1996.

Hall-Ellis, Sylvia D. *Mathematical and Logical Thinking: A Critical Intelligence*. Paper delivered at the 3rd Annual Paraprofessional Conference at the University of Texas - Pan American, Edinburg, Tex., March 8, 1996.

Hall-Ellis, Sylvia D. *Cataloging Trends and Issues: Update Session*. Paper delivered at the 1st Annual Institute for School Library Personnel, South Texas Community College, McAllen, Tex., July 19, 1995.

Hall-Ellis, Sylvia D. *Grant Writing: Tips and Encouragement for School Librarians*. Paper delivered at the 1st Annual Institute for School Library Personnel, South Texas Community College, McAllen, Tex., July 18 and 19, 1995.

Hall-Ellis, Sylvia D. *How to Become an Expert Grant Writer*. Paper delivered at the 3rd Annual High School Principals' Academy, South Padre Island, Port Isabel, Tex., June 19, 1995.

Texas Library Study: Results from Regions I and II. Paper delivered at the 3rd Annual Technology Conference, Texas A&M University, College Station, Tex., November 18, 1994.

Hall-Ellis, Sylvia D. *Academic Achievement and Middle School Students*. Paper delivered at the 8th Annual Young Adult Conference, Sam Houston State University, Huntsville, Tex., November 5, 1994.

Hall-Ellis, Sylvia D. *Multimedia Resources for Library Leaders*. Paper delivered at the Institute for Librarians in A Multicultural Environment, Sam Houston State University, Huntsville, Tex., June 10, 1994.

Hall-Ellis, Sylvia D. *Finding the Resource: Empowering the User, or, the Case for Curriculum Based Subject Access to Learning Resource Center Collections*. Paper delivered at the 81st Annual Texas Library Association Conference, Corpus Christi, Tex., April 12-16, 1994.

Hall-Ellis, Sylvia D. and William H. Pichette. *Sam Houston State University Makes Use of OCLC/AMIGOS Collection Analysis CD*. Paper delivered at the 81st Annual Texas Library Association Conference, Corpus Christi, Tex., April 12-16, 1994.

Hall, Sylvia D. *Funding and Library Development in Pennsylvania: A Symbiotic Relationship*. Paper delivered at the Annual Graduate Student Colloquia, University of Pittsburgh, School of Library and Information Science, 1982.

Hall, Sylvia D. *Leadership for Public Library Trustees*. Paper delivered for the Trustees Division, Pennsylvania Library Association Annual Conference, Lancaster, Penn., 1981.

Seminar and Professional Development Presentations

Taylor, Meredith, and Sylvia D. Hall-Ellis. *Talent Management and Succession Planning*. ALCTS eForum, held March 22, 2017.

Hirsh, Sandra, Heather O'Brien, Michelle Holschuh Simmons, Michael Krasulski, and Sylvia D. Hall-Ellis. *Information Services Today: An Introduction. Part 3: Information Services: Roles in the Digital Age*. Rowan and Littlefield in partnership with Library Journal webinar, recorded February 5, 2015.

Hall-Ellis, Sylvia D. and Jennifer Sweda. *Copy Cataloging in an RDA Environment*. ALCTS eForum, held May 14 and 15, 2013.

Hall-Ellis, Sylvia D. *Law Librarianship: A Community Conversation*. Sponsored by the Colorado Association of Law Libraries, presented at the Colorado Supreme Court Library, Denver, Colo., May 14, 2008.

Hall-Ellis, Sylvia D. and Beatrice Z. Gerrish. *Reading and Libraries: Recent Research in Reading*. Presentation at the Ricks Center for Gifted Education, Denver, Colo., March 4, 2008.

Hall-Ellis, Sylvia D. *Cataloger Competencies: Do the Employers Require What the Professors Teach?* Presentation for the School of Library and Information Science, San José State University, February 12, 2008.

Hall-Ellis, Sylvia D. and Robert O. Ellett, Jr. *Cooperative Cataloging: Rules, Tools, and Conventions for Building a Multi-institutional Catalog*. Sponsored for the Spanish Ministry of Defense, Madrid, Spain, July 10, 2006.

Hall-Ellis, Sylvia D. *Cash for Kids: Grant Writing Opportunities for Youth Services Librarians*. Sponsored by the Colorado Young Adult Librarians; presented at Bemis Memorial Library, Littleton, Colo., November 13, 2002.

Hall-Ellis, Sylvia D. *MARC Records and Authority Control: Planning for Bibliographic Database Migration*. Sponsored and held at the Douglas County Public Library, Castle Rock, Colo., May 28, 2002.

Grant Writing: A Refresher for Librarians. Sponsored by Library and Information Science Program, College of Education, University of Denver; presented at University Center at Chaparral, August 12, 2000.

Hall-Ellis, Sylvia D. *Shaking the Money Tree – Basic Grant Writing for Colorado Educators*. Sponsored by the Office of Educational Telecommunications of the Colorado Department of Education. Pikes Peak Community College, Colorado Springs, Colo., November 16, 1998. Pueblo School District 60, Pueblo, Colo., November 12, 1998.

University of Northern Colorado, Greeley, Colo., November 10, 1998.

United Technology Educational Partnership, Grand Junction, Colo., November 9, 1998.

Hall-Ellis, Sylvia D. *Cataloging Multimedia, Kits, Globes and Map Materials in USMARC*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., April 24, 1997 and December 12, 1996.

Hall-Ellis, Sylvia D. *New Standards for School Library Media Centers*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., April 15, 1997.

Hall-Ellis, Sylvia D. *The School Library Media Specialist in the 21st Century: Visions for the Future*. Sponsored and hosted by Pharr-San Juan-Alamo Independent School District, Pharr, Tex., April 4, 1997.

Hall-Ellis, Sylvia D. *Cataloging Sound Recordings and Audio Materials in USMARC*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., March 20, 1997 and November 21, 1996.

Hall-Ellis, Sylvia D. *Evaluating and Selecting CD-ROMS for School Library Media Collections*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., March 18, 1997.

Hall-Ellis, Sylvia D. *Cataloging Audiovisual Materials in USMARC*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., February 27, 1997, November 7, 1996 and October 24, 1996.

Hall-Ellis, Sylvia D. *Introduction to Dialog: Basic Searching Strategies*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., February 14, 1997.

Hall-Ellis, Sylvia D. *Cataloging Books in USMARC*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., January 30, 1997, October 10, 1996, September 26, 1996 and August 8, 1996.

Hall-Ellis, Sylvia D. *Advanced Internet Searching Techniques for Librarians*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., January 21, 1997.

Hall-Ellis, Sylvia D. *Texas Library Connection Full-Text Searching*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., December 13, 1996 and October 25, 1996.

Hall-Ellis, Sylvia D. *Developing Evaluation Strategies for Grants and Proposals*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., December 10, 1996.

Hall-Ellis, Sylvia D. *Developing Needs Assessment for Grants and Proposals*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., November 12, 1996.

Hall-Ellis, Sylvia D. *Texas Library Connection Union Catalog Searching*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., November 8, 1996 and September 6, 1996.

Hall-Ellis, Sylvia D. *Grant Resources on the Internet*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., October 23, 1996.

Hall-Ellis, Sylvia D. *Preparing a Response to the Telecommunications Infrastructure Fund Board: Needs Assessment, Professional Development Framework, and Evaluation Strategies*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., October 16, 1996.

Hall-Ellis, Sylvia D. *Texas Library Connection: Building the Districtwide Bibliographic Database*. Sponsored and hosted by Mercedes Independent School District, Mercedes, Tex., September 13, 1996 and August 8, 1996. Sponsored and hosted by Los Fresnos Consolidated Independent School District, Los Fresnos, Tex., August 12, 1996.

- Hall-Ellis, Sylvia D. *School-to-Work and Special Education: An Inclusive Partnership for Success*. Sponsored and hosted by the Office of Special Education, Region One Education Service Center, Edinburg, Tex., September 11, 1996.
- Hall-Ellis, Sylvia D. *Telecommunications Infrastructure Fund Board: An Overview of Funding for Secondary Schools*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., August 31, 1996.
- Hall-Ellis, Sylvia D. *Cataloging Books, Multimedia, and Realia in USMARC*. Sponsored and hosted by Edinburg Consolidated Independent School District, Edinburg, Tex., August 6, 1996.
- Hall-Ellis, Sylvia D. *Internet Resources for Grant Writers*. Sponsored and hosted by Region One Education Service Center, Edinburg, Tex., April 20, 1996.
- Hall-Ellis, Sylvia D. *Enhanced Grant Writing Skills for Mathematics Educators: Writing Skills for Campus Teams*. Sponsored and hosted by the Office of General Education, Region One Education Service Center, Edinburg, Tex., March 22, 1996.
- Hall-Ellis, Sylvia D. *Internet Resources for Grant Writers*. Sponsored and hosted by the College of Education and Applied Science, Sam Houston State University, Huntsville, Tex., March 9, 1996.
- Hall-Ellis, Sylvia D. *Grant Writing for Mathematics Educators: A Development Process for Campus Teams*. Sponsored and hosted by the Office of General Education, Region One Education Service Center, Edinburg, Tex., March 4, 1996.
- Hall-Ellis, Sylvia D. *Shaking the Money Tree: Preparing Successful Technology Grant Applications*. Sponsored and hosted by the Office of Technology and Media Services, Region One Education Service Center, Edinburg, Tex., February 29, 1996 and April 29, 1996.
- Hall-Ellis, Sylvia D. *District-wide Technology Planning: Technical Assistance for the Texas Education Agency Initiative*. Sponsored and hosted by the Office of Technology and Media, Region One Education Service Center, Edinburg, Tex., February 2, 1996.
- Hall-Ellis, Sylvia D. *Enhanced Grant Writing Skills*. Sponsored and hosted by Pharr-San Juan-Alamo Independent School District, Pharr, Tex., January 27, 1996.
- Hall-Ellis, Sylvia D. *United States Copyright Act of 1976, Video Transmissions, Computer Software and the Internet*. Sponsored and hosted by the Office of Technology and Media, Region One Education Service Center, Edinburg, Tex., January 24, 1996.
- Hall-Ellis, Sylvia D. *The Grant Writing Development Process*. Sponsored and hosted by Pharr-San Juan-Alamo Independent School District, Pharr, Tex., January 20, 1996.
- Hall-Ellis, Sylvia D. *MARC Cataloging of Materials for Library Media Centers*. Sponsored and hosted by the Office of Media Services, Region One Education Service Center for the Donna Independent School District, Donna, Tex., August 17, 1995.
- Hall-Ellis, Sylvia D. *Classification*. Sponsored by AJ Seminars, Rockville, Maryland; presented at University Hilton Hotel, Houston, Tex., May 10, 1995.
- Hall-Ellis, Sylvia D. *Library Technical Services*. Sponsored by AJ Seminars, Rockville, Maryland; presented at University Hilton Hotel, Houston, Tex., April 26, 1995.

Hall-Ellis, Sylvia D. *Grant Writing: An Introduction for Public School Administrators*. Sponsored and hosted by the Office of Administrative Services, Region One Education Service Center, Edinburg, Tex., April 19, 1995.

Hall-Ellis, Sylvia D. *The School Library Media Specialist in the 21st Century: Visions for the Future*. Sponsored and hosted by the United Independent School District, Laredo, Tex., March 31, 1995.

Hall-Ellis, Sylvia D. *Using USMARC*. Sponsored by AJ Seminars, Rockville, Maryland; presented at University Hilton Hotel, Houston, Tex., March 29, 1995.

Hall-Ellis, Sylvia D. *Library Media Center Policies and Guidelines: How to Prepare for School Board Adoption*. Sponsored and hosted by the Office of Technology and Media Services, La Joya Independent School District, La Joya, Tex., March 10, 1995.

Hall-Ellis, Sylvia D. *Developing District-wide Policies and Guidelines for Library Media Centers*. Sponsored and hosted by the Office of Technology and Media Services, La Joya Independent School District, La Joya, Tex., January 10, 1995.

Hall-Ellis, Sylvia D. *MARC Cataloging of Audiovisual Materials for Library Media Centers*. Sponsored and hosted by the Office of Library Media and Technology Services, Cypress-Fairbanks Independent School District, Houston, Tex., December 1, 1994.

Hall-Ellis, Sylvia D. *The School Library Media Specialist in the 21st Century: Visions for the Future*. Sponsored and hosted by United Independent School District, Laredo, Tex., October 14, 1994.

Hall-Ellis, Sylvia D. *The School Library Media Specialist in the 21st Century: Visions for the Future*. Sponsored and hosted by the Laredo Independent School District, Laredo, Tex., October 7, 1994.

Hall-Ellis, Sylvia D. *MARC Cataloging for Library Media Centers*. Sponsored by the Office of Library Media and Technology Services, Cypress-Fairbanks Independent School District, Houston, Tex., October 5, 1994.

Hall-Ellis, Sylvia D. *Jump to the Head of the Class: Undergraduate Library Resources Available at Sam Houston State University*. Sponsored by the Office of the Associate Vice President for Student Services, Sam Houston State University, Huntsville, Tex., October 4, 1994.

Hall-Ellis, Sylvia D. *CD-ROMs - 1994's Newest and the Best for Secondary Level Media Centers*. Sponsored and hosted by Clear Lake Independent School District, Houston, Tex., June 3, 1994.

Hall-Ellis, Sylvia D. *Introduction to Classification*. Sponsored by AJ Seminars, Rockville, Maryland; presented at Holiday Inn, Market Center, Dallas, Tex., May 18, 1994.

Hall-Ellis, Sylvia D. *Basic Descriptive Cataloging*. Sponsored by AJ Seminars, Rockville, Maryland; presented at University Hilton Hotel, Houston, Tex., May 4, 1994.

Hall-Ellis, Sylvia D. *Shaking the Money Tree - Part II: Writing Successful Grant Applications*. Sponsored by Donna Independent School District, Donna, Texas, and Region One Education Service Center Edinburg, Texas; presented at South Texas Community College Library, McAllen, Tex., April 29, 1994.

Hall-Ellis, Sylvia D. *Using MARC*. Sponsored by AJ Seminars, Rockville, Maryland; presented at Holiday Inn, Market Center, Dallas, Tex., April 6, 1994.

Hall-Ellis, Sylvia D. *Automated Authority Control*. Sponsored by AJ Seminars, Rockville, Maryland; presented at University Hilton Hotel, Houston, Tex., March 23, 1994.

Hall-Ellis, Sylvia D. *Automating the District School Library Media Centers: Choices and Opportunities*. Sponsored and hosted by the Office of Technology and Library Media Services, Fort Bend Independent School District, Sugar Land, Tex., March 4, 1994.

Hall-Ellis, Sylvia D. *Shaking the Money Tree - Part I: Preparing Successful Grant Applications*. Sponsored and hosted by the Office of Library Media Services, Donna Independent School District, Donna, Tex., February 4, 1994.

GRADUATE COURSES TAUGHT

San José State University, School of Library and Information Science

INFO 249 – Advanced Cataloging and Classification (Fall 2015, 2016; Summer 2016)
INFO 287 – Special Topics in Cataloging and Classification (Spring 2017, 2018, 2019, 2020, 2021, 2022, 2023; Fall 2020, 2021, 2022, 2023)
LIBR 248 – Beginning Cataloging and Classification (Summer 2002, 2003, 2004, 2005, 2006)
LIBR 249 – Advanced Cataloging and Classification (Summer 2003; Fall 2014; Summer 2015)

University of Denver, University College

Grant Writing Certificate Seminar for Non-Profit Organizations (Fall 2020, 2021; Spring 2021)

University of Denver, Morgridge College of Education HED

5991 – Grant Writing in Higher Education (Spring 2011)
LIS 4010 – Organization of Information (Fall 2002-2009; Winter 2005; Spring 2004-2006)
LIS 4020 – Professional Principles and Ethics (Summer 2000)
LIS 4040 – Management of Libraries and Information Centers (Fall 2010; Spring 2003, 2009 (DS); Winter 2005)
LIS 4070 – Cataloging and Classification (Winter 2008, 2009, 2010, 2011, 2012; Fall 2009 (DS)) LIS
4321 – Collection Management (Spring 2005)
LIS 4326 – LIS Research (Winter 2009 (DS); Spring 2009 (DS))
LIS 4350 – Adult Materials and Services (Summer 2006, 2009)
LIS 4379 – Social Sciences Resources (Spring 2009)
LIS 4400 – Cataloging and Classification (Spring 2000, 2001; Winter 2002-2009; Summer 2005, 2006 – course
renumbered LIS 4070, September 2007)
LIS 4401 – Descriptive Cataloging (Winter 2001; Spring 2002, 2003, 2006-2009; Summer 2005)
LIS 4402 – Subject Cataloging (Spring 2001, 2009; Summer 2005, 2006, 2007, 2008)
LIS 4403 – Classification Schemes (Fall 2007, 2008, 2009 (DS)) LIS
LIS 4405 – Authority Control (Winter 2009)
LIS 4510 – Materials and Services for Children (Winter 2004; Summer 2005)
LIS 4620 – Grant Writing and Fundraising (Summer 2000, 2002, 2004, 2010; Winter 2006; Fall 2006-2009)
LIS 4700 – Seminar in Technical Services (Fall 2001)
LIS 4700 – Seminar in Public Libraries (Summer 2002)
LIS 4804 – Management of Electronic Records (Spring 2004; Fall 2005)
LIS 4902 – Capstone Projects (Winter 2003, Spring 2008, 2009, 2011)
LIS 4910 – Independent Study (every quarter Winter 2000 through Spring 2011)
LIS 4920 – Service Learning (every quarter Summer 2004 through Spring 2011)
RMS 4954 – Grant Writing (Summer 2013, 2014)
RMS 4959 – Content Analysis Methodology (Spring 2015)
QRM 4978 – Grant Writing (Summer 2011, 2012)

Rutgers University, School of Communication and Information

SC&I 522 – Cataloging and Classification (Summer 2013)

University of Arizona, College of Behavioral and Social Sciences

LIS 602 – Cataloging and Classification (Summer 1995)
LIS 612 – Advanced Online Search and Retrieval (Summer 1995)

Sam Houston State University, College of Education & Applied Science

LIS 532 - Cataloging and Classification (Fall 1993, 1994, 1995)
LIS 563 - Advanced Cataloging and Classification (Summer 1994)
LIS 567 - Research Methods (Spring 1994, Spring 1995)
LIS 591 - Educational Technology (Spring 1994, 1995)
LIS 596 - Networking and Computer Technologies in Education (Fall 1993, Summer 1994, Fall 1995)

Dissertations at the University of Denver

Bowers, Stacey L. *Library Anxiety of Law School Students: A Study Utilizing the Multidimensional Library Anxiety Scale*. Chair, May 5, 2010.

Fattor, Melissa M. *Student Engagement Differences by Ethnicity and Scale for Ninth Grade Students*. Chair, November 1, 2010.

Fulton, Roseanne. *A Case Study of Culturally Responsive Teaching in Middle School Mathematics*. Kent Seidel, Chair, June 18, 2009, Outside Chair.

Greal, Deborah S. *Tribes and Territories in Library and Information Studies Education*. Bruce Uhrmacher, Chair, June 10, 2008, Committee Member.

McCord, J. Michael. *Developing a Standard of Care for Educational Malpractice*. Chair, April 15, 2011.

Priebe, Sarah J. *Distinguishing Effects of Domain and General Knowledge on Passage Fluency and Comprehension*. Jan Keenan, Chair. July 21, 2011, Outside Chair.

Snyder-Mondragon, Sandra M. *Institutional Factors that Impact the Retention of Graduate Students of Color in Schools of Library and Information Science: A Metaregression of Accredited Library School Statistics on Student Retention and Graduation Rates*. Kathy Green, Chair, July 24, 2009, Committee Member.

Taylor, Karen Pickles. *Effective Teaching*. Elinor Katz, Chair, July 15, 2009, Outside Chair.

Thompson, Jennifer. *Distinguishing a Western Women's College: A History of the Curriculum and Student Experience at Colorado Women's College*. Edith W. King, Chair, July 16, 2010, Committee Member.

Walker, Emelda. *Influence of Organizational Factors on Job Satisfaction of Disability Service Providers at Postsecondary Institutions*. Chair, April 29, 2010.

Dissertation Proposals at the University of Denver

Bowers, Stacey L. *Library Anxiety of Law School Students: A Study Utilizing the Multidimensional Library Anxiety Scale*. Chair, November 5, 2009.

McCord, J. Michael. *Developing a Standard of Care for Educational Malpractice*. Edith W. King, Chair. April 23, 2010.

Thompson, Jennifer. *History of Colorado Women's College*. Edith W. King, Chair, October 30, 2008. Committee Member.

Walker, Emelda. *Influence of Organizational Factors on Job Satisfaction of Disability Service Providers at Postsecondary Institutions*. Chair, July 21, 2009.

Dissertations at Other Institutions

Rodríguez-Mori, Howard. *The Information Behavior of Puerto Rican Immigrants to Central Florida, 2003-2009: Grounded Analysis of Six Case Studies Use of Social Networks during the Migration Process*. Kathleen Burnett, Chair, April 10, 2009, Florida State University, Committee Member.

Schwartz, Brian *More than a Look-up Skill: Medical Information Literacy Education in Osteopathic Medical Schools*. D. Mirah Dow, Chair, July 18, 2017. Emporia State University, Committee Member.

Snow, Karen. *A Study of the Perception of Cataloging Quality among Catalogers*. Shawne D. Miksa, Chair, August 1, 2011. University of North Texas, Committee Member.

Dissertation Proposals at Other Institutions

Schwartz, Brian *More than a Look-up Skill: Medical Information Literacy Education in Osteopathic Medical Schools*. D. Mirah Dow, Chair, December 4, 2015. Emporia State University, Committee Member.

Snow, Karen. *A Study of the Perception of Cataloging Quality among Catalogers*. Shawne D. Miksa, Chair, May 11, 2010. University of North Texas, Committee Member.

Master's Thesis at the University of Denver

Hemingson, Jeff. *Recital Paper*. Lamont School of Music, February 2010, Outside Chair.

Capstones at the University of Denver

Anthony, Alisa. *Correlation of Library and Information Science Program outcomes and Vacant Position Qualifications Listed on the Colorado State Library Jobline by Employers During the Period September 1, 2000 through August 31, 2002*. Chair, Winter Quarter, 2003.

Borden, Donna M. *Improving Emergency Communications Systems: Is a Radio Communications Network the Answer?* Fall Quarter, 2014.

Bowden, Heather L.M. *Exploring Biological Models for Long-term Data Preservation*. Chair, Spring Quarter, 2008.

Casenada, Cassandra Y. *Challenges to the Recruitment, Education, and Retention of Librarians of Color*. Chair, Spring Quarter, 2008.

Chang, Jennifer C. *Legal Research Practice and Preference: A Law Firm Perspective*. Chair, Spring Quarter 2011.

Ellis, Megan S. Fitzgerald. *Design of a Public Library Adult Volunteer Recruitment Program and Training Curriculum*. Chair, Winter Quarter, 2003.

Kircher, Kathy. *Development of a Library Pathfinder for Exobiology and Posting it on the Internet*. Chair, Winter Quarter, 2003.

Melhado, Loretta. *Design of St. John's Episcopal Church Library*. Chair, Spring Quarter, 2008.

Radcliff, Kathy. *Original Cataloging of Archival materials in the HERS Collection in Penrose Library*. Chair, Winter Quarter, 2003.

Sass, Carol Ann. *ACT Periodical Index: Access to Catholic Thinking Periodical Index: Web Index to Select Catholic Periodicals*. Spring Quarter 2000.

Stone, Sergio D. *Conducting Community Analysis for the Bemis Public Library (Littleton, Colorado) Using 2002 U.S. Census Data and the Online Outcome-Based Evaluation Toolkit*. Chair, Winter Quarter, 2003.

Tureson, Tamara. *Design and Use of an Information Audit Tool for Use in a Law Library*. Chair, Winter Quarter, 2003.

Tweed, Beth. *Evaluation of Email Reference Service in a Consumer Health Library Environment*. Chair, Winter Quarter, 2003.

GRANTS AND CONTRACTS

Student Learning in Agriculture STEM through Teacher Professional Development. Research team: Stanton Gartin (PI) and Cyndi Hofmeister, Northeast Junior College; Jeff Cash, Cheryl Sánchez, Anne-Marie Crampton, Lamar Community College; Suzanna Spears, Morgan Community College; Jack Wiley, Kerry Gabrielson, Trinidad State Junior College; Michael J. Miller, Colorado State University; Michael Womochil (Co-PI), Casey Sacks, and Sylvia D. Hall-Ellis, Colorado Community College System. U.S. Department of Agriculture, Agriculture and Food Research Initiative, Food, Agriculture, Natural Resources and Human Sciences Education and Literacy Initiative, \$404,460 (2017-2020)

Leading and Achieving: the Colorado Agriculture Regional Consortium. Research team: Jack Wiley (PI), Kerry Gabrielson, Trinidad State Junior College; Jeff Cash (PI), Cheryl Sánchez, Anne-Marie Crampton, Lamar Community College; Suzanna Spears, Morgan Community College; Cyndi Hofmeister, Northeast Junior College; Michael Womochil (Co-PI), Casey Sacks, and Sylvia D. Hall-Ellis, Colorado Community College System. U.S. Department of Agriculture, Hispanic Serving Institutions Education Grants Program, \$504,414 (2017-2020)

Cyber Prep Program Planning Grant. Research team: Debbie Sagen (PI), Brenda Lauer, Pikes Peak Community College; Gretchen Martin, Koiosa Insights; and, Sylvia D. Hall-Ellis, Colorado Community College System. U.S. Department of Commerce, Regional Alliances and Multi-stakeholder Partnerships to Stimulate (RAMPS) Cybersecurity Education and Workforce Development, \$199,681 (2016-2018)

Career and Technical Education in Colorado: Pathways to Education and Employment. Research team: Heather McKay (PI), Rutgers University; Sarah Heath, Casey Sacks, Sylvia D. Hall-Ellis, Colorado Community College System. U.S. Department of Education, Institute of Education Sciences, \$1,400,000 (2017-2021)

Pre-Alliance Planning Grant Colorado Community College Alliance. Research team: Victor Vialpondo (PI) and Janel Highfill, Community College of Aurora; Heidi Loshbaugh (Co-PI), Community College of Denver; Rick Reeves, Bill McGreevy, Liz Cox, and Kristin Aslin, Red Rocks Community College; Cathy Pellish, Front Range Community College; Samuel DeVries, Arapahoe Community College; Sylvia D. Hall-Ellis, Colorado Community College System. National Science Foundation, Louis Stokes Alliance for Minority Participation (LSAMP), \$86,817 (2016-2017)

Towards Scalable Differentiated Instruction Using Technology-enabled, Competency-based, Dynamic Scaffolding. Research team: Karen Wilcox (PI) and Vijay Kumar, Center for Computational Engineering, Massachusetts Institute of Technology; Flora McMartin, Broad-based Knowledge; Quinsigamond Community College; and, Casey Sacks, and Sylvia D. Hall-Ellis, Colorado Community College System. U.S. Department of Education, First in the World Developmental Grant, \$2,891,882 (2015-2019)

Colorado Strategic Partnerships Emergency Grant. Research team: Elise Lowe-Vaughn (PI), Amy Hodson, Celia Hardin, Barbara McBride, James Newby, Christopher Dewhurst, Nina Holland, Kate Anderson, MaryAnn Roe, Chrystalynn Chrystalynn, Elaine Edon, Mona Barnes, Tom Morgan, Rob Hanni, and Marie Valenzuela, Colorado Department of Labor and Employment; Steve Anton, Joelle Brouner, and, Katie Griego, Colorado Department of Human Services; Rebecca Holmes, Judith Martinez, and Jennifer Jirous, Colorado Department of Education; Emily Templin Lesh, Colorado Workforce Development Council; Cory Everett, Colorado Department of Regulatory Agencies; and, Casey Sacks and Sylvia D. Hall-Ellis, Colorado Community College System. U.S. Department of Labor, Strategic Partnerships Emergency Grant, \$5,000,000 (2015-2017)

CAEL Jump Start Program: Competency-Based Education. Research team: Jerry Migler (PI), Casey Sacks, Debra Cohn, Thomas Hartman, and Sylvia D. Hall-Ellis, Colorado Community College System; Matt Jamison, Front Range Community College; Mike Coste, Red Rocks Community College; Amanda Corum, Pueblo Community College; Janet Colvin, Pikes Peak Community College; and, MaryAnn Matheny, Community College of Denver. Council for Adult and Experiential Learning, \$15,000 (2015)

Summit on the Redesign of Developmental Education. Research team: Jerry Migler (PI), Casey Sacks, and Sylvia D. Hall-Ellis, Colorado Community College System; Chip Nava, Pueblo Community College; Kim Moultny, Arapahoe Community College; Debbie Ulibarri, Trinidad State Junior College; and, Kris Bernard, Front Range Community College. American Association of Community Colleges, \$15,000 (2015-2016)

Equity in Excellence at Colorado Community Colleges. Research team: Keith Howard (PI) and Sylvia D. Hall-Ellis, Colorado Community College System; Estela Mata Bensimon, Center for Urban Education, University of Southern California; and Kerry Gabrielson, Trinidad State Junior College. Colorado Department of Higher Education, Colorado Opportunity Scholarship Program, \$150,000 (2015-2016)

MBA High School of Business in Colorado. Research team: Laurie Urich (PI) and Sylvia D. Hall-Ellis, Colorado Community College System; Rudolph Sumpter and Beatrice Gerrish, Boulder Valley Schools; Keith Curry Lance, RSL Research Group. Colorado Department of Higher Education, Colorado Opportunity Scholarship Program, \$501,295 (2015-2016)

Fullbridge Program in Colorado. Research team: Keith Howard (PI) and Sylvia D. Hall-Ellis, Colorado Community College System; Suzanna Spears, Fort Morgan Community College; and, Cheryl Sánchez and Anne-Marie Compton, Lamar Community College. Colorado Department of Higher Education, Colorado Opportunity Scholarship Program, \$300,000 (2015-2017)

Colorado Community College System Alternative Credit Program. Research team: Jerry Migler (PI), Keith Howard, and Sylvia D. Hall-Ellis, Colorado Community College System. American Council on Education, \$13,000 (2015)

Internationalization in Higher Education. Researcher: Samuel D. Museus. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Internationalization, \$8,000 (2014-2015)

International Perspectives on Bilingual Education. Researcher: Sharolyn Pollard-Durodola. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Internationalization, \$3,700 (2014-2015)

Cultivating Culturally Relevant and Responsive Curriculum and Pedagogy in College. Researcher: Samuel Museus. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, iRise Grant, \$5,000 (2014-2015)

Project EMERGE (Educational Model for Evaluation and Replicability in Gifted Environments). Research team: Norma Hafenstein (PI) and Bruce Uhrmacher. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Lynde and Harry Bradley Foundation, \$235,000 (2014-2015)

Collecting Asian American Refugee Stories. Researcher: Samuel Museus. Technical reviewer for MCE: Sylvia D. Hall-Ellis. American Educational Research Association, Research Grant, \$5,000 (2014-2015)

Developing Expertise in Teaching K-5 Mathematics. Research team: Julie Sarama (PI) and Douglas H. Clements (Co-PI), in partnership with the School of Education at the University of Michigan. Technical reviewer for MCE: Sylvia D. Hall-Ellis. National Science Foundation, \$130,344 (2013-2015)

Investigation of the Long-Term Outcomes for Special Education Students. Researcher: Antonio Olmos-Gallos. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Jefferson County School District, Office of Assessment, \$40,000 (2014)

Refugee Community Collaboration. Researcher: Vicki Tomlin (PI) in partnership with the African Community Center and Jewish Family Service. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Center for Community Engagement and Service Learning, \$14,854 (2014-2015)

Access to Mathematics for All. Research team: Richard S. Kitchen (PI), Nicole M. Russell (Co-PI), and Terrence Blackman (Co-PI), Curriculum Studies and Teaching Program, Morgridge College of Education; Álvaro Árias (Co-PI, Department of Mathematics); and, James Gray (Co-PI), Department of Mathematics, Community College of Aurora. Technical reviewer for MCE: Sylvia D. Hall-Ellis. National Science Foundation, The Robert Noyce Scholarship Program, Capacity Building Project, \$349,926 (2014-2016)

Cognitive Test Battery for Intellectual Disabilities. Research team: Karen Riley (PI), Lyndsay Agans, Jessica Lerner, and Karin Ditttrick-Nathan in partnership with David Hessel (PI), The MIND Institute at the University of California – Davis, and Elizabeth Berry-Kravis, Rush University Medical Center. Technical reviewer for MCE: Sylvia D. Hall-Ellis. National Institutes of Health, Outcome Measures for Use in Treatment Trials for Individuals with Intellectual and Developmental Disabilities (R01), \$2,499,996 (\$588,672 at DU) (2014- 2019)

Broadening Participation in Engineering among Women and Latino/as: A Longitudinal, Multi-Site Study. Researcher: Patton Garriott (PI) in partnership with the University of North Dakota and the University of Missouri. Technical reviewer for MCE: Sylvia D. Hall-Ellis. National Science Foundation, HER Core Research, \$677,390 (\$69,992 at DU) (2014-2019)

Designing a Teacher Evaluation System to Improve Teacher Effectiveness for Culturally and Linguistically Diverse Learners. Research team: María del Carmen Salazar (PI), Jessica Lerner, and Kathy Green. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Professional Research Opportunities for Faculty, \$29,988 (2014-2016)

Developing a College-Going Culture in Latina/O Families: Exploring the Influence of Funds of Knowledge on Family Outreach Programs. Researcher: Judy Marquez Kiyama. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Professional Research Opportunities for Faculty, \$18,720 (2014-2016)

Assessment of Quality of Life in Neural Implantation Surgery for the Treatment of Parkinson's Disease. Researcher: Cynthia McRae. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Internationalization, \$3,967 (2014-2015)

Pura Vida: Cloud Forest, Curriculum and Cross-Cultural Study. Research team: Norma Hafenstein (PI) and Bruce Uhrmacher (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Internationalization, \$8,000 (2014-2015)

Online Course Development for Curriculum and Instruction. Researcher: Ruth Chao. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Teaching and Learning, \$3,000 (2014)

Online Course Development for Curriculum and Instruction. Researcher: María del Carmen Salazar. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Teaching and Learning, \$3,000 (2014)

Online Course Development for Curriculum and Instruction. Researcher: Jessica Lerner. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Teaching and Learning, \$3,000 (2014)

Online Course Development for Curriculum and Instruction. Researcher: Duan Zhang. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Teaching and Learning, \$3,000 (2014)

The Mathematics Education of African Americans, 1866 – 1954. Researcher: Nicole M. Russell. Technical reviewer for MCE: Sylvia D. Hall-Ellis. National Academy of Education, Spencer Foundation Postdoctoral Fellowship, \$55,000 (2014-2016)

Early Childhood Care and Education Study. Research team: Carrie Germeroth (PI), Melissa Mincic, and Douglas H. Clements. Technical reviewer for MCE: Sylvia D. Hall-Ellis. State of North Dakota, Department of Public Instruction, \$73,500 (2013-2014)

Graduate Level Specialty in Addiction Counselor Training with Emphasis on Integration of Native American Specific Content. Research team: Ruth Chao (PI) and Michael J. Faragher (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. The Galena Foundation, \$289,732 (2013-2016)

The Collecting Asian American and Pacific Islander Refugee Stories (CARS) Project. Researcher: Samuel Museus. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Center for Community Engagement and Service Learning, \$15,000 (2014)

Parents in Transition: A Multiple Case Study of Parent and Family Orientation Programs. Researcher: Judy Marquéz Kiyama. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Faculty Research Fund, \$1,500 (2014-2015)

The Sistah Network: Black Women Graduate Students Supporting and Retaining Each Other. Researcher: Nicole M. Russell. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Faculty Research Fund, \$2,708 (2014-2015)

Evaluation of the Northeast Denver Babies Ready for College Program. Research team: Carrie Germeroth (PI), Melissa Mincic, and Douglas H. Clements. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Mile High Montessori, \$9,922 (2013-2014)

Developing Teaching Expertise in K-5 Mathematics. Research team: Julie Sarama (PI) and Douglas Clements (University of Denver), in partnership with Timothy Boerst (PI), Meghan Shaughnessy, Deborah Ball, Hyman Bass (School of Education at the University of Michigan). Technical reviewer for MCE: Sylvia D. Hall-Ellis. National Science Foundation, \$449,827 (\$130,344 at the University of Denver (2013-2015)

Early Learning Care and Education Study Program Grant for the State of North Dakota. Research team: Carrie Germeroth (PI), Melissa Mincic, and Sheridan Green. Technical reviewer for MCE: Sylvia D. Hall-Ellis. State of North Dakota Department of Public Instruction, \$73,500 (2013-2014)

Local Professional Learning Community for School Leaders. Research team: Susan Korach (PI), Kristina Hesbol, and Rebecca McClure. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Education Development Center, \$10,950 (2013)

Healthy Eaters, Lifelong Movers 2: Implementing Evidence-Based School Environment, Policy, and Curricular Changes to Increase Opportunities for Healthy Eating and Physical Activity in Low Income, Rural Colorado. Research team: Elaine Berlansky, University of Colorado at Denver (PI), Nicholas Cutforth, University of Denver (Co-PI), and Allison Reeds. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Health Foundation, \$3,103,108 (2013-2017)

Hughes Rare Books Library Room Renovation in the Sturm College of Law. Project team: Patti H. Marks, Sylvia D. Hall-Ellis, and Leigh Elliott. Mabel T. Hughes Charitable Trust, \$34,000 (2013-2014)

The Promise Center Partnership with the Marsico Institute for Early Learning and Literacy and the City and County of Denver. Research team: Karen Riley (PI), Douglas H. Clements (Co-PI), and Sheridan Green. Technical reviewer for MCE: Sylvia D. Hall-Ellis. The Piton Foundation, \$223,468 (2013-2014)

Center of Excellence for Problem Gambling. Research team: Ruth Chao (PI) and J. Mike Faragher. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Department of Behavioral Health, \$68,021 (2012-2013)

United Way Implementation and Validation Review. Research team: Douglas H. Clements (PI), Amanda Moreno, and Sheridan Green. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Mile High United Way, \$19,737 (2013)

Math/Science Partnership in Rural Districts. Research team: Kristen Bunn (PI, Eagle County Schools), Paul Michalec (Co-PI), and Alegra Reiber. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Department of Education, Colorado's Mathematics and Science Partnership Program, \$750,000 (2013-2014)

Mathematics and Science Education of African Americans. Research team: Nicole Russell (PI), Sylvia D. Hall-Ellis, Steve Fisher (Penrose Library). Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Professional Research Opportunities for Faculty, \$29,994 (2013-2015)

Online Course Development for Curriculum and Instruction. Researcher: Nicole Russell. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Teaching and Learning, \$3,000 (2013)

Discourse and Opportunity: Undocumented Students and Higher Education Policy. Researcher: Ryan Gildersleeve. Technical reviewer for MCE: Sylvia D. Hall-Ellis. National Academy of Education, Spencer Foundation Postdoctoral Fellowship, \$55,000 (2012-2014)

An Anthropological Study of the Latino Graduation Ceremony. Researcher: Ryan Gildersleeve. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Spencer Foundation, \$39,900 (2012-2013)

Fragile-X and Pharmaceutical Company: Clinical Trial of AFQ056. University of California – Davis Children's Hospital MIND Institute (Sacramento), Children's Hospital Denver, and Rush Children's Hospital at Rush University Medical Center (Chicago). Karen Riley, PI. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Novartis Pharmaceuticals Corporation, \$394,206 (2012-2014)

Project Engage, Phase 2, a DAPRA Grant in partnership with Total Immersion Systems, Inc., and Texas A&M University. Research team: Karen Riley (PI) and Lyndsay Agans (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. U.S. Department of Defense, \$60,000 (2011-2013)

International School Psychology Practicum Exchange. Researcher: Gloria L. Miller. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Center for Community Engagement and Service Learning, \$14,951 (2012-2013)

Online Course Development for Curriculum and Instruction. Research team: Bruce Uhrmacher (PI) and Norma Hafenstein (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Teaching and Learning, \$18,193 (2012-2014)

Writers in the Schools. Research team: Karen Riley (PI) and Amanda Moreno (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Humanities, \$4,965 (2012-2013)

Learning Ecosystem Validation Grant. Research team: Karen Riley (PI), Lyndsay Agans, Kent Seidel, and Shimelis Assefa. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Bill & Melinda Gates Foundation, \$315,000 (2012-2013)

Project Words of Oral Reading and Language Development (WORLD). Research team: Jorge E. Gonzalez (PI), Texas A&M University; Laura Saenz (Co-PI), University of Texas – Pan American; and, Sharolyn Pollard-Durodola (Co-PI), University of Denver. Technical reviewer for MCE: Sylvia D. Hall-Ellis. U.S. Department of Education, Institute of Education Sciences, \$53,354 (2012-2015); award \$640,718, transfer from Texas A&M University

Increasing the Efficacy of an Early Mathematics Curriculum with Scaffolding Designed to Promote Self-Regulation.

Research team: Douglas H. Clements (PI) and Julie Sarama (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. U.S. Department of Education, Institute of Education Sciences, \$1,445,315 (2008-2014); award \$4,541,975, transfer from University at Buffalo, The State University of New York

Using Rule Space and Poset-based Adaptive Testing Methodologies to Identify Ability Patterns in Early

Mathematics and Create a Comprehensive Mathematics Ability Test. Research team: Douglas H. Clements (PI) and Julie Sarama (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. National Science Foundation, \$323,791 (2010-2014); award \$1,194,944, transfer from University at Buffalo, The State University of New York

Comprehensive Postdoctoral Training in Scientific Education Research. Researcher: Julie Sarama (PI). Technical

reviewer for MCE: Sylvia D. Hall-Ellis. U.S. Department of Education, Institute of Education Sciences, \$133,458 (2010-2014); award \$613,353, transfer from University at Buffalo, The State University of New York

Longitudinal Study of a Successful Scaling Up Project: Extending TRIAD. Research team: Douglas H. Clements

(PI), Julie Sarama (Co-PI), and Abt Associates (Carolyn Layzer, Fatih Unlu, Laurie Bozzi, Lily Fesler, Alina Martinez, Cristofer Price, James van Orden). Technical reviewer for MCE: Sylvia D. Hall-Ellis. Institute of Education Sciences, \$384,940 (2011-2015); award \$1,250,286, transfer from University at Buffalo, The State University of New York

Early Childhood Education in the Context of Mathematics, Science, and Literacy. Research team: Julie Sarama (PI),

Douglas H. Clements (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. National Science Foundation, \$990,020 (2010-2014); award \$2,285,228, transfer from University at Buffalo, The State University of New York

Early Childhood Clearinghouse Information Center Redesign. Research team: Karen Riley (PI) and Amanda

Moreno (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. Office of the Lt. Governor of Colorado, \$12,000 (2012-2013)

Morgridge Rural Educational Leadership Initiative. Research team: Lyndsay Agans (PI), Linda Brookhart (Co-PI),

Susan Korach, and Rebecca McClure. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Morgridge Family Foundation, \$100,000 (2012-2014)

Center of Excellence for Problem Gambling. Research team: Patrick Sherry (PI) and J. Mike Faragher. Technical

reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Department of Behavioral Health, \$55,000 (2012-2013)

Intermodal Transportation Institute Research Initiatives. Researcher: Patrick Sherry. Technical reviewer for MCE:

Sylvia D. Hall-Ellis. University Transportation Centers Program, Research and Innovative Technology Administration, U.S. Department of Transportation. \$600,000 (2012-2014)

Mile High United Way Social Innovation Fund Early Literacy Initiative. Gloria L. Miller, PI, Amanda Moreano,

Kim Hartnett-Edwards, and Sheridan Green. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Mile High United Way, \$89,992 (2012-2013)

International School Psychology Practicum Exchange. Researcher: Gloria L. Miller. Technical reviewer for MCE:

Sylvia D. Hall-Ellis. University of Denver, Center for Community Engagement and Service Learning, \$1,000 (2012-2013)

Refugee Student Art Outreach. Researcher: Karin Ditttrick-Nathan. Technical reviewer for MCE: Sylvia D. Hall-

Ellis. University of Denver, Faculty Research Fund, \$3,000 (2012-2013)

Resistance, Resilience, and Reciprocity: Centering the Voices of Black Doctoral Women with Faculty Aspirations.

Researcher: Nicole M. Russell. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Faculty Research Fund, \$2,965 (2012-2013)

Assessing Learning through Student Notebooks. Research team: Keith Miller, Nancy Sasaki, and Kathy Green.

Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Professional Research Opportunities for Faculty, \$30,000 (2012-2014)

International School Psychology Practicum Exchange. Researcher: Gloria L. Miller. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Internationalization, \$2,000 (2012-2013)

ELO in Colorado. Research team: Cynthia Hazel and Duan Zhang. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Legacy Foundation, \$150,000 (2012-2013)

Creating Online LIS Courses. Research team: Mary C. Stansbury (PI), Shimelis Assefa, Denise Anthony, Xiao Hu, and Krystyna Matusiak. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Center for Teaching and Learning, \$15,000 (2011-2013)

Maritime Piracy Seminar. Researcher: Ved Nanda, The Nanda Center, Sturm College of Law. Technical reviewer for Sturm College of Law: Sylvia D. Hall-Ellis. Arsenault Family Foundation, \$15,000 (2012-2013).

Early Childhood Librarianship: An Interdisciplinary, Experiential Learning MLIS. Researcher: Mary C. Stansbury (PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. Laura Bush's 21st Century Librarians Program, Institute for Museums and Library Services, \$249,066 (2012-2014)

Learning Ecosystem Planning Grant. Research team: Karen Riley (PI), Lyndsay Agans, Kent Seidel, and Shimelis Assefa. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Bill & Melinda Gates Foundation, \$281,217 (2011-2012)

Advanced Service Learning Practitioner Faculty Grant, Sylvia D. Hall-Ellis, University of Denver, Center for Community Engagement and Service Learning, \$400 (2011)

Evaluating and Enhancing the EspeciallyMe Program. Research team: Lori D. Patton and Nicole Russell. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Center for Community Engagement and Service Learning, Public Good Fellowship Grant, \$24,780 (2012)

Choosing Excellence: Let Every Child Bloom. Research team: Shimelis Assefa (PI) and Mary C. Stansbury (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Center for Community Engagement and Service Learning, Public Good Grant, \$7,657 (2012)

K-8 STEM Content Specific Professional Development to Improve Elementary Student Achievement. Research team: Kent Seidel (PI), Nicole Russell (Co-PI), Kimberly Hartnett-Edwards, Paul Michalec, Jeff Farmer, Keith Miller, Alegra Reiber, and Nancy Sasaki. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Department of Education, Improving Teacher Quality Grant, (Title II ESEA), \$307,299 (2011-2012)

Building a Better Principal Pipeline to Boost Student Achievement. Researcher: Susan Korach. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Denver Public Schools; a subcontract from the Wallace Foundation Grant, \$170,000 (2011-2017)

Center of Excellence for Problem Gambling. Research team: J. Mike Faragher (Co-PI) and Bobbie Vollmer (PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Department of Behavioral Health, \$79,999 (2011-2012)

An Exploration of Novice Teachers' Core Competencies: Impacts on Student Achievement, and Effectiveness of Preparation. Research team: Kent Seidel (PI), Kathy Green (Co-PI), Kimberly Hartnett-Edwards, and Duan Zhang. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Institute of Education Sciences, Effective Teachers and Effective Teaching, \$990,987 (2012-2015)

Project Engage, a DAPRA Grant in partnership with Total Immersion Systems, Inc., and Texas A&M University.

Research team: Karen Riley (PI) and Lyndsay Agans (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. U.S. Department of Defense, \$49,964 (2011-2014)

User-centered Evaluation of Music Search Engines. Researcher: Xiao Hu. Technical reviewer for MCE: Sylvia D.

Hall-Ellis. University of Denver, Faculty Research Fund, \$2,931 (2011-2012)

Educational Practicum in Vietnam and China to Promote the Inclusion of Young Children with Disabilities.

Researcher: Gloria L. Miller. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Office of Internationalization, \$5,000 (2011-2012)

Evaluation of Colorado's Enhancing Quality in Infant-Toddler (EQIT) Initiative. Research team: Virginia R.

Maloney and Amanda Moreno. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Buell Foundation, \$395,884 (2011-2013)

Creating Engaging Environments to Teach Pre-Algebra Mathematics to Elementary Students. Research team:

Álvaro Arias, Mario López, María del Carmen Salazar, and Lyndsay Agans. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver Interdisciplinary Grant, \$60,000 (2011-2012)

Morgridge Education Technology Accessible (META) Resource Project. Research team: Lyndsay Agans (PI) and

Shimelis Assefa (Co-PI). Technical reviewer for MCE: Sylvia D. Hall-Ellis. Morgridge Family Foundation, \$36,000 (2011)

MCE Connect: A 21st Century Framework for Faculty Development. Research team: Bruce Uhrmacher (PI),

Shimelis Assefa (Co-PI), Lyndsay Agans (Co-PI), Kimberly Hartnett-Edwards, Norma Hafenstein, Xiao Hu, Paul Michalec (Co-PI), María del Carmen Salazar (Co-PI), and Sandra Snyder-Mondragon. Technical reviewer for MCE: Sylvia D. Hall-Ellis. University of Denver, Center for Teaching and Learning, \$22,355 (2011-2012)

Parent Education and Parent Leadership and Advocacy. Research team: Virginia Maloney (PI) and Amanda

Moreno, Marsico Institute for Early Learning and Literacy. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Health Foundation, \$27,358 (2010-2011)

Intentional School Culture. Researcher: Cynthia Hazel. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Denver

Public Schools, \$38,040 (2010-2011)

Healthy Eaters, Lifelong Movers: Implementing Evidence-Based School Environment, Policy, and Curricular Changes to Increase Opportunities for Healthy Eating and Physical Activity in Low Income, Rural Colorado.

Research team: Elaine Berlansky, University of Colorado at Denver (PI), Nicholas Cutforth, University of Denver (Co-PI), and Allison Reeds. Technical reviewer for MCE: Sylvia D. Hall-Ellis. Colorado Health Foundation, \$1,683,277 (2011-2014)

Second Life Learning Community. Research team: Don McCubbrey (PI), Sylvia D. Hall-Ellis (Co-PI), Walter

LaMendola, and Paul Novak. University of Denver, Center for Teaching and Learning, \$13,000 (2010-2011)

Reintroducing the Value of Law Librarians to Academic and Public Librarians in Colorado through the

Identification and Use of Emerging Technologies. Research team: Sylvia D. Hall-Ellis (Co-PI), Stacey L. Bowers (PI), and Christopher Hudson, in partnership with Denver Public Library, Arapahoe Library District, and the Colorado State Supreme Court Library. University of Denver, Center for Community Engagement and Service Learning, \$5,773 (2010-11)

Reintroducing the Value of Law Librarians to Public Librarians through the Identification and Use of Emerging

Technologies and Resources. Research team: Stacey Bowers (PI) and Sylvia D. Hall-Ellis (Co-PI). American Association of Libraries, Wolters Kluwer Law & Business Grant Program, \$2,725 (2010-2011)

Faculty Service Learning Pod. Research team: María del Carmen Salazar and Nicholas Cutforth (Curriculum and Instruction Program), Frank Tuitt (Higher Education Program), Cynthia Hazel and Gloria Miller (Child, Family, and School Psychology Program), and Sylvia D. Hall-Ellis (Library and Information Science Program). University of Denver, Center for Community Engagement and Service Learning, \$8,000 (2010-2011)

Lincoln Collaborative. Research team: Antonio Esquibel (Principal, Lincoln High School), María del Carmen Salazar (Curriculum and Instruction Program), and Sylvia D. Hall-Ellis. School Improvement Grant, Denver Public Schools, \$375,000 (2010-2012)

Future LEADers of America: Leaders III. Research team: Denver Public Library (Kristen Svendsen, PI), the University of Denver (Sylvia D. Hall-Ellis), the Colorado Chapter of REFORMA (Orlando Archibeque), and the Colorado Association of Libraries (Martin Garner). Laura Bush's Recruiting Librarians for the 21st Century Program, Institute for Museums and Library Services, \$988,366 (2009-2012)

Teaching for Success in the Library Environment: LIS 4030 in Library 2.0. Research team: Deborah S. Greal (PI) and Sylvia D. Hall-Ellis (Co-PI). University of Denver, Center for Teaching and Learning, \$ 9,350 (2009-10)

Writing Group Faculty Grant, Sylvia D. Hall-Ellis, University of Denver, Center for Community Engagement and Service Learning, \$750 (2008-2009)

Collaborative Learning Faculty Grant, Sylvia D. Hall-Ellis, University of Denver, Center for Teaching and Learning, \$1,500 (2008)

Connecting Information Literacy to Learning. Research team: Lori Micho, Merrie Valliant, Amanda Samland, and Sylvia D. Hall-Ellis. Colorado State Library, LSTA Discretionary Grant Program, \$19,548 (2008-2009)

Law Librarianship Fellows Program. Research team: Sylvia D. Hall-Ellis (PI), Stacey Bowers (Co-PI), and Christopher Hudson, Westminster Law Library. Laura Bush's 21st Century Librarians Program, Institute for Museums and Library Services, \$999,370 (2008-2012)

Grant Writing in a Cooperative Learning Environment. Sylvia D. Hall-Ellis. University of Denver, Center for Teaching and Learning, \$2,000 (2008-2009)

Project Homeless Connect 6 Event Evaluation. Research team: Sylvia D. Hall-Ellis and Duan Zhang. University of Denver Center for Community Engagement and Service Learning, \$9,785 (2008)

Project Ecuador: International Learning Service Libraries – A Faculty Development Experience in Ecuador. Sylvia D. Hall-Ellis, Office of Internationalization, University of Denver, \$600 (2007)

Project Ecuador: International Learning Service Libraries – A Faculty Development Experience in Ecuador. Sylvia D. Hall-Ellis, International Service Learning Office, University of Denver, \$400 (2007)

Project Homeless Connect 5 Event Evaluation. Research team: Sylvia D. Hall-Ellis and Duan Zhang. University of Denver Center for Community Engagement and Service Learning, \$1,000 (2007)

Project Homeless Connect 4 Event Evaluation. Research team: Sylvia D. Hall-Ellis and Duan Zhang. University of Denver Center for Community Engagement and Service Learning, \$4,595 (2007)

Future LEADers of America: Leaders II. Research team: Denver Public Library (Kristen Svendsen, PI), the University of Denver (Sylvia D. Hall-Ellis), and the Colorado Chapter of REFORMA (Orlando Archibeque). Laura Bush's Recruiting Librarians for the 21st Century Program, Institute for Museums and Library Services, \$988,518 (2007-2010)

Strategic Planning Assistance for the Denver Medical Library. Sylvia D. Hall-Ellis. Denver Medical Library, Inc., \$30,000 (2006-2007)

Destiny Software for JMAC Student Lab. Sylvia D. Hall-Ellis, gift from the Sagebrush Corporation, Minneapolis, Minnesota, \$10,000 (2006)

Libraries: Tools for Education and Development Worldwide: A Faculty Development Experience in France. Sylvia D. Hall-Ellis, Office of Internationalization, University of Denver, \$800 (2005)

Denver Public Library: Opportunities for Change. Sylvia D. Hall-Ellis, Colorado Community Based Research Network, \$2,000 (2005)

Future LEADers of America. Research team: Denver Public Library (Letty Icolari and Steve Taylor, PIs), Emporia State University (Jim Agee), and the University of Denver (Sylvia D. Hall-Ellis). Recruiting Librarians for the 21st Century Program, Institute for Museums and Library Services, \$670,315 (2005-2008)

American Association of University Professors Summer Institute Professional Development Grant. Sylvia D. Hall-Ellis, American Association of University Professors, \$300 (2005)

Beta Phi Mu Alumni Tea. Sylvia D. Hall-Ellis, gift from the Office of Alumni and Parent and Relations, University of Denver, \$2,000 (2005)

Spectrum Software for LIS Student Lab. Sylvia D. Hall-Ellis, gift from the Sagebrush Corporation, Minneapolis, Minnesota, \$5,000 (2005)

Developing Research Capacity in Community Organizations and Residents through Training and Technical Assistance. Nicholas J. Cutforth (PI) and Sylvia D. Hall-Ellis. Piton Foundation, \$25,000 (2005-2006)

Libraries: Tools for Education and Development Worldwide: A Faculty Development Experience in Argentina. Sylvia D. Hall-Ellis, Office of Internationalization, University of Denver, \$500 (2004)

Developing Research Capacity in Community Organizations and Residents through Training and Technical Assistance. Research team: Nicholas J. Cutforth (PI), Gary Lichtenstein and Sylvia D. Hall-Ellis, Piton Foundation, \$25,000 (2003-2004)

Increasing Spanish-Speaking and Hispanic Diversity among Library and Information Science Students at the University of Denver: Development of a Student Recruitment Model. Researcher: Sylvia D. Hall-Ellis (PI), Office of Multicultural Excellence, University of Denver, \$2,750 (2003-2004)

Collection Development Enrichment to Support the Cataloging & Classification Specialization and School Librarianship within the Library & Information Science Program at the University of Denver. Research team: Sylvia D. Hall-Ellis (PI) and Deborah S. Grealy. Women's Library Association, University of Denver, \$4,000 (2003)

Collection Development Enrichment to Support the Library & Information Science Program at the University of Denver. Research team: Deborah S. Grealy (PI) and Sylvia D. Hall-Ellis. Women's Library Association, University of Denver, \$4,000 (2001)

Wireless LAN for Library Education. Research team: Deborah S. Grealy (PI) and Sylvia Hall-Ellis. University of Denver, Center for Teaching and Learning, \$24,000 (2001-2002)

Upward Bound – A Program for South Texas Youth. Research team: Monte Churchill, Executive Director of Community Relations; Gary R. Saucedo, Outreach Coordinator; Raymond Hernandez, (PI) Associate Dean for Student Success; and Sylvia D. Hall-Ellis, South Texas Community College (McAllen, Texas). U.S. Department of Education, Office of Postsecondary Education, \$2,672,003 (1999-2003)

Write Now! Improving Elementary Students' Writing Skills. Research team: Caryl G. Thomason, Assistant Superintendent (PI); Karen Tankersley, Principal; and, Hal Anderson, Director of Technology, Cheyenne Mountain School District 12 (Colorado Springs, Colorado); and Sylvia D. Hall-Ellis. Colorado Department of Education, Educational Telecommunications Unit, \$189,453 (1999-2001)

Operation Quick Start -- Distance Learning in Rural Colorado. Research team: Randal Weigum, Technology Coordinator (PI); Bonnie Barns, Director of Federal Programs and Staff Development; and, Adam "Joe" Raskop, Executive Director, Southeastern Board of Cooperative Educational Services (Lamar, Colorado); and Sylvia D. Hall-Ellis. Colorado Department of Education, Educational Telecommunications Unit, \$400,000 (1999-2001)

Advanced Technological Training for Information Professionals for the 21st Century. Research team: Mario Reyna, Division of Business Director (PI) and Sylvia D. Hall-Ellis, South Texas Community College (McAllen, Texas). Phi Delta Kappa and the National Science Foundation, \$250,000 (1999-2001)

Working Connections – Training Information Technologies Professionals for the 21st Century. Research team: Mario Reyna, Division of Business Director (PI) and Sylvia D. Hall-Ellis, South Texas Community College (McAllen, Texas). Microsoft Corporation and the American Association of Community Colleges, \$1,147,775(1999-2001)

The ROAD (Research Oriented Amplification of Development to Literacy) Program. Research team: Deborah J. Leong (PI), Metropolitan State University; Elena Bodrova, Metropolitan State University; Dmitri Semenov, Robert J. Marzano, and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). Hewlett-Packard Foundation, \$25,000 (1998-1999)

Press to Literacy. Research team: Deborah J. Leong (PI), Metropolitan State University; Elena Bodrova, Metropolitan State University; Dmitri Semenov, Robert J. Marzano, and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). The Denver Post and the Robert S. McCormick Foundation, \$49,818 (1998-1999)

International Telementor Center. Research team: David Neils, David B. Frost (PI), and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). Hewlett-Packard Philanthropy, \$100,000 (1998-1999)

America Reads: Providing Tutor Training for the America Reads Challenge. Research team: Louis F. Cicchinelli (PI) and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). U.S. Department of Education, Office of Educational Research and Improvement, \$306,000 (1998-1999)

Comprehensive School Reform. Research team: Louis F. Cicchinelli (PI), J. Timothy Waters, and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). U.S. Department of Education, Office of Educational Research and Improvement, \$285,000 (1998-1999)

Sustainable Energy Education (SEE) Program for Grades 4-8: Preparing Today's Youth for Lifelong Learning and Responsible Actions in Energy Conservation. Research team: Mary Gromko, Colorado Department of Education; Gene McCarthy, Rocky Flats Field Office, U.S. Department of Energy; Gina Kissell, National Renewable Energy Laboratory; and Barbara L. McCombs (PI), Janet L. Bishop, and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). State of Colorado Governor's Office for Energy Conservation, \$499,936 (1997-1999)

Review of Kansas Curriculum Standards in Mathematics and Language Arts. Research team: Robert J. Marzano (PI), John S. Kendall, David B. Frost, and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). Submitted to the Kansas State Department of Education, \$25,903 (1998)

International Telementor Center. Research team: David Neils, John Kuglin, Chris Rapp, David B. Frost (PI), and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). Hewlett-Packard Company, \$54,752 (1998)

Genesis Mission: Education Public Outreach. Developed in partnership by the Jet Propulsion Laboratory, California Institute of Technology, Los Alamos National Laboratory, Lockheed Martin Astronautics, and the Mid-continent Regional Educational Laboratory (Aurora, Colorado). Research team: John T. Sutton (PI), Alice Krueger, Martha Henry, Greg Rawls, Shae Isaacs, Jeff Johnson, Deb Jordan, Arlene Mitchell, David B. Frost, Jana Caldwell, J. Timothy Waters, and Sylvia D. Hall-Ellis. National Aeronautics and Space Administration, \$139,700,000; subcontract award, \$4,750,000 (1997-2007)

North Dakota Mathematics Assessment Project. Developed in partnership by the North Dakota Department of Education and Mid-continent Regional Educational Laboratory (Mid-continent Regional Educational Laboratory). Research team: Ann Clapper, Clarence Bina, Greg Gallagher, North Dakota Department of Education; Don Burger (PI), Hillary Michaels, and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). U.S. Office of Education, \$1,618,214; subcontract award, \$389,076 (1997-2001)

Pacific Resources for Education and Learning Distance Education: Project Evaluation. Developed in partnership by the Pacific Educational Community, the Pacific Resources for Education and Learning (PREL), and Mid-continent Regional Educational Laboratory (McREL). Research team: John W. Kofel (PI), Executive Director, PREL; J. Timothy Waters, Executive Director; Joan Buttram, Robert Keller, and Sylvia D. Hall-Ellis, Mid-continent Regional Educational Laboratory (Aurora, Colorado). U.S. Office of Education, Star Schools Program, \$10,000,000; subcontract award, \$500,000 (1997-2002)

Identification of Bilingual Gifted and Talented Children: A Comprehensive School Grants for Bilingual Education. Developed in partnership by Hidalgo (Texas) ISD, Los Fresnos (Texas) CISD, Progreso (Texas) ISD, University of Texas – Pan American (Edinburg, Texas), and Education Service Center, Region One (Edinburg, Texas). Research team: Hilda Medrano, Dean, College of Education, University of Texas – Pan American; Linda Phemister (PI), Janie Navarro, and Sylvia D. Hall-Ellis, Education Service Center, Region One. U.S. Department of Education, Office of Bilingual Education and Minority Languages Affairs, \$1,670,633 (1997-2002)

Academics 2000: First Things First -- The Texas Goals 2000. Developed for Jim Hogg (Hebbronville, Texas) County ISD, Mirando City (Texas) ISD, and San Isidro (Texas) ISD. Research team: Hilda Medrano, Dean, College of Education, University of Texas – Pan American (Edinburg, Texas); Angie Lehmann, Amy Mares, Ellen Gonzalez (PI), and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg, Texas). Texas Education Agency, \$339,987 (1997-2000)

Southwestern Bell's Learning Communities Initiative. Developed for Tech Prep of the Rio Grande Valley, Inc. (Harlingen, Texas); the Center for Professional Teacher Development, University of Texas – Brownsville; Teach for America – Rio Grande Valley (McAllen, Texas); and Education Service Center, Region One (Edinburg, Texas). Research team: Patricia G. Bubbs, Executive Director (PI), Tech Prep of the Rio Grande Valley; Martin Winchester, Executive Director, Teach for America – Rio Grande Valley; Aileen Johnson, Director, School of Education, University of Texas – Brownsville; and Sylvia D. Hall-Ellis. Southwestern Bell Foundation, \$100,000 (1997-1998)

Texas School to Work: Regional Implementation. Developed for Tech Prep of the Rio Grande Valley, Inc.

(Harlingen), South Texas Community College (McAllen), Texas State Technical College (Harlingen), Texas Southmost College (Brownsville), Empowerment Zone of the Rio Grande Valley (Mercedes), Project VIDA (Weslaco), Youth Fair Chance (McAllen), and Education Service Center, Region One (Edinburg). Research team: Patricia G. Bubb (PI), Tech Prep of the Rio Grande Valley; Stephen Vassberg, Texas State Technical College; Ellen Trevino, Youth Fair Chance; Wanda Garza, Project VIDA; Leonardo Olivares, University of Texas – Pan American; Michael Bell, South Texas Community College; and Sylvia D. Hall-Ellis. Texas Workforce Commission, \$4,250,000 (1997-2002).

Comprehensive Bilingual Education Grant for Hidalgo ISD and Roma ISD. Developed for Hidalgo (Texas) ISD, Roma (Texas) ISD, College of Education, University of Texas – Pan American (Edinburg, Texas), and Education Service Center, Region One (Edinburg, Texas). Research team: Tomas Thomas (PI), Director, Office of Bilingual Education and Sylvia D. Hall-Ellis. U.S. Department of Education, Office of Bilingual Education and Minority Languages Affairs, \$1,531,361 (1997-2002)

Lopez High School, Porter High School, Rivera High School, Central Middle School, and Perkins Middle School, Brownsville (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$1,473,611 (1997-1998)

Donna High School, Todd Middle School, and Solis Middle School, Donna (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$704,052 (1997-1998)

Memorial Middle School and Nellie Schunior Middle School, La Joya Independent School District (Texas). Telecommunications Infrastructure Fund Board, \$293,641 (1997-1998)

Martin High School, Christen Middle School, Cigarroa Middle School, Lamar Middle School, Laredo (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$1,200,000 (1997-1998).

Lasara Middle School, Lasara (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$246,210 (1997-1998)

Los Fresnos High School and Resaca Middle School, Los Fresnos (Texas) Consolidated Independent School District. Telecommunications Infrastructure Fund Board, \$500,000 (1997-1998)

Lyford Junior High School, Lyford (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$354,997 (1997-1998)

Travis Middle School, McAllen (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$269,139 (1997-1998)

Mission High School, Mission (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$297,010 (1997-1998)

Progreso High School, Progreso (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$300,000 (1997-1998)

San Perlita High School, San Perlita (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$293,490 (1997-1998)

Myra Green Junior High School, Raymondville (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$225,000 (1997-1998)

Rio Grande City High School, Ringgold Middle School, Gruella Middle School, Rio Grande City (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$809,934 (1997-1998)

Rio Hondo Junior High School, Rio Hondo (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$297,024 (1997-1998)

Roma High School, Roma (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$333,178 (1997-1998)

San Benito High School, Miller Jordan Junior High School, San Benito (Texas) Consolidated Independent School District. Telecommunications Infrastructure Fund Board, \$547,000 (1997-1998)

Santa Maria High School and Santa Maria Middle School, Santa Maria (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$400,000 (1997-1998)

Salvador High School, United Independent School District (Laredo, Texas). Telecommunications Infrastructure Fund Board, \$250,879 (1997-1998)

Weslaco High School, Cabaza Middle School, Cuellar Middle School, Weslaco (Texas) Independent School District. Telecommunications Infrastructure Fund Board, \$874,242 (1997-1998)

Principals' Assessment and Training Center. Developed for Education Service Center, Region One (Edinburg, Texas). Research team: Roberto Zamora, Leonel Barrera, William H. Parry, and Sylvia D. Hall-Ellis. Texas Principals' Leadership Initiative, Texas Association of Secondary School Principals, Texas Association of Elementary School Principals, and the Sid Richardson Foundation. \$461,439 (1996-1998)

The Texas Library Connection -- Integrating and Sharing Resources. Developed for Hidalgo County Library System (McAllen), Cameron County Library System (Brownsville), South Texas Community College (McAllen), the University of Texas - Pan American (Edinburg), University of Texas - Brownsville, and Education Service Center, Region One (Edinburg). Research team: William R. McGee, Coordinator, Hidalgo County Library System; Joe Garcia, Director, Cameron County Library System; Michael D. Bell, Library Director, South Texas Community College; Eleanor Folger Foster, University Library, University of Texas - Pan American; Jaime Vela (PI), Director of Instructional Technology and Media Services, Ron Pontius, Instructional Technology, and Fabiola Fuentes, Media Services, Education Service Center, Region One; and Sylvia D. Hall-Ellis. Office of Library Media Services, Technology Services, Texas Education Agency. \$8,000 (1996-1997)

Developing Leadership Communities for Improving Algebra I for All Students. Developed for a partnership of the Region One Statewide Systemic Initiative Team. Research team: Noel Villarreal (PI), Eduardo Cancino, and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg). Texas Statewide Systemic Initiative for Reform in Mathematics, Science and Technology Education to The Charles A. Dana Center for Mathematics and Science Education, The University of Texas at Austin. \$25,000 (1996-1997)

Academics 2000: First Things First -- The Texas Goals 2000. Developed for Edinburg (Texas) CISD. Research team: Hilda Medrano, Dean, College of Education, University of Texas - Pan American (Edinburg); Helen Jones, Director (PI), Gifted and Talented Education, Edinburg CISD; and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg). Texas Education Agency, \$750,000 (1996-2001)

Texas Teachers Empowered for Achievement in Mathematics (TEXTEAM) Institute for Algebra I. Developed for Hidalgo ISD, Jim Hogg (Hebbronville) County ISD, La Joya ISD, La Villa ISD, Lyford ISD, Mission CISD, Pharr-San Juan-Alamo ISD, Rio Hondo ISD, San Isidro ISD, San Perlita ISD, Santa Maria ISD, Santa Rosa, Sharyland ISD, Valley View ISD, Webb (Laredo) CISD, Weslaco ISD, and Zapata County (Zapata) ISD. Research team: Noel Villarreal (PI), Chuck McInteer, Ellen M. Gonzalez, Education Service Center, Region One (Edinburg); and Sylvia D. Hall-Ellis. Charles A. Dana Center for Mathematics and Science Education, University of Texas - Austin, \$15,975 (1996)

Community Learning Center for La Villa, Texas. Developed for Edcouch-Elsa Independent School District. Research team: Noe Gonzalez (PI), Assistant Superintendent, Edcouch-Elsa Independent School District, and Sylvia D. Hall-Ellis. Delta Region Subzone, Rio Grande Valley (Texas) Rural Empowerment Zone, \$325,000 (1996-1997)

Monte Alto (Texas) Community Learning Center. Developed for Monte Alto Independent School District. Research team: Homero A. Diaz (PI), Superintendent, Monte Alto Independent School District, and Sylvia D. Hall-Ellis. Delta Region Subzone, Rio Grande Valley (Texas) Rural Empowerment Zone, \$300,000 (1996-1997)

Community Learning Center for La Villa, Texas. Developed for La Villa Independent School District. Research team: Sam Gonzalez (PI), Assistant Superintendent, La Villa Independent School District; and Sylvia D. Hall-Ellis. Delta Region Subzone, Rio Grande Valley (Texas) Rural Empowerment Zone, \$325,000 (1996-1997)

Building Project for Taylor Elementary. Developed for Mercedes (Texas) Independent School District. Research team: Mrs. Denise Rivera, Librarian, and Eduardo Infante, Principal, Taylor Elementary School; Ismael S. Cantu (PI), Federal Programs Director, Mercedes Independent School District; and Sylvia D. Hall-Ellis. Delta Region Subzone, Rio Grande Valley (Texas) Rural Empowerment Zone, \$375,000 (1996-1997)

Border Education Network (BEN) - Distance Education through Cable Television. Developed for Edinburg (Texas) Consolidated Independent School District. Research team: Noe Torres (PI), Library Media Specialist, Magdalena Rosas, Library Media and Technology Coordinator, Edinburg Consolidated Independent School District; and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg). Edinburg (Texas) Consolidated School District, \$250,000 (1996-1997)

Multiservice One-Stop Open Enrollment Charter School. Developed for the Information Referral Resource Assistance, Inc. (McAllen, Texas). Research team: Pablo Perez and Aguié Pena (PI), Executive Director, Information Referral Resource Assistance, Inc.; Roberto Zamora and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg). Texas Education Agency, \$3,066,000 (1996-2001)

Project OK: A Community Youth Opportunities Grant for Summer, 1996. Developed for McAllen (Texas) Independent School District, St. Joseph the Worker Catholic Church, and the Office of Adult Education, Education Service Center, Region One. Research team: Father Bart Flatt, St. Joseph the Worker Catholic Church; Noe Calvillo (PI), Office of Adult Education; Maria Louisa Garcia, McAllen Independent School District; and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg). Texas Protective and Regulatory Agency through the Office of the Mayor, City of McAllen, \$350,000 (1996-2001).

Early Childhood: a Time of Discovery. Developed for a partnership of Lasara ISD, Rio Hondo ISD, San Perlita ISD, the School of Education, University of Texas - Brownsville, and Education Service Center, Region One (Edinburg). Research team: Hugo Rodriguez, Dean, School of Education, University of Texas - Pan American; Leonel Barrera and Jack Damron, Field Service Agents, Ellen M. Gonzalez (PI), Administrator for Student Instructional Services, Ruth Solis, Education Specialist in Special Education, and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg). Texas Education Agency, \$722,090 (1996-2001)

Innovative Gifted and Talented Programs for Early Childhood and Elementary Education Students. Developed for a partnership of Edinburg (Texas) CISD, the School of Education, University of Texas - Pan American (Edinburg), and Education Service Center, Region One (Edinburg). Research team: Hilda Medrano, Dean, School of Education, University of Texas - Pan American; Helen de la Garza (PI), Director of Elementary Curriculum and Instruction, Edinburg CISD; and Sylvia D. Hall-Ellis. Texas Education Agency, \$750,000 (1996-2001)

Reading Recovery in Early Elementary Grades. Developed for a partnership of La Villa (Texas) ISD the School of Education, University of Texas - Pan American (Edinburg), and Education Service Center, Region One (Edinburg). Research team: Hilda Medrano, Dean, School of Education, University of Texas - Pan American; Marcario Salinas (PI), Supervisor of Elementary Curriculum and Instruction, La Villa ISD; and Sylvia D. Hall-Ellis, Education Service Center, Region One. Texas Education Agency, \$750,000 (1996-2001)

Connected Mathematics Project for Middle and Junior High Students. Developed for a partnership of Michigan State University, The Charles A. Dana Center for Mathematics and Science Education, The University of Texas at Austin and Region One Statewide Systemic Initiative Team. Research team: Jack Damron, Chuck McInteer, Noel Villarreal (PI), and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg). National Science Foundation through Michigan State University to the Charles A. Dana Center at the University of Texas - Austin, \$539,610 (1996-1999)

Sharing Resources: Testing the Interlibrary Loan Potential of the Texas Library Connection -- Integrating Media Resources. Developed under the sponsorship of the Hidalgo County Library System (McAllen) and Education Service Center, Region One (Edinburg). Research team: William H. McGee, Hidalgo County System Coordinator; Fabiola Fuentes, Library Media; Ronald Pontius (PI), Instructional Technology, Education Service Center, Region One; and Sylvia D. Hall-Ellis. Library Media Services Program, Office of Technology Services, Texas Education Agency, \$25,000 (1996-1997)

State and Federal Adult Education JOBS Program. Developed for Education Service Center, Region One (Edinburg). Research team: Noe Calvillo (PI), Director, Adult Education Program, and Sylvia D. Hall-Ellis. Adult Education Program, Texas Education Agency, \$532,846 (1995-1996)

Creating Safe and Drug-Free Schools and Communities. Developed for a partnership of the Region One Consortium for Safe and Drug-Free Education Environments. Research team: Clara Contreras (PI), Health Specialist, and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg). Texas Education Agency, \$150,000 (1995-1996)

Developing Leadership Communities for Improving Mathematics Performance for All Students on Title I Campuses. Developed for a partnership of the Region One Statewide Systemic Initiative Team. Research team: Jack Damron, Chuck McInteer, Noel Villarreal (PI), and Sylvia D. Hall-Ellis, Education Service Center, Region One (Edinburg). Texas Statewide Systemic Initiative for Reform in Mathematics, Science and Technology Education to The Charles A. Dana Center for Mathematics and Science Education, The University of Texas at Austin, \$50,669 (1995-1996)

The Impact of Library Resource Centers on Academic Achievement in Selected Public Schools in South Texas. Sylvia D. Hall-Ellis (PI). Developed under the sponsorship of the Department of Library Science, College of Education and Applied Science, Sam Houston State University (Huntsville). Texas Association of School Librarians, Children's Services Round Table, and Young Adults Round Table (Austin, Texas), \$2,500 (1995)

School Library Media Specialists Fellowship Program. Sylvia D. Hall-Ellis (PI). Developed under the sponsorship of the Department of Library Science, College of Education and Applied Science, Sam Houston State University (Huntsville, Texas). U.S. Department of Education, HEA Title II-B, Library Education and Human Resource Development Program, \$44,000 (1995-1996)

Planning for Educational Technology. Research team: Ruth Ann Riggins (PI), Director of Library Media and Technology Services, Donna (Texas) Independent School District; Noe Torres, Education Service Center, Region One; Patricia G. Bubb, Tech Prep of the Rio Grande Valley, Inc; Michael D. Bell, South Texas Community College; and Sylvia D. Hall-Ellis, Sam Houston State University. Developed under the sponsorship of Donna (Texas) Independent School District, Education Service Center, Region One (Edinburg), Tech Prep of the Rio Grande Valley, Inc. (Harlingen), South Texas Community College (McAllen), and the Department of Library Science, Sam Houston State University (Huntsville). Funded through Infusion of Educational Technology Planning Grant Program (H.B. 18: Models). Texas Education Agency, \$18,000 (1993-1994)

The Impact of Library Resource Centers on Academic Achievement in Selected Public Schools in South Texas. Sylvia D. Hall-Ellis (PI) and Mary Ann Berry. Developed under the sponsorship of the Department of Library Science, College of Education and Applied Science, Sam Houston State University (Huntsville). Sam Houston State University Research Enhancement Fund, \$7,500 (1993-1994)

Electronic Mail Resource Sharing System: Management and Operation of the Iowa Computer-Assisted Network. State Library of Iowa, \$294,000 (1986-1993)

The Iowa Locator: A CD-ROM Resource Sharing Tool. State Library of Iowa, \$567,000 (1986-1992)

Statewide Database Development: An OCLC Tape Analysis To Determine Feasibility. State Library of South Dakota, \$15,000 (1987)

The Iowa Locator: A Feasibility Study. State Library of Iowa, \$50,000 (1986)

Electronic Mail Resource Sharing System: A Feasibility Study for Libraries in the State of Iowa. State Library of Iowa, \$5,000 (1985)

Access Pennsylvania: A Feasibility Study. State Library of Pennsylvania, \$50,000 (1984)

Automating Library Administrative and Management Tasks: Procurement and Distribution of Microcomputer Systems for District Library Centers in the Commonwealth of Pennsylvania. State Library of Pennsylvania, \$495,000 (1982)

Sharing Serial Titles Resources: Procurement and Distribution of Microfiche Readers for 550 Libraries in the Commonwealth of Pennsylvania. State Library of Pennsylvania, \$500,000 (1982)

Electronic Mail System: A Pilot Project for Libraries throughout the Commonwealth of Pennsylvania. State Library of Pennsylvania, \$125,000 (1982)

Literacy Program for Adults in Rural Upstate New York State: Program Outreach and Evaluation - Phase 3. Appalachian Regional Commission, \$50,000 (1981)

Database Building: A Cooperative Project of the Finger Lakes Library System (Ithaca), Four County Library System (Binghamton), and the Southern Tier Library System (Corning). New York State Library, \$450,000 (1980-1985)

Faces of the Southern Tier: A Professional Photographer-in-Residence. New York State National Endowment for the Humanities, \$25,000 (1980)

Literacy Program for Adults in Rural Upstate New York State: Program Implementation - Phase 2. Appalachian Regional Commission, \$50,000 (1980)

Small Business Resources Center: A Pilot Project for Rural Public Libraries. New York State Library, \$50,000 (1980)

Media Programming: A Professional Development Program for Public Librarians in Upstate New York: A Program in Allegheny, Chemung, Schuylers, Steuben, and Yates Counties. New York State Library, \$35,000 (1979)

Information and Library Resources for Inmates and Prisoners in Selected Upstate New York Facilities: A Cooperative Program in Allegheny, Chemung, Schuylers, Steuben, and Yates Counties. New York State Library, \$25,000 (1979)

Library Resources for Homebound Adults in Upstate New York: An Outreach Program in Allegheny, Chemung, Schuylers, Steuben, and Yates Counties. New York State Library, \$40,000 (1979)

Literacy Program for Adults in Rural Upstate New York State: Program Initiation and Establishment - Phase 1. Funded by the Appalachian Regional Commission. Awarded to the Corning (New York) Public Library, \$50,000 (1979)

Information Reference Services to Homebound Adults. New York State Library, \$31,000 (1978)

Books-By-Mail Services to Homebound Adults. New York State Library, \$31,000 (1978)

System Headquarters Services and Programs for Public Libraries in District 10. Funded through Library Services and Construction Act Title I. Texas State Library and Historical Commission, \$880,000 (1976)

County Library Development Grant for Atascosita County. Funded through Library Services and Construction Act Title I. Texas State Library and Historical Commission, \$15,000 (1976)

Spanish Language Materials Collection Development Program. Texas State Library and Historical Commission, \$40,000 (1975)

Establishment of System Headquarters for Alamo Regional Library System (District 10) Headquartered at the San Antonio (Texas) Public Library. Texas State Library and Historical Commission, \$800,000 (1975)

SELECTED CONSULTANTSHIPS

Project Strategic Planning & Funding Proposal Development

Walden University, 2015.
 Pikes Peak Library District, 2014.
 Douglas County Public Libraries, 2011-2012.
 Denver School for Science and Technology, 2008-2011.
 Johnson & Wales University, Denver Campus, 2007-2009.
 Challenges, Choices, and Images K-12 Charter School, Denver Public Schools, 2007.
 Denver Medical Library, Inc., 2006-2010.
 Bemis Public Library (Littleton), Ergonomic Design and Facilities Enhancement Consultant, 2003.
 Curtis Park Community Center (Denver), Community Technology Center Evaluation and Proposal Development Consultant, 2003.
 Colorado Community Based Research Network (Denver), Funding Research Associate, 2002.
 Our Lady of the Rosary Academy (Edgewater), Learning Resource Center Development Project Consultant, 2001-2003
 University of Southern Colorado (Pueblo). Technology Integration and Curriculum Enhancement into Higher Education Learning Environment. Proposal Development Consultant, 2000.
 Jefferson County Library System (Lakewood), 1999-2000.
 Southeastern BOCES (Lamar, CO). Distance Learning Curriculum Content Development Project. Proposal Development Consultant, 1998-2004.
 Cheyenne Mountain School District 12 (Colorado Springs, CO). Technology Integration into Elementary Writing Curriculum Project. Proposal Development Consultant, 1998.
 Telecommunications Infrastructure Fund Board Round #2 Application, 1997. Technical assistance to the following: La Villa (Texas) Independent School District; Mirando City (Texas) Independent School District; Monte Alto (Texas) Independent School District; San Isidro (Texas) Independent School District.
 Telecommunications Infrastructure Fund Board Round #1, 1996. Technical assistance to the following: Brownsville (Texas) Independent School District; Donna (Texas) Independent School District; Edinburg (Texas) Consolidated Independent School District; Harlingen (Texas) Consolidated Independent School District; Jim Hogg County Independent School District (Hebbronville, Texas); La Feria (Texas) Independent School District; La Joya (Texas) Independent School District; La Villa (Texas) Independent School District; Los Fresnos (Texas) Consolidated Independent School District; Progreso (Texas) Independent School District; Raymondville (Texas) Independent School District; Rio Hondo (Texas) Independent School District; San Benito (Texas) Independent School District; Sharyland Independent School District (Mission, Texas); Weslaco (Texas) Independent School District; Zapata (Texas) County Independent School District.
 South Texas Community College (McAllen). Strategy Development to Meet the Technology Instructional Needs for Vocational, School-To-Work and Academic Programs, 1994-2000. Development Consultant.
 Donna (Texas) Independent School District. Planning for the Infusion of Technology in Middle Schools Serving High At-Risk Students, 1994-1995. Research Associate.
 Pettus (Texas) Independent School District. Planning for District-wide Automation in School Library Media Centers: Preparation of Data, and CD-ROM Hardware/Software Configuration Evaluation, 1994. Principal Investigator.
 Fort Bend Independent School District (Sugar Land, TX). Planning for District-wide Automation in School Library Media Centers, Preparation of Data, and CD-ROM Hardware/Software Configuration Evaluation, 1994-1995. Principal Investigator.
 Northern Waters Library Services (Ashland, WI). Professional Consulting Services to Make Recommendations on the Development of System-Wide Efforts of the Northern Waters Library Service, 1988-1989. Research Associate.
 State Library of Iowa (Des Moines). The Iowa Locator Compact Disc to Support Multi-Type Libraries Resource Sharing including Database Design, Building, Production, and Distribution, 1986-1991. Project Director.
 State Library of Iowa (Des Moines). Iowa Computer-Assisted Network Development, Enhancement, and Operation, 1985-1992. Technical Director.
 State Library of South Dakota (Pierre). Statistical Sampling and Analysis of Multi-Institutional OCLC Archive Tape for Statewide Online Database Building, 1985-1986. Research Associate.
 District of Columbia Public Library (Washington, DC). Planning Document for the Retrospective Conversion of Bibliographic Records and Automation Issues in the 1990's, 1984-1985. Research Associate.

State Library of Pennsylvania (Harrisburg). Database Development for High School Libraries, 1984-1985. Research Associate.

MINITEX (Minneapolis, MN). Workshops for Retrospective Conversion, Bar Coding, Library Statistics, and OCLC Serials Format, 1985. Presenter and Research Associate.

ABC Film Consortium (Altoona, Bellefonte, Johnstown, PA). Database Building, System Design, and Implementation of Online Film Booking System, 1983-1985. Database Manager.

Library Automation -- System Design & Implementation

Douglas County Library District (Castle Rock, CO). Library Automation Technical and System Performance Specifications, 2001.

Pharr-San Juan-Alamo Independent School District (Pharr, TX). Library Automation Technical and System Performance Specifications, 1997. Project Development Consultant.

Harlingen (Texas) Independent School District. Planning for District-wide Automation in Junior High School Library Media Centers: Preparation of Data, and CD-ROM Hardware/Software Configuration Evaluation, 1996. Principal Investigator.

Sharyland (Texas) Independent School District. Design and Construction of New Elementary School Library and Technology Resources Center, 1995-1996. Principal Investigator.

South Texas Independent School District (Mercedes, TX). Design and Construction of a New High School Library and Technology Resources Center, 1995-1996. Principal Investigator.

Citizens' Library (Washington, PA). Online Community Resources Files: Design and Implementation, 1984. Research Associate.

Altoona (Pennsylvania) Hospital. Integrated Online System Upgrade Study, 1984. Research Associate.

State Library of South Dakota (Pierre). Automation Plan and State Database Development, 1982-1983. Principal Investigator.

State Library of Pennsylvania (Harrisburg). COM Production and Preparation of the Technical Specifications Document, Procurement, and Distribution of Microcomputers in the Commonwealth of Pennsylvania, 1983-1984. Research Associate.

Altoona (Pennsylvania) Area Public Library. Integrated System (Circulation/Online Catalog) Study, 1982-1983. Principal Investigator.

COPSCAULD (Council of Pennsylvania State College and University Library Directors, Edinboro, PA). Design of Online Media Catalog, 1982. Principal Investigator.

Erie (Pennsylvania) County Library System. Operations Research and Design for Automated Circulation, Hardware Upgrade and Re-Retrospective Conversion, 1982. Research Associate.

Michigan Library Consortium (Lansing, MI). Tape Management System Design and Implementation, 1982-1984. Research Associate.

State Library of Pennsylvania (Harrisburg). Preparation of the Technical Specifications Document, Procurement and Distribution of Microfiche Readers in the Commonwealth of Pennsylvania, 1982. Research Associate.

Community College of Allegheny County, Allegheny Campus (Pittsburgh, PA). Integrated Systems Study, 1981. Principal Investigator.

Community College of Allegheny County, South Campus (West Mifflin, PA). Retrospective Conversion Training Program for Handicapped Students, 1981. Technical Director.

Southern Tier Library System (Corning, NY). OCLC Acquisitions Subsystem Evaluation, 1981. Principal Investigator.

South Central Reference and Research Council (Ithaca, NY). South Central Regional Delivery System, 1980. Principal Investigator.

Southern Tier Library System (Corning, NY). Newspapers on Microfilm in the Chemung-Southern Tier Library System, 1979-1981. Principal Investigator.

Cataloging & Bibliographic Database Building

Challenges, Choices, and Images K-12 Charter School, Denver Public Schools, 2007.

Denver Medical Library, Inc., 2006-2010.

Ricks Gifted and Talented School Library, 2005-

American Humane Society (Englewood), 2004-2006.

Fisher Early Learning Center Library, 2004-

Colorado Community Based Research Network (Denver), 2004-
Boulder Valley School District (Boulder), 2002-2003.
Douglas Public Library District (Castle Rock), 2001-2002.

Bibliographic Center for Research, Inc. (Denver). Original Cataloging, 2001-2003 & 1992-1993. Professional Cataloger. Libraries include Arapahoe Library District (Centennial); Clarke College (Clarke, IA); Kaiser Permanente Center for Health Research (Portland, KS); Douglas County Library System (Carson City, NV); Grinnell College (Grinnell, IA); Kansas State University (Manhattan, KS); Kansas State Library (Topeka, KS); McPherson College (McPherson, KS); Newman University (Wichita, KS); Montana Technical University (Helena, MT); Montana State Library (Helena, MT); University of Texas Southwest Medical Center Library (Dallas, TX); Community College of Southern Nevada (Las Vegas, NV); Pikes Peak Library District (Colorado Springs); Mesa Community College (Grand Junction); Coe College (Cedar Rapids, IA); Briar Cliff College (Sioux City, IA); Tri-Care Health Systems (Aurora); The Penrose-St. Francis Healthcare System (Colorado Springs); Westminster Public Library (Westminster); Lutheran Medical Center Medical Library (Wheat Ridge); American Heritage Center, University of Wyoming (Laramie, WY); National Wildlife Research Center Library (Lakewood); University of Colorado Health Sciences Center, Denison Memorial Library (Denver); Water Resources Library, Denver District Office, Bureau of Land Management (Lakewood); Mesa State Community College Learning Resources Center (Pueblo); Front Range Community College Learning Resources Center (Westminster).

Colorado Historical Society Library (Denver). Original Cataloging of Serials for Multi-Institutional Union Listing Project, 1993. Technical Services Associate. Institutional partners: Denver Art Museum, Denver Museum of Natural History Library, and Denver Botanical Gardens Library.

Arapahoe Library District (Centennial). Original Cataloging of Major Media, 1991.

Original Cataloging Projects: Davis and Elkins College (Elkins, WV), 1989-1990; Waldorf College (Forest City, IA), 1989-1990; Kennametal Corporation (Latrobe, PA), 1984-1985; Pennsylvania Public Libraries Film Center (Harrisburg), 1982-1985.

Retrospective Conversion Projects: North Central Regional Library Service (Mason City, IA), 1987-1988; Southeastern Library Services (Davenport, IA), 1986-1987; Virginia Theological Seminary (Alexandria), 1984-1985; California University of Pennsylvania (California, PA), 1984-1985; Kennametal Corporation (Latrobe, PA), 1984-1985; West Virginia University (Morgantown), 1983-1985; Altoona Area Public Library (Altoona, PA), 1983-1984; George Washington University (Washington, DC), 1983-1984; Indiana University of Pennsylvania (Indiana, PA), 1983-1985; Health Education Center (Pittsburgh), 1983-1984; Central Pennsylvania District Library Center (Bellefonte, PA), 1982-1985; Duquesne University Law School Library (Pittsburgh), 1982-1983; Allegheny County Law Library (Pittsburgh), 1982-1984; Calgon Technical Information Center (Pittsburgh), 1982; Dow Corning Corporation, Technical Information Center (Midland, MI), 1982-1983; Tri-System Public Library Retrospective Conversion Project (Binghamton, Corning, and Ithaca, NY), 1978-1981, Technical Project Director.

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